Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Minimum Stock Size Threshold (MSST) for snapper grouper stocks with low natural mortality

Environmental Assessment Regulatory Impact Review Regulatory Flexibility Act Analysis

April 1, 2014

Definitions, Abbreviations, and Acronyms Used in the Document

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

Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region

Documents:	Environmental Assessment Regulatory Impact Review
Proposed actions:	This amendment proposes revisions to the minimum stock size threshold (MSST) for select species in the Snapper Grouper Fishery Management Unit (FMU).
Lead agency:	Regulatory Amendment 21 – South Atlantic Fishery Management Council EA/RIR – National Marine Fisheries Service (NMFS)
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Summary

What Actions Are Being Proposed?

Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) proposes to modify the definition of minimum stock size threshold (MSST) for select snapper grouper species with low (less than 0.25) natural mortality rates including red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack.

Purpose for Action

The *purpose* for the action is to modify the definition of MSST for select snapper grouper species with low natural mortality rates.

Need for Action

The *need* for the proposed action is to prevent snapper grouper stocks with low natural mortality rates from frequently alternating between overfished and rebuilt conditions due to natural variation in recruitment and other environmental factors.

Who is Proposing the Action?

The South Atlantic Fishery Management Council (South Atlantic Council) is proposing the action. The South Atlantic Council develops the regulatory amendment and submits it to the National Marine Fisheries Service (NMFS) who publishes a rule to implement the regulatory amendment on behalf of the Secretary of Commerce. NMFS is an agency in the National Oceanic and Atmospheric Administration within the Department of Commerce.

Why are the South Atlantic Council and NMFS Considering Action?

Regulatory Amendment 21 to the Snapper Grouper Fishery FMP (Regulatory Amendment 21) would re-define the overfished threshold for select snapper grouper species with low natural mortality rates. The current definition of minimum stock size threshold (MSST), which is used to determine if a snapper grouper species is overfished, is a function of the natural mortality rate (M). MSST equals SSB_{MSY}*(1-M or 0.5, whichever is greater), where SSB_{MSY} is the biomass when the stock is at the maximum sustainable yield (MSY) level and considered to be rebuilt. Thus, when the natural mortality rate is low, less than 0.25, even small fluctuations in biomass due to natural variations not related to fishing mortality may cause a stock to vary between an overfished or rebuilt condition. When a species is identified as overfished, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that a plan be implemented to rebuild the stock. Currently, a number of snapper grouper species with low natural mortality rates could unnecessarily be classified as overfished because of the current definition of MSST for those species. The snapper grouper species with low natural mortality rates addressed in this amendment include red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. Redefining MSST for these species would help to prevent unnecessary overfished designations when small drops in biomass are due to natural variation in recruitment or other environmental variables, and ensure that rebuilding plans are applied to stocks when truly appropriate.

Alternatives for Proposed Action

Alternative 1 (No Action). Retain the current definition of minimum stock size threshold (MSST) for species in the snapper grouper fishery management unit (FMU). For golden tilefish, red grouper, and snowy grouper, MSST equals 75% of SSB_{MSY}. For the remaining species in the snapper grouper FMU, MSST equals SSB_{MSY}*(1-M or 0.5, whichever is greater).

Preferred Alternative 2. Change the MSST for select species in the snapper grouper FMU to 75% of SSB_{MSY}.

> **Sub-alternative 2a.** Change MSST if the estimation of M is 0.15 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).
>
> **Sub-alternative 2b.** Change MSST if the estimation of M is 0.20 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).
>
> **Preferred Sub-alternative 2c.** Change MSST if the estimation of M is 0.25 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Alternative 3. Change the MSST for select species in the snapper grouper FMU with low natural mortality rates to 50% of $SSB_{MSY.}$

Summary of Effects

Proposed Action. Re-define Minimum Stock Size Threshold for Select Species in the Snapper Grouper Fishery Management Unit

Biological Effects

Alternative 1 (No Action) would retain the Minimum Stock Size Threshold (MSST) definition established in the Amendment 11 to the Fishery Management Plan for the Snapper Grouper FMP (SAFMC 1998). It requires MSST to be equal to SSB_{MSY}*(1-M or 0.5, whichever is greater). If the value of the natural mortality for a species is very small, i.e., lower than 0.25, then there is very little difference between the biomass threshold for being overfished (MSST) and the biomass threshold for being rebuilt (SSB_{MSY}). Thus, even small fluctuations in biomass due to natural variations not related to fishing mortality may cause a stock to vary between an overfished or rebuilt condition. If (1-M) were equal to 0.5, then the value obtained from this alternative would be the same as that obtained from **Alternative 3**.

Preferred Alternative 2, and its sub-alternatives, would provide a higher biomass threshold (75%SSB_{MSY}) than **Alternative 3** (50%SSB_{MSY}) for determining when a stock is overfished. Although **Preferred Alternative 2** would establish a larger biomass buffer between an overfished and rebuilt condition than **Alternative 1 (No Action)**, it is not expected to result in negative biological impacts on fished species and their ecosystems. **Preferred Alternative 2** is expected to minimize undue administrative and economic burdens that could be experienced with **Alternative 1 (No Action)** due to natural variation in recruitment, which could cause stock biomass to frequently alternate between an overfished and rebuilt condition. **Sub-alternative 2a** would change MSST for species with natural

mortality rates equal to or lower than 0.15 including red snapper, blueline tilefish, gag, and black grouper (**Table S.1**). **Sub-alternative 2b** would change MSST for species with natural mortality rates equal to or lower than 0.20, i.e., yellowtail snapper, in addition to the species affected under **Sub-alternative 2a** (**Table S.2**). **Preferred Sub-alternative 2c** would change MSST for species with natural mortality rates equal to or less than 0.25, including greater amberjack, red porgy, and vermilion snapper, in addition to the species listed under **Sub-alternatives 2a** and **2b** (**Table S.3**).

Table S.1. Snapper grouper species with natural mortality estimates below 0.15 (Sub-alternative 2a).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14

Table S.2. Snapper grouper species with natural mortality estimates below 0.20 (Sub-alternative 2b).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19

Table S.3. Snapper grouper species with natural mortality estimates below or equal to 0.25 (Preferred Sub-alternative 2c and Alternative 3).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19
Vermilion snapper	0.22
Red porgy	0.23
Greater amberjack	0.23

Like **Preferred Sub-alternative 2c**, **Alternative 3** would change the MSST for species with natural mortality rates equal to or less than 0.25 including red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. However, **Alternative 3** is the most risky of the alternatives considered, because it would allow stock biomass to decrease to 50% of the SSB_{MSY} level before an overfished determination is made, regardless of stock productivity. Such a low threshold for determining an overfished status could be problematic for snapper grouper species that are particularly vulnerable to overfishing. This alternative could make it more difficult to rebuild the stocks from an overfished condition within the allowed time period specified by the Magnuson-Stevens Act, and

would likely result in more severe catch restrictions following an overfished determination. However, it would eliminate the potential administrative complications associated with setting MSST close to SSB_{MSY} by establishing a larger buffer between what are considered overfished and rebuilt conditions. **Table S.4** shows MSST values for all the species considered in this amendment under each alternative.

Table S.4. Minimum Stock Size Threshold (MSST), natural mortality (M), and Spawning Stock Biomass at MSY (SSB_{MSY}) values under each alternative for snapper grouper species addressed in Regulatory Amendment 21.

				MSST				
Stock	**M**	**SSB_{MSY}**	**Units**	**Alt. 1**	**Alt. 2a**	**Alt. 2b**	**Alt. 2c**	**Alt. 3**
Black Grouper	0.14	5,920,000	lb ww	5,091,200	4,440,000	4,440,000	4,440,000	2,960,000
Blueline Tilefish	0.10	543,660	lb ww	489,294	407,745	407,745	407,745	271,830
Gag	0.14	7,925,000	lb gw	6,815,500	5,943,750	5,943,750	5,943,750	3,962,500
Greater Amberjack	0.23	4,277,000	lb ww	3,293,290	3,293,290	3,293,290	3,207,750	2,138,500
Red Porgy	0.23	8,671,000	lb ww	6,676,670	6,676,670	6,676,670	6,503,250	4,335,500
Red Snapper	0.08	344,000	lb ww	316,480	258,000	258,000	258,000	172,000
Vermilion Snapper	0.22	5.98	1e12 eggs	4.66	4.66	4.66	4.49	2.99
Yellowtail Snapper	0.19	6,773,000	lb ww	5,418,400	5,418,400	5,079,750	5,079,750	3,386,500

Economic Effects

Re-defining the MSST of a stock does not alter the current harvest or use of the resource because it does not change the annual catch limits (ACLs) or accountability measures (AMs). Instead, MSST is the biomass threshold used to determine if a stock is overfished or not. If overfished, the Magnuson-Stevens Act requires a rebuilding plan that includes catch restrictions. If biomass is above the MSST, the stock is not overfished and development of a rebuilding plan is not required. Consequently, **Alternatives 1 (No Action), 2 (Preferred),** and **3** would not affect current harvest or use of stocks and would have no direct economic impact beyond the status quo. Any indirect impacts would be dependent on future management actions resulting from the determination of whether a stock is overfished or not. Among the alternative MSST specifications in Action 1, **Alternative 1 (No Action)** has the greatest probability of resulting in an overfished determination, especially for stocks with a low natural mortality, such as red snapper, and highest likelihood of unnecessarily reducing landings and the net economic benefits that derive from those landings, in addition to unnecessarily adding administrative costs When M is relatively small, such as 0.10, the current definition of MSST for some species would trigger a rebuilding plan if biomass fell slightly below the rebuilt condition (SSB_{MSY}), in the above case, at less than 90%SSB_{MSY}. Natural variation in recruitment could cause stock biomass to frequently alternate between overfished and rebuilt determinations. To avoid this, the South Atlantic Council previously re-defined the MSST for red grouper, snowy grouper, and golden tilefish, which also have low natural mortality estimates.

Sub-alternatives 2a, 2b, and **2c (Preferred)** would re-define MSST for snapper grouper stocks with a low natural mortality to establish a more appropriate buffer between the biomass at the rebuilt threshold (SSB_{MSY}) and the biomass at the overfished threshold (MSST). **Sub-alternative 2a** would allow for larger reductions in the biomass of red snapper, blueline tilefish, gag, and black grouper before implementing catch restrictions that reduce net economic benefits from those stocks. **Sub-alternative 2b**

would add yellowtail snapper to the above list of four stocks, and **Preferred Sub-alternative 2c** would add to the above five, greater amberjack, red porgy and vermilion snapper. Consequently, **Preferred Sub-alternative 2c**, which could avoid unnecessary catch restrictions for eight species, could have the largest long-run net economic benefit and **Sub-alternative 2a** could have the smallest long-run net economic benefit of the three sub-alternatives. **Alternative 3** would allow for the largest reduction in biomass of each of the above eight stocks, which could have the largest short-run net economic benefit of the three alternatives, but the magnitude of the long-term net economic costs to rebuild the stock could be substantial. Therefore, **Alternative 3** could have lower long-run net economic benefits than **Alternative 1 (No Action)**.

Social Effects

Under **Alternative 1 (No Action)**, commercial permit holders may be unnecessarily affected by continued or future restricted access to a species due to an overfished designation, which could have negative effects on associated fishing businesses and communities. **Preferred Alternative 2** and **Alternative 3** could reduce the number of species that are designated as overfished, which could improve commercial access to economically important species such as red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. The degree to which these new MSST definitions would result in fewer incidences of overfished determinations would vary depending on the alternative chosen, with **Alternative 3** likely to result in the least number of species being assigned an overfished status. Similar effects would be expected for the recreational sector of the snapper grouper fishery.

Administrative Effects

Any option that would reduce the likelihood snapper grouper species would be designated as overfished would subsequently reduce the administrative burden associated with development and implementation of rebuilding plans. Administratively, development of a rebuilding plan can include a prolonged fishery management plan amendment process, followed by requisite implementation and monitoring efforts. Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2** would reduce the risk that snapper grouper species with low natural mortality rates be designated as overfished due to natural variations in biomass. However, because **Alternative 3** would establish a larger buffer between the value of MSST and SSB_{MSY}, it would trigger an overfished determination less frequently than **Alternative 1 (No Action)** and result in smaller administrative effects compared to **Preferred Alternative 2**. Under **Preferred Alternative 2**, the buffer between MSST and SSB_{MSY} is smaller than under **Alternative 3**, and, therefore, would result in overfished determinations more frequently than **Alternative 3**. However, because **Alternative 3** would allow for the greatest decrease in biomass before triggering a rebuilding plan, there could be greater administrative costs associated with rebuilding the stock than under **Alternative 1 (No Action)** and **Preferred Alternative 2**.

Chapter 1. Introduction

1.1 What Actions Are Being Proposed?

Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) proposes to modify the definition of minimum stock size threshold (MSST) for select snapper grouper species with low natural mortality rates including red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. A public hearing for this amendment was held during the March 2014, South Atlantic Fishery Management Council (South Atlantic Council) meeting. Additionally, the process of notice and comment of the proposed rule will provide another opportunity for public comments on the actions contained in this amendment.

South Atlantic Fishery Management Council

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

1.2 Who is Proposing the Actions?

The South Atlantic Council is proposing the action. The South Atlantic Council develops the regulatory amendment and submits it to the National Marine Fisheries Service (NMFS) who publishes a rule to implement the regulatory amendment on behalf of the Secretary of Commerce. NMFS is an agency in the National Oceanic and Atmospheric Administration within the Department of Commerce.

1.3 Where is the Project Located?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. Exclusive Economic Zone (EEZ) is conducted under the Snapper Grouper FMP (SAFMC 1983) (**Figure 1.3.1**). Species included in Regulatory Amendment 21 are among the 59 species managed by the South Atlantic Council under the Snapper Grouper FMP.

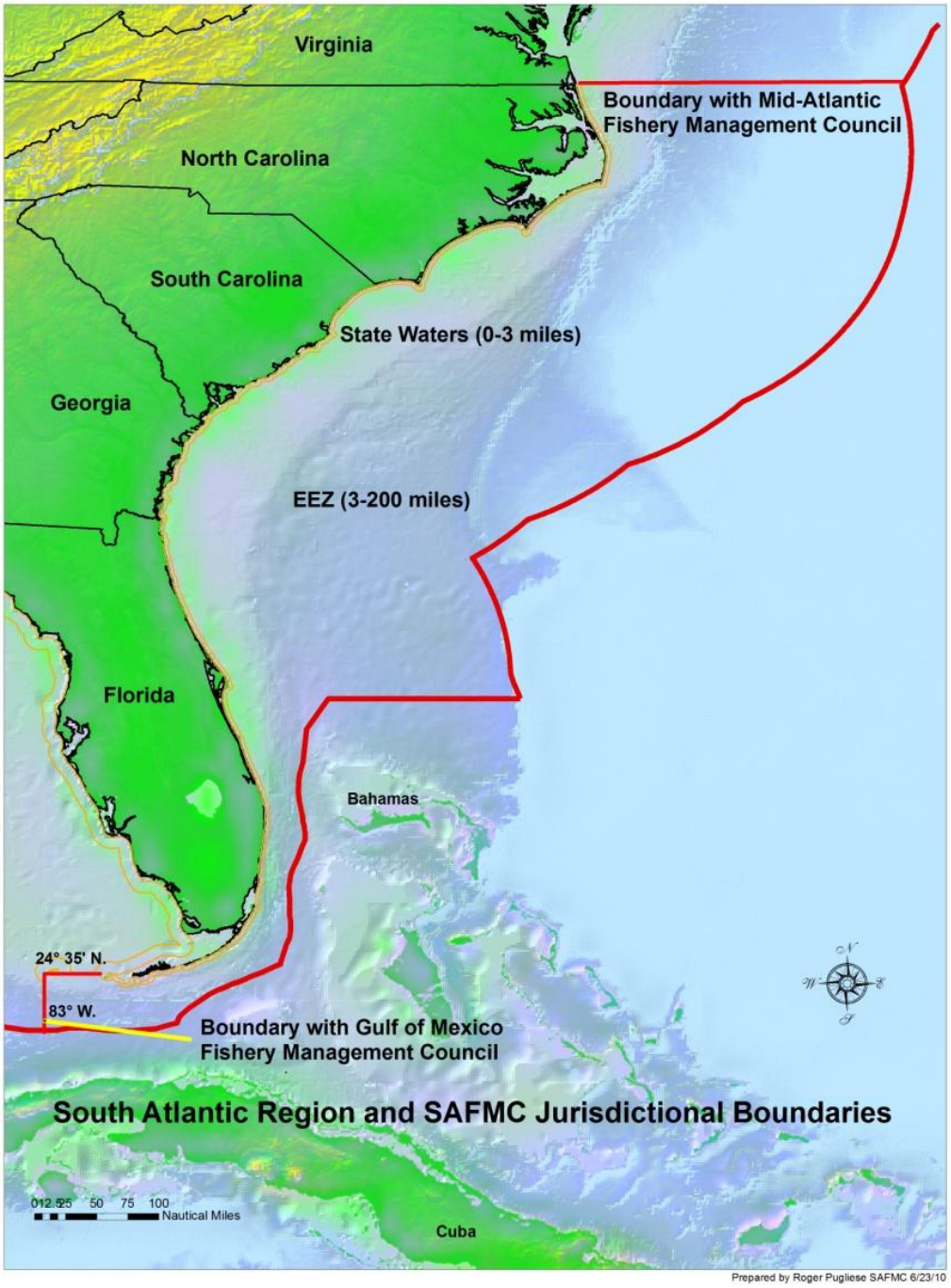


Figure 1.3.1. Jurisdictional boundaries of the South Atlantic Council.

1.4 Purpose and Need

Purpose for Action

The *purpose* for the action is to modify the definition of MSST for select snapper grouper species with low natural mortality rates.

Need for Action

The *need* for the proposed action is to prevent snapper grouper stocks with low natural mortality rates from frequently alternating between overfished and rebuilt conditions due to natural variation in recruitment and other environmental factors.

1.5 What is the History of Management for the species considered in this amendment?

Snapper grouper regulations in the South Atlantic were first implemented in 1983. See **Appendix D** of this document for a detailed history of management for the snapper grouper fishery.

Chapter 2. Proposed Action and Alternatives

2.1 Proposed Action. Re-define Minimum Stock Size Threshold for Select Species in the Snapper Grouper Fishery Management Unit

Alternative 1 (No Action). Retain the current definition of minimum stock size threshold (MSST) for species in the snapper grouper fishery management unit (FMU). For golden tilefish, red grouper, and snowy grouper, MSST equals 75% of SSB_{MSY}. For the remaining species in the snapper grouper FMU, MSST equals SSB_{MSY}*(1-M or 0.5, whichever is greater).

Preferred Alternative 2. Change the MSST for select species in the snapper grouper FMU to 75% of SSB_{MSY}.

Sub-alternative 2a. Change MSST if the estimation of M is 0.15 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14

Sub-alternative 2b. Change MSST if the estimation of M is 0.20 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19

Preferred Sub-alternative 2c. Change MSST if the estimation of M is 0.25 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19
Vermilion snapper	0.22
Red porgy	0.23
Greater amberjack	0.23

Alternative 3. Change the MSST for select species in the snapper grouper FMU with low natural mortality rates to 50% of SSB_{MSY}.

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19
Vermilion snapper	0.22
Red porgy	0.23
Greater amberjack	0.23

2.1.1 Comparison of Alternatives

Alternative 1 (No Action) would retain the MSST definition established in Amendment 11 to the Snapper Grouper FMP (SAFMC 1998) for species addressed by Regulatory Amendment 21. It requires MSST to be at least one-half of SSB_{MSY}, but allows for it to be greater than this value if natural mortality (M) is suitably low. If (1-M) is equal to 0.5, then the value obtained from this alternative would be the same as that obtained from **Alternative 3**.

Preferred Alternative 2 and its sub-alternatives would provide a higher threshold than **Alternative 3** for determining when a stock is overfished. **Alternative 2** is not expected to result in negative biological impacts on fished species and their ecosystems, but is expected to minimize undue administrative and economic burdens that could be experienced with **Alternative 1 (No Action)** due to natural variation in recruitment, which could cause stock biomass to frequently alternate between an overfished and rebuilt condition. The most biologically conservative alternative is **Alternative 1 (No Action)** because it would ensure that rebuilding plans are developed for overfished species; however, under **Alternative 1 (No Action)** rebuilding plans may also be required when they are not biologically necessary. The biological benefits of **Alternative 1 (No Action)** would take the form of increased harvest restrictions that would be implemented with intent to rebuild a particular stock according to the current MSST threshold criterion. **Preferred Alternative 2** and its sub-alternatives would still require the development of a rebuilding plan for species determined to be overfished, but would reduce the risk of requiring a rebuilding plan for specie's with decreased biomass due to natural variations in recruitment. The biological benefits of **Preferred Alternative 2** are expected to be neutral compared those of **Alternative 1 (No Action)**.

Alternative 3 would apply to eight species in the snapper grouper fishery management unit with low natural mortality rates (less than or equal to 0.25) and is the least conservative of the alternatives considered, because it would allow stock biomass to decrease to as little as 50% of the biomass at the maximum sustainable yield (MSY) level before an overfished determination is made, regardless of stock productivity. Such a low threshold for determining an overfished status could be problematic for snapper grouper species that are particularly vulnerable to overfishing. This alternative could make it more difficult to rebuild the stocks from an overfished condition within the allowed time period, and would likely result in more severe catch restrictions following an overfished determination. This scenario would likely result in negative biological impacts compared to **Alternative 1 (No Action)** and **Preferred Alternative 2**. However, it would eliminate the potential administrative complications associated with setting MSST close to SSB_{MSY} by establishing a larger buffer between what is considered to be an overfished and rebuilt condition.

Redefining the MSST of a stock does not alter the current harvest or use of the resource because it does not change the annual catch limits (ACLs) or accountability measures (AMs). Instead, MSST is a biomass threshold used to determine if a stock is overfished. If overfished, the Magnuson-Stevens Fishery Conservation and Management Act requires a rebuilding plan, which could result in negative short term economic effects due to harvest constraints. If biomass is above the MSST, the stock is not overfished. If a stock was overfished and biomass is at or above SSB_{MSY}, the stock is considered rebuilt. This action would not implement either a rebuilding plan or regulatory change. Consequently, **Alternatives 1 (No Action)**, **2 (Preferred),** and **3** would not affect current harvest or use of stocks and would have no direct economic impact beyond the status quo. However, the status quo may include

unnecessary catch restrictions that reduce short-run net economic benefits and yield lower long-run net economic benefits. Among the alternative MSST specifications in the Proposed Action, **Alternative 1 (No Action)** has the greatest probability of resulting in an overfished determination, especially for stocks with a low natural mortality. When M is relatively small, such as 0.10, the current definition of MSST for some species would trigger a rebuilding plan if biomass fell slightly below SSB_{MSY}, in the above case, at less than 90% SSB_{MSY}. Natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt status. To avoid this, the South Atlantic Council previously redefined the MSST equal to 75%SSB_{MSY} for red grouper, snowy grouper, and golden tilefish, which have low natural mortalities; however, the MSST for the species included in this amendment was not addressed at that time.

Sub-alternatives 2a, 2b, and **2c (Preferred)** would re-define MSST for snapper grouper stocks with a low natural mortality to establish a more appropriate buffer between SSB_{MSY} and the MSST. **Sub-alternative 2a** would allow for larger reductions in the biomass of red snapper, blueline tilefish, gag, and black grouper before implementing catch restrictions to rebuild the stocks that reduce net economic benefits from those stocks. **Sub-alternative 2b** would add yellowtail snapper to the above list of four stocks, and **Preferred Sub-alternative 2c** would add to the above five, greater amberjack, red porgy and vermilion snapper. Consequently, **Preferred Sub-alternative 2c**, which could avoid unnecessary catch restrictions for eight species, could have the largest long-run net economic benefit and **Sub-alternative 2a** could have the smallest long-run net economic benefit of the three sub-alternatives. **Alternative 3** would allow for the largest reduction in biomass of each of the above eight stocks, which could have the largest short-run net economic benefit of the three alternatives, but the magnitude of the long-term net economic costs to rebuild the stock could be substantial. Therefore, **Alternative 3** could have lower long-run net economic benefits than **Alternative 1 (No Action)**.

Under **Alternative 1 (No Action)**, commercial permit holders may be unnecessarily affected by continued or future restricted access to a species due to an unnecessary overfished designation, which could have negative effects on associated fishing businesses and communities. **Preferred Alternative 2** and **Alternative 3** could reduce the number of species that are designated as overfished, which could improve commercial access to these economically important species. The degree to which these new MSST definitions would result in fewer incidences of overfished determinations would vary depending on the alternative chosen, with **Alternative 3** likely to result in the least number of species being assigned an overfished status. Similar effects would be expected for the recreational sector of the snapper grouper fishery.

Chapter 3. Affected Environment

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

Affected Environment

- **Habitat environment (Section 3.1)**

  Examples include coral reefs and sea grass beds

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

  Examples include populations of groupers, corals, and turtles

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

  Examples include fishing communities and economic descriptions of the fisheries

- **Administrative environment (Section 3.4)**

  Examples include the fishery management process and enforcement activities

3.1 Habitat Environment

3.1.1 Inshore/Estuarine Habitat

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

3.1.2 Offshore Habitat

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

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

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

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

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

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

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

3.1.3 Essential Fish Habitat

Essential fish habitat (EFH) is defined in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) as "those waters and substrates necessary to fish for spawning, breeding, feeding, or growth to maturity" (16 U.S. C. 1802(10)). Specific categories of EFH identified in the South Atlantic Bight, which are utilized by federally managed fish and invertebrate species, include both estuarine/inshore and marine/offshore areas. Specifically, estuarine/inshore EFH includes: Estuarine emergent and mangrove wetlands, submerged aquatic vegetation, oyster reefs and shell banks, intertidal flats, palustrine emergent and forested systems, aquatic beds, and estuarine water column. Additionally, marine/offshore EFH includes: live/hard bottom habitats, coral and coral reefs, artificial and manmade reefs, *Sargassum* species, and marine water column.

EFH utilized by snapper grouper species in this region includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs, and medium to high profile outcroppings on and around the shelf break zone from shore to at least 183 meters [600 ft (but to at least 2,000 ft for wreckfish)] where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical fish complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for survival of larvae and growth up to and including settlement. In addition, the Gulf Stream is also EFH because it provides a mechanism to disperse snapper grouper larvae.

For specific life stages of estuarine-dependent and near shore snapper grouper species, EFH includes areas inshore of the 30 meter (100-ft) contour, such as attached macroalgae; submerged rooted vascular plants (seagrasses); estuarine emergent vegetated wetlands (saltmarshes, brackish marsh); tidal creeks; estuarine scrub/shrub (mangrove fringe); oyster reefs and shell banks; unconsolidated bottom (soft sediments); artificial reefs; and coral reefs and live/hard bottom habitats.

3.1.4 Habitat Areas of Particular Concern

Areas which meet the criteria for Essential Fish Habitat-Habitat Areas of Particular Concern (EFH-HAPCs) for species in the snapper grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning

aggregations; near shore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the Oculina Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; South Atlantic Council-designated Artificial Reef Special Management Zones (SMZs); and deep-water MPAs.

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

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

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

3.2 Biological and Ecological Environment

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

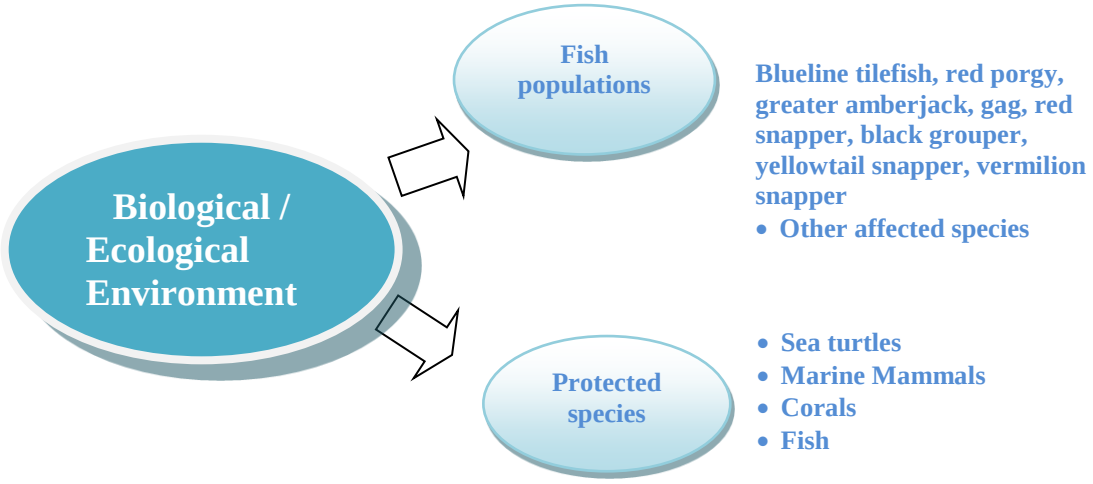


Figure 3.2.1. Two components of the biological environment described in this document.

3.2.1 Fish Populations

The waters off the South Atlantic coast are home to a diverse population of fish. The snapper grouper fishery management unit contains 59 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.

Snapper grouper species that may be affected by the proposed action include red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. The life history, biological characteristics, and stock status of each species 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/ (see **Section 3.2.3** of this document for more information on the SEDAR process). Yellowtail snapper was assessed by the state of Florida in 2012 (FWRI 2012).

- Vermilion Snapper – SEDAR 17 Update Assessment (2012)
- Yellowtail Snapper – FWRI (2012)
- Gag – SEDAR 10 (2006)
- Red Snapper – SEDAR 24 (2010)

- Black Grouper – SEDAR 19 (2010)
- Red Grouper – SEDAR 19 (2010)
- Greater Amberjack – SEDAR 15 (2008)
- Red Porgy –SEDAR Assessment Update (2012)
- Blueline Tilefish – SEDAR 32 (2013)

3.2.2 Other Species Affected

Species that co-occur with the species considered in this amendment are:

Deepwater Species
Yellowedge grouper
Silk snapper
Misty grouper
Sand tilefish
Queen snapper
Blackfin snapper
Golden tilefish
Warsaw grouper
Speckled hind

Snappers
Gray snapper
Lane snapper
Cubera snapper
Mahogany snapper
Mutton snapper

Shallow-Water Species
Red hind
Rock hind
Yellowmouth grouper
Yellowfin grouper
Coney
Graysby
Hogfish
Nassau grouper
Bar jack
Scamp
Porgies

For details on the life histories and ecology of co-occurring species, the reader is referred to Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) available at: http://www.safmc.net/ecosystem-management/fishery-ecosystem-plan-1.

3.2.3 The Stock Assessment Process

SEDAR is a cooperative Fishery Management Council process initiated to improve the quality and reliability of fishery stock assessments in the South Atlantic, Gulf of Mexico, and U.S. Caribbean. The Caribbean, Gulf of Mexico, and South Atlantic Fishery Management Councils manage SEDAR in coordination with the National Marine Fisheries Service (NMFS) and the Atlantic and Gulf States Marine Fisheries Commissions. SEDAR seeks improvements in the scientific quality of stock assessments, constituent and stakeholder participation in assessment development, transparency in the assessment process, and a rigorous and independent scientific review of completed stock assessments.

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

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

3.2.4 Protected Species

There are 44 species protected by federal law that may occur in the exclusive economic zone (EEZ) of the South Atlantic Region and are under the purview of NMFS. Thirty-one of these species are marine mammals protected under the Marine Mammal Protection Act (MMPA). Six of these marine mammal species are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). In addition to those six marine mammals, five species of sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; five distinct population segments of Atlantic sturgeon; and elkhorn coral (*Acropora palmata*) and staghorn coral (*A. cervicornis*) ("*Acropora*" collectively) are also protected under the ESA. Portions of designated critical habitat for North Atlantic right whales and *Acropora* also occur within the South Atlantic Council's jurisdiction. The species potentially affected by the hook-and-line portion of the fishery are discussed below.

3.2.4.1 ESA-Listed Sea Turtles

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

Green sea turtle hatchlings are thought to occupy pelagic areas of the open ocean and are often associated with *Sargassum* rafts (Carr 1987, Walker 1994). Pelagic stage green sea turtles are thought to be carnivorous. Stomach samples of these animals found ctenophores and pelagic snails (Frick 1976, Hughes 1974). At approximately 20 to 25 cm carapace length, juveniles migrate from pelagic habitats to benthic foraging areas (Bjorndal 1997). As juveniles move into benthic foraging areas a diet shift towards herbivory occurs. They consume primarily seagrasses and algae, but are also know to consume jellyfish, salps, and sponges (Bjorndal 1980, 1997; Paredes 1969; Mortimer 1981, 1982). The diving abilities of all sea turtles species vary by their life stages. The maximum diving range of green sea turtles is estimated at 110 m (360 ft) (Frick 1976), but they are most frequently making dives of less than 20 m (65 ft.) (Walker 1994). The time of these dives also varies by life stage. The maximum dive length is estimated at 66 minutes with most dives lasting from 9 to 23 minutes (Walker 1994).

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

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

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

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

3.2.4.2 ESA-Listed Marine Fish

Historically the **smalltooth sawfish** in the U.S. ranged from New York to the Mexico border. Their current range is poorly understood but believed to have contracted from these historical areas. In the South Atlantic region, they are most commonly found in Florida, primarily off the Florida Keys (Simpfendorfer and Wiley 2004). Only two smalltooth sawfish have been recorded north of Florida since 1963 [the first was captured off North Carolina in 1963 and the other off Georgia in 2002 (National Smalltooth Sawfish Database, Florida Museum of Natural History)]. Historical accounts and recent encounter data suggest that immature individuals are most common in shallow coastal waters less than 25 meters (Bigelow and Schroeder 1953, Adams and Wilson 1995), while mature animals occur in waters in excess of 100 meters (Simpfendorfer pers. comm. 2006). Smalltooth sawfish feed primarily on fish. Mullet, jacks, and ladyfish are believed to be their primary food sources (Simpfendorfer 2001). Smalltooth sawfish also prey on crustaceans (mostly shrimp and crabs) by disturbing bottom sediment with their saw (Norman and Fraser 1938, Bigelow and Schroeder 1953).

3.3 Socio-economic Environment

3.3.1 Economic Description of the Commercial Sector

The South Atlantic snapper grouper fishery is composed of 59 of the 74 species that the SAFMC manages. Over the 5-year period from 2008 through 2012, commercial landings of these 59 species represented approximately 11% of all finfish commercial landings in the South Atlantic Region by pounds whole weight (lb ww) and approximately 20% by dockside revenue ($) (NMFS ALS, excluding confidential data). Landings of the 59 species also represented almost 5% of combined finfish and shellfish landings by weight and almost 8% by revenue.

Within the snapper grouper fishery, sea basses and groupers ranks first by both weight and dockside revenue. During the above 5-year period, landings of sea basses and groupers represented approximately 33% of all snapper grouper commercial landings by weight and approximately 44% by revenue (**Figures 3.3.1.1** and **3.3.1.2**). Snappers rank second, and during the above period, snappers accounted for approximately 25% of commercial landings by weight and 31% by revenue.

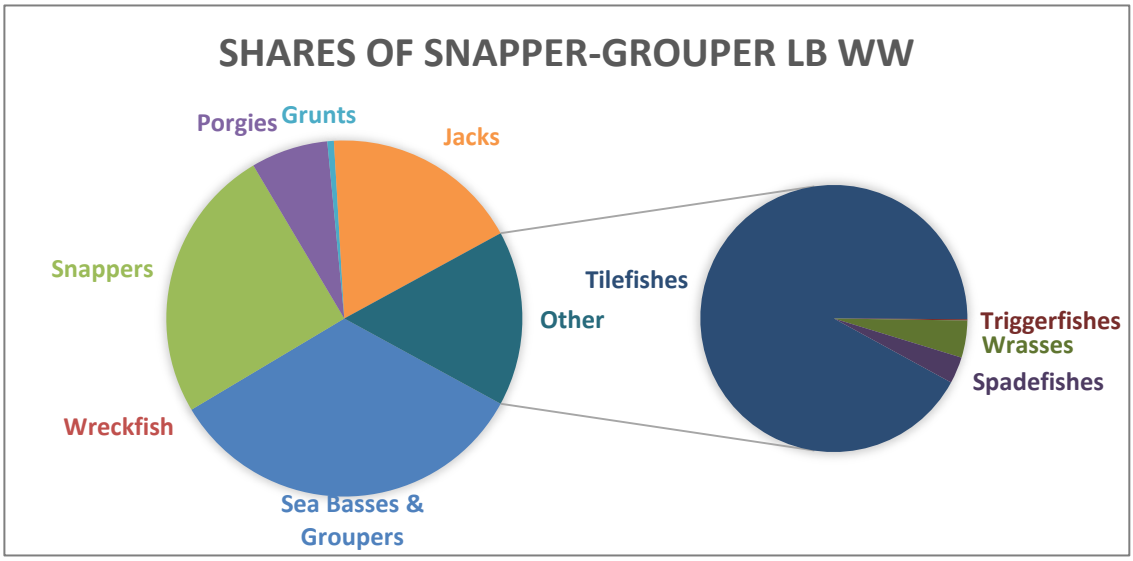


Figure 3.3.1.1. Snapper grouper commercial landings (lb ww) by group, 5-year period from 2008 – 2012. Source: NMFS ALS, excluding confidential data.

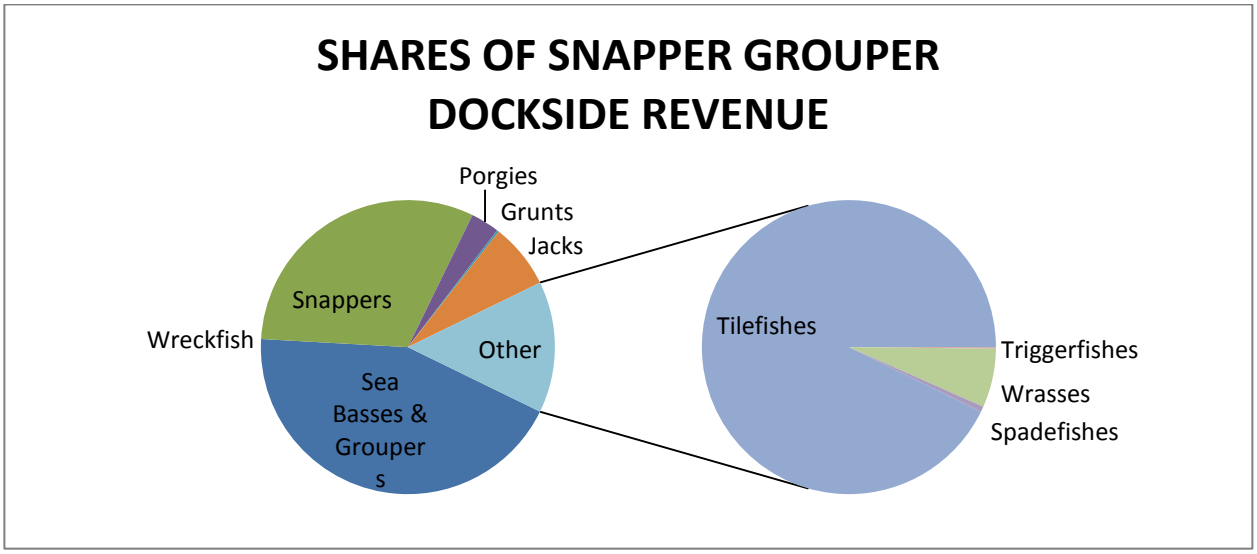


Figure 3.3.1.2. Snapper grouper commercial landings ($) by group, 5-year period from 2008 – 2012.
Source: NMFS ALS, excluding confidential data.

Any fishing vessel that harvests and sells any of the snapper grouper species from the South Atlantic EEZ must have a valid South Atlantic commercial snapper grouper permit, which is a limited access permit. There are currently 547 valid South Atlantic Snapper Grouper Unlimited Permits and 117 valid 225 lb Trip Limited Permits (**Table 3.3.1.1**). After a permit expires, it can be renewed and transferred up to one year after it expires. The numbers of valid and transferrable/renewable permits have declined since 2008 (**Table 3.3.1.2**).

Table 3.3.1.1. Valid and transferrable/renewable South Atlantic commercial snapper grouper permits as of January 30, 2014.
Source: NMFS SERO PIMS.

South Atlantic S-G Permits	Unlimited lb	225 lb
Valid	547	117
Transferrable/Renewable	22	8
Total	569	125

Table 3.3.1.2. Number of South Atlantic commercial snapper grouper permits.
Source: NMFS SERO PIMS, 2013.

	Unlimited	Limited 225 lb
2008	665	151
2009	640	144
2010	624	139
2011	569	126
2012	558	123
Average	611	137

The following eight subsections focus on commercial landings and fishing for the eight species that could be affected by the action. Landings from the logbook program do not include all landings shown

from the ACL database due to landings by fishermen who do not have the federal snapper grouper permit and are not required to complete the logbook; non-reporting in the logbook program is also an issue. Additional information on commercial landings and fishing for the snapper grouper fishery as a whole or the 10 species groups within it can be found in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Regulatory Amendment 9 (SAFMC 2011a), and Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011c)] and is incorporated herein by reference.

3.3.1.1 Black grouper

Black grouper is within the sea basses and groupers group of the snapper grouper fishery. From 2008 through 2012, black grouper's 5-year commercial landings ranked seventh among the 20 species within the group and its landings represented less than one percent of the group's landings by weight and revenue over that time (NMFS ALS, confidential data excluded). Annual commercial landings of black grouper in the South Atlantic States ranged from 44,057 to 56,796 lb ww from 2008 through 2012 (SERO ACL). Dockside revenues from those landings ranged from $169,746 to $212,360 (2012 $) (**Figure 3.3.1.3**). The average dockside price during those five years was $3.78 per pound ww (2012$).

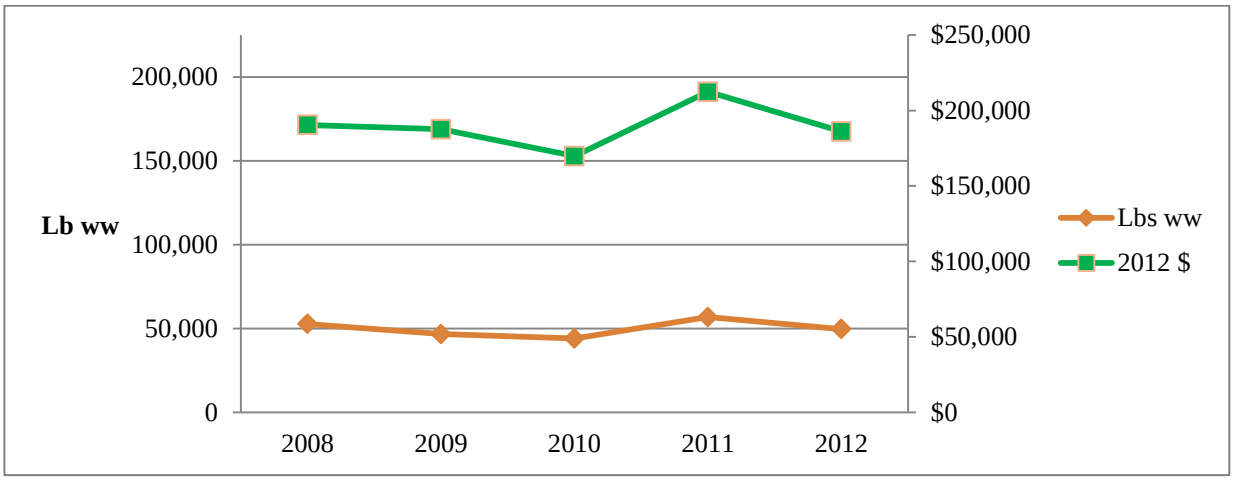


Figure 3.3.1.3. Annual commercial landings of black grouper by weight (lb ww) and dockside revenue (2012 $). Source: SERO ACL.

The commercial ACL for black grouper was 90,575 lb ww in 2012 and 94,571 lb ww in 2013. Annual landings reached approximately 55% of the commercial ACL in 2012. As of January 29, 2014, approximately 51% (48,475 lb ww) of the 2013 commercial ACL had been landed; however, that figure is preliminary because landings for 2013 are still be reported and counted.

Black grouper is a shallow-water grouper, and commercial harvest of any shallow-water grouper species is prohibited from January 1 through April 30 each year. The commercial season opens May 1. Black grouper must be landed with head and fins intact, and its minimum size limit is 24 inches TL. In 2010, it was listed as undergoing overfishing. A stock assessment completed in 2010 indicated black grouper is no longer undergoing overfishing and is not overfished.

Among the South Atlantic States, Florida's East Coast ranks first in black grouper landings, with South Carolina a distant second. Approximately 86% of commercial landings of black grouper occurred on Florida's East Coast over the 5-year period from 2008 through 2012 (**Figure 3.3.1.4**) (NMFS ALS, confidential data excluded). Florida's East Coast also accounted for approximately 84% of the South Atlantic Region's dockside revenues from black grouper landings over that time.

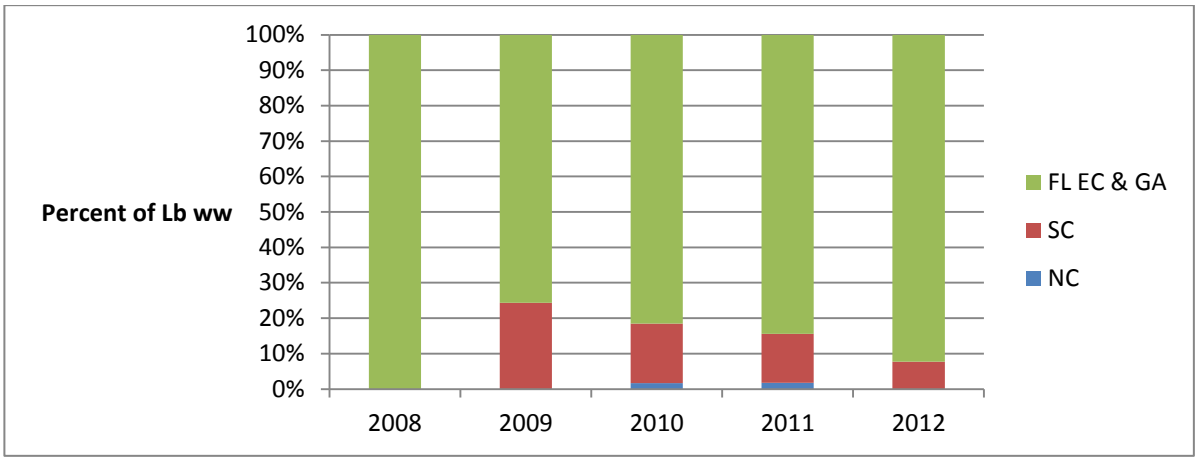


Figure 3.3.1.4. Percent of black grouper landings (lb ww) by state, 2008 – 2012.
Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 212 vessels made 812 commercial trips that combined landed an average of 68,483 pounds gutted weight (lb gw) of black grouper annually with a dockside value (2012 dollars) of $306,974 (**Table 3.3.1.3**). The average trip with landings of the species sold approximately 84 lb gw of black grouper yielding an average dockside revenue of $378. Average annual dockside revenue from black grouper landings represented approximately 18% of total dockside revenue from trips that landed black grouper from 2008 through 2012.

Table 3.3.1.3. Vessels and trips with black grouper landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed black grouper	Number trips that landed black grouper	Black grouper landings (lb gutted wt)	Dockside revenue from black grouper (2012 $)	'Other species' landed and jointly caught with black grouper (lb gutted wt)	Dockside revenue from 'other species' from trips with black grouper landings (2012 $)	Total dockside revenue (2012 $) from trips with black grouper landings
2008	254	1,061	97,118	$405,651	656,129	$1,784,451	$2,190,101
2009	238	908	70,818	$319,609	590,901	$1,498,398	$1,818,008
2010	193	693	63,334	$298,692	480,534	$1,295,259	$1,593,951
2011	202	774	66,427	$312,193	496,027	$1,461,533	$1,773,726
2012	175	625	44,717	$198,726	323,400	$955,950	$1,154,676
Average	212	812	68,483	$306,974	509,398	$1,399,118	$1,706,092

On average, the vessels that harvested black grouper also took 6,343 trips per year without black grouper landings (**Figure 3.3.1.5**). The 812 average annual trips that these vessels took with black grouper landings represented approximately 12% of the average of all annual commercial trips of those vessels in the South Atlantic Region during the five years.

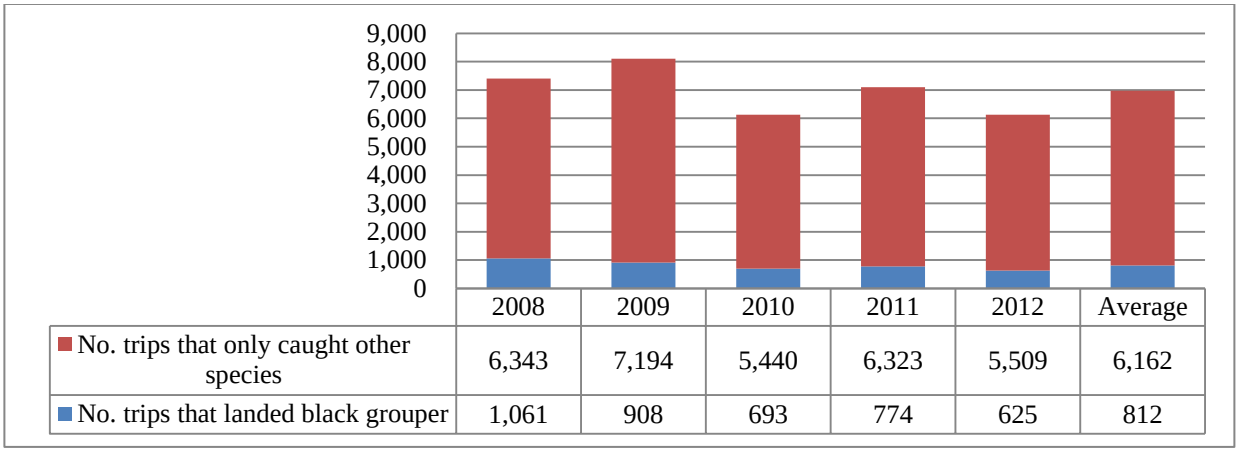


Figure 3.3.1.5. All annual trips by vessels that landed black grouper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from black grouper landings represented, on average, approximately 3% of the total dockside revenue from all commercial landings from 2008 through 2012 (**Table 3.3.1.4**). Average annual dockside revenue per vessel from all landings was $44,207 as compared to $1,448 per vessel from black grouper only.

Table 3.3.1.4. Dockside revenues from all sources for vessels that landed black grouper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed black grouper	Dockside revenue from black grouper (2012 $)	Dockside revenue from 'other species' jointly landed with black grouper (2012 $)	Dockside revenue from 'other species' landed on trips without black grouper (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	254	$405,651	$1,784,451	$6,581,525	$8,771,626	$34,534
2009	238	$319,609	$1,498,398	$8,312,378	$10,130,386	$42,565
2010	193	$298,692	$1,295,259	$6,712,272	$8,306,224	$43,037
2011	202	$312,193	$1,461,533	$8,301,495	$10,075,221	$49,877
2012	175	$198,726	$955,950	$7,774,123	$8,928,799	$51,022
Average	212	$306,974	$1,399,118	$7,536,359	$9,242,451	$44,207

Diving outfits and hand lines are the two most popular gear types used to harvest black grouper. The use of non-stainless steel circle hooks (offset or non-offset) is required to harvest black grouper and all other species in the snapper grouper complex when using hook-and-line gear with natural baits in waters north of 28 degrees N. latitude.

3.3.1.2 Blueline Tilefish

Blueline tilefish is one of three species in the tilefishes group. During the 5-year period from 2008 through 2012, the tilefishes group accounted for approximately 15% of all snapper grouper commercial landings by weight (lb ww) and approximately 13% by dockside revenue (NMFS ALS, confidential data excluded). Blueline tilefish ranked a close second to golden tilefish in commercial landings during that time. Together, they represented over 99.9% of all tilefish landings over that time. Blueline tilefish accounted for approximately 47% of the group's commercial landings by weight and approximately 40% by dockside revenue. Blueline tilefish landings count against the commercial ACL for the deep-water complex. In 2012, commercial landings of the complex exceeded its commercial ACL and the commercial season for the complex closed on September 8 of that year. An emergency rule is under development that would temporarily remove blueline tilefish from the complex and establish separate ACLs and accountability measures (AMs). The South Atlantic Council is developing Amendment 32 to make these changes permanent and to consider management measures.

Annual commercial landings of blueline tilefish in the South Atlantic Region from 2002 through 2012 varied from 69,135 lb ww to approximately 0.46 million lb ww (**Figure 3.3.1.6**). North Carolina led in those landings, averaging approximately 79% of annual landings by lb ww from 2002 through 2012 and approximately 94% since 2008. Commercial landings greatly increased after 2007, although in 2011 fishing for blueline tilefish and five other species in federal waters seaward of 240 feet deep was prohibited after January 30, 2011. Explanation for the increase after 2007 is found in the 100-lb trip limit placed on commercial snowy grouper landings established in 2008. Prior to that trip limit, blueline tilefish was primarily bycatch, caught while targeting the higher priced snowy grouper. Once fishermen reach the trip limit for snowy grouper, they harvest blueline tilefish, which has no trip limit and is found in more areas than snowy grouper. The switch of blueline tilefish from bycatch to targeted species is illustrated in the relationship of dockside revenues (current dollars) of blueline tilefish and snowy grouper (**Figure 3.3.1.7**). This is not to suggest, however, that trips that land blueline tilefish target or land only snowy grouper and blueline tilefish.

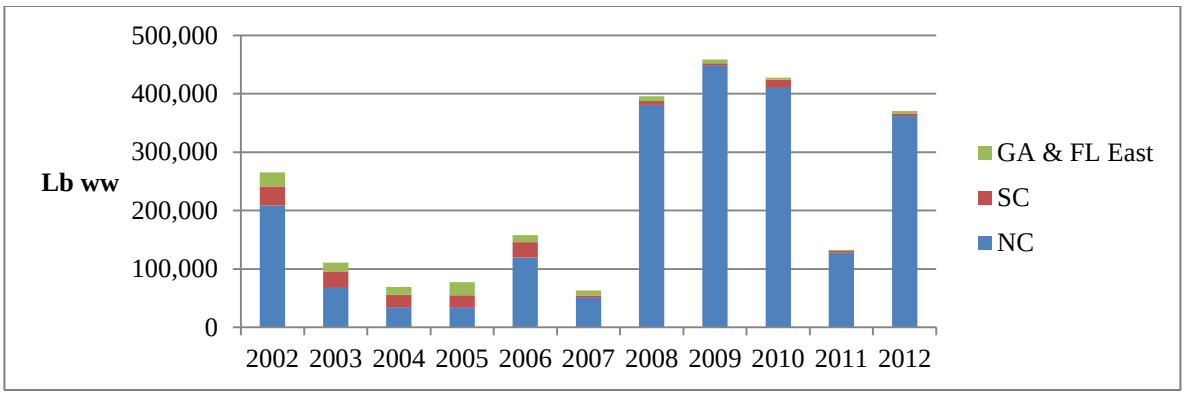


Figure 3.3.1.6. Commercial landings (lb ww) of blueline tilefish, 2002 – 2012.
Source: SEDAR 32 (2002-2011) and ACL (2012).

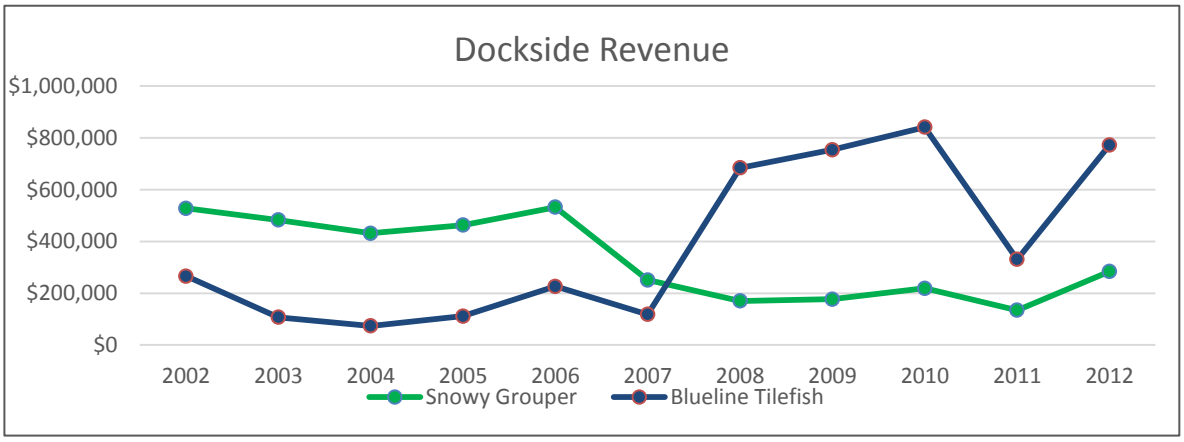


Figure 3.3.1.7. Dockside revenue (current dollars) from blueline tilefish and snowy grouper, 2002 – 2012.
Source: NMFS, ALS, excluding confidential data.

In North Carolina, the majority of blueline tilefish are landed in gutted condition. Consequently, the following discussion of landings by trip are presented in lb gw. From 2008 through 2012, an annual average of 124 vessels made 611 commercial trips that combined landed an average of 321,237 lb gw of blueline tilefish annually with a dockside value (2012 dollars) of $679,289 (**Table 3.3.1.5**). The average trip with landings of the species sold 526 lb gw of blueline tilefish yielding an average dockside revenue of $1,112. If 2011 is excluded, an average of 131 vessels made 684 trips that collectively landed an average of 372,271 lb gw with a value of $772,738 (2012 dollars) annually. Average annual dockside revenue from blueline tilefish landings represented approximately 34% of total dockside revenue from trips that landed blueline tilefish from 2008 through 2012, and when 2011 is excluded, the 4-year average share is approximately 36%.

Table 3.3.1.5. Vessels and trips with blueline tilefish landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed blueline tilefish	Number of trips that landed blueline tilefish	Blueline tilefish landings (lb gw)	Dockside revenue (2012 $) from blueline tilefish landings	'Other species' landings jointly caught with blueline tilefish (lb gw)	Dockside revenue (2012 $) from other species caught during same trip	Total dockside revenue (2012 $) from trips with blueline tilefish landings
2008	119	714	362,562	$711,302	564,485	$1,462,798	$2,174,100
2009	149	795	435,104	$817,298	688,642	$1,680,922	$2,498,220
2010	131	705	397,165	$879,655	557,226	$1,362,821	$2,242,475
2011	98	320	117,102	$305,491	355,018	$946,502	$1,251,993
2012	125	523	294,254	$682,699	383,616	$1,042,293	$1,724,992
5-Year Average	124	611	321,237	$679,289	509,797	$1,299,067	$1,978,356
4-Year Average	131	684	372,271	$772,738	548,492	$1,387,208	$2,159,947

Note: 4-Year Average excludes 2011.

On average, the vessels that harvested blueline tilefish also took 3,612 trips per year without blueline tilefish landings (**Figure 3.3.1.8**). The 684 average annual trips that these vessels took with blueline tilefish landings represented approximately 16% of all the annual commercial trips of those vessels in the South Atlantic Region during the four years. When 2011 trips are included, the 5-year average annual percentage is approximately 15%.

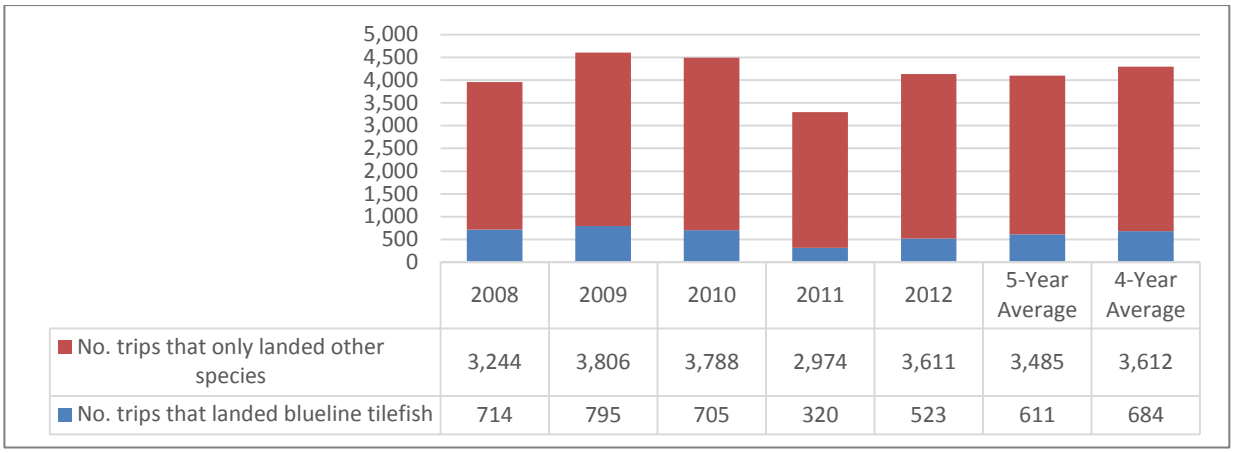


Figure 3.3.1.8. All annual trips by vessels that landed blueline tilefish, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Trips made by the above vessels without landings of blueline tilefish had higher landings by weight and value from 2008 through 2012 than the trips with blueline tilefish landings; however, the average weight and value per trip are less for trips without blueline tilefish landings (**Table 3.3.1.6**). The 5-year average annual dockside revenue from blueline tilefish landings per vessel is $5,478 and 4-year average

(excluding 2011) is $5,899 (**Table 3.3.1.4**). The 5-year and 4-year averages of annual dockside revenue from all landings per vessel are shown in **Figure 3.3.1.9**.

Table 3.3.1.6. Weight and value of landings from trips with and without blueline tilefish landings, 2008 – 2012. Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Total lb gw from trips with blueline tilefish landings	Total lb gw from trips without blueline tilefish landings	Dockside revenue (2012 $) from trips with blueline tilefish landings	Dockside revenue (2012 $) from trips without blueline tilefish landings	Average lb gw per trip with blueline tilefish landings	Average lb gw per trip without blueline tilefish landings	Average dockside revenue (2012 $) per trip with blueline tilefish landings	Average dockside revenue (2012 $) per trip without blueline tilefish landings
2008	927,047	2,931,841	$2,174,100	$7,492,040	1,298	903	$3,044	$2,309
2009	1,123,745	3,526,472	$2,498,220	$8,079,124	1,413	926	$3,142	$2,122
2010	954,391	3,439,819	$2,242,475	$7,601,958	1,353	908	$3,180	$2,006
2011	472,120	2,794,739	$1,251,993	$6,161,852	1,475	939	$3,912	$2,071
2012	677,870	2,652,061	$1,724,992	$6,813,035	1,296	734	$3,298	$1,886
5-Year Average	831,035	3,068,986	$1,978,356	$7,229,602	1,359	880	$3,235	$2,074
4-Year Average	920,763	3,137,548	$2,159,947	$7,496,539	1,345	868	$3,156	$2,075

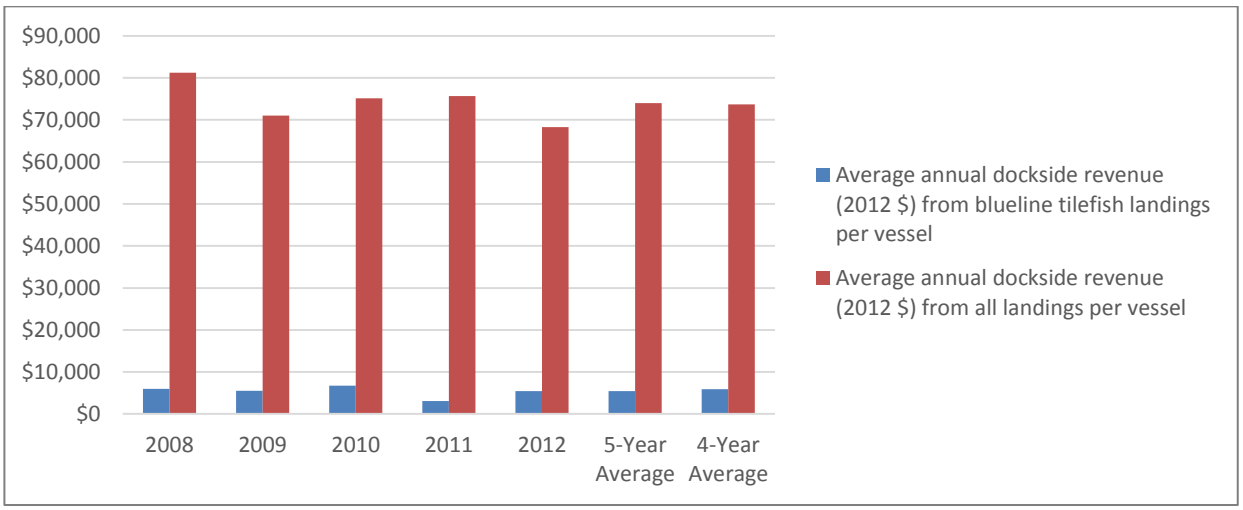


Figure 3.3.1.9. Average dockside revenue (2012 $) from blueline tilefish and all landings per vessel with blueline tilefish landings, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Over the 10-year period from 2002 through 2011, handlines and longlines accounted for 48% and 45% of commercial blueline tilefish landings, respectively (SEDAR 32 2013). However, in 2010 and 2011, the use of longlines accounted for 56% and 81% of annual landings, respectively.

3.3.1.3 Gag

Gag is a species within the sea basses and groupers group. Over the 5-year period from 2008 through 2012, it ranked first in commercial landings by weight (lb ww) and second by dockside revenue in its group (NMFS ALS, confidential data excluded). The average dockside price of gag varied from $3.65 to $4.23 per pound ww.

Annual commercial landings of gag in the South Atlantic Region from 2009 through 2013 varied from 339,158 to 442,760 lb gw (**Figure 3.3.1.10**). From 2009 through 2011, annual commercial landings exceeded the quota by as much as approximately 60%. In 2012 and 2013 when commercial landings reached or were projected to reach the ACL for the year, the season closed. The commercial ACL was 352,940 lb gw in 2012 and 326,722 lb gw in 2013. The 2014 commercial ACL is the same as it was in 2013, and harvest is prohibited from January 1 through April 30.

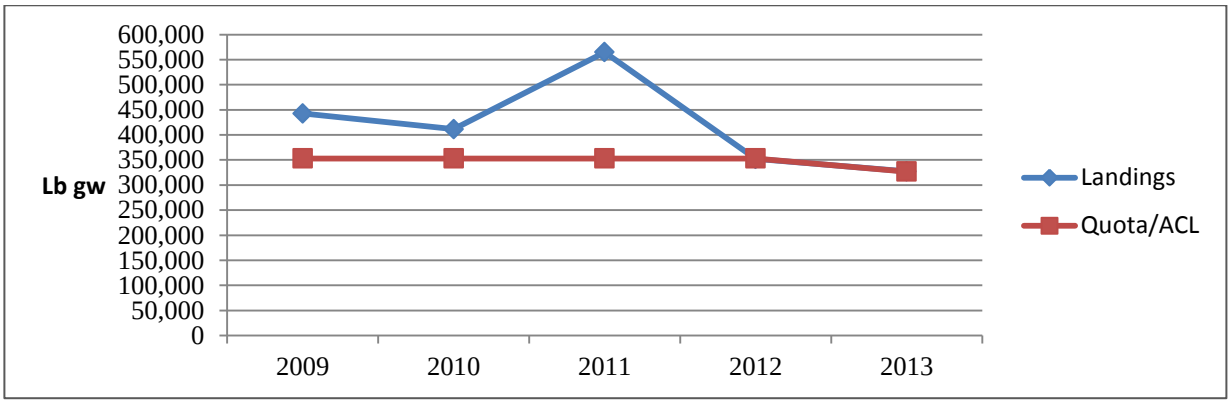


Figure 3.3.1.10. Annual commercial landings (lb gw) of gag in South Atlantic Region, 2009 – 2013. Source: SERO ACL.

Annual commercial landings of gag during the 5-year period from 2003 through 2007 were significantly larger than annual commercial landings from 2008 through 2012 (NMFS ALS, excluding confidential data). **Figure 3.3.1.11** illustrates the significant difference in the 5-year averages for the two periods. The results of a 2006 stock assessment determined gag was undergoing overfishing in the South Atlantic, and consequently, a number of management measures were implemented after that assessment. Among these measures are the establishment of eight deep-water Marine Protected Areas closed to grouper fishing (Amendment 14; SAFMC 2007), establishment of a spawning seasonal closure for gag from January through April (Amendment 16; SAFMC 2009a), and implementation of a commercial ACL with corresponding AMs that close the season when landings reach or are projected to reach the ACL (SAFMC 2011c).

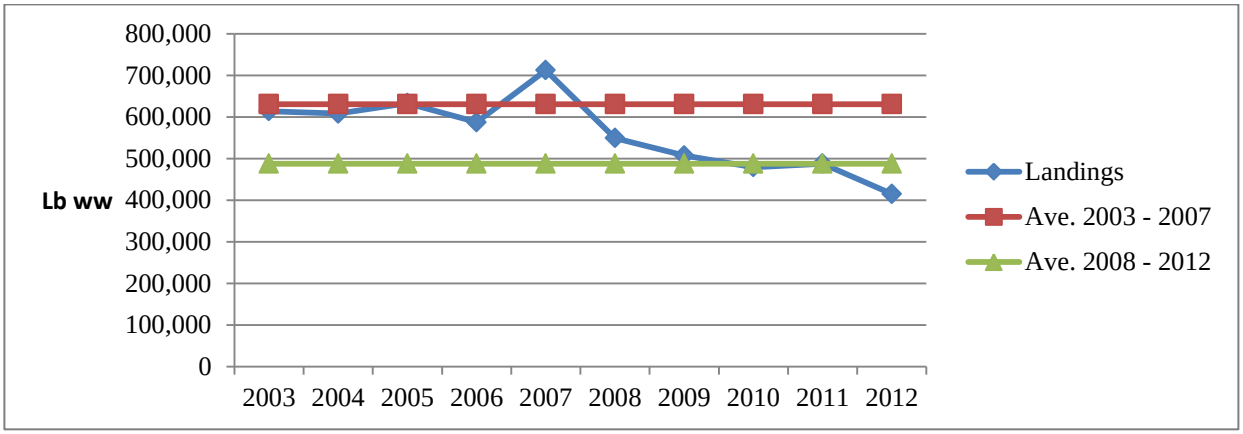


Figure 3.3.1.11. Annual commercial landings (lb ww) of gag grouper in South Atlantic Region, 2003 – 2012. Source: NMFS ALS, confidential data excluded.

North Carolina historically led the South Atlantic States in commercial landings of gag, averaging almost 42% of annual landings by lb ww, and followed, in turn, by South Carolina (approximately 31.5%) and combined Florida East Coast and Georgia with 26.6% (**Figure 3.3.1.12**). From 2003 to 2007, North Carolina's average annual share of commercial gag landings was approximately 36% and from 2008 through 2012 was approximately 42%. South Carolina's average annual share fell from approximately 38% (2003 – 2007) to approximately 32% (2008 – 2012), while the Florida East Coast and Georgia share increased by half a percent.

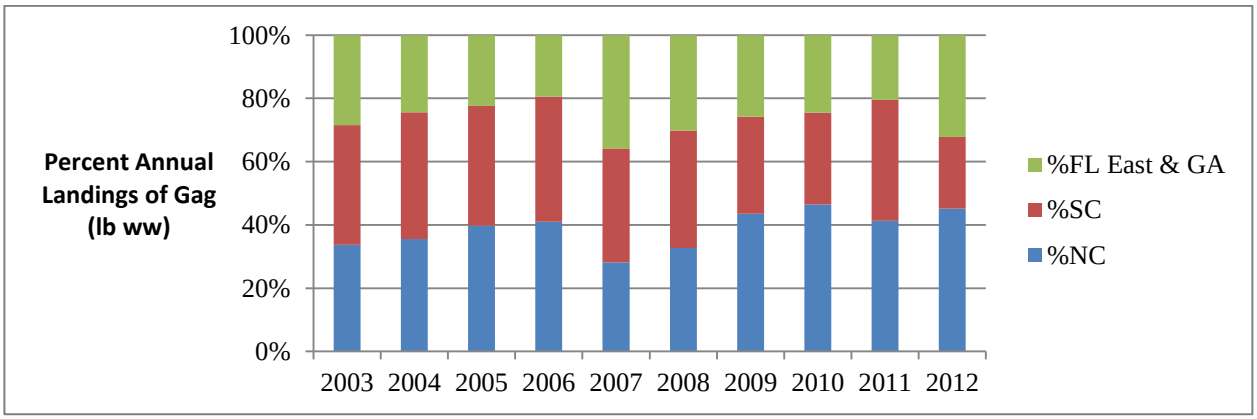


Figure 3.3.1.12. Percent of annual South Atlantic commercial landings (lb ww) of gag by state, 2003 – 2012. Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 257 vessels made 2,144 commercial trips that combined landed an average of 370,338 lb gw of gag annually with a dockside value (2012 dollars) of approximately $1.79 million (**Table 3.3.1.7**). The average trip with landings of the species sold 173 lb gw of gag yielding an average dockside revenue of $834. Average annual dockside revenue from gag landings represented approximately 30% of total dockside revenue from trips that landed gag from 2008 through 2012.

Table 3.3.1.7. Vessels and trips with gag landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed gag	Number trips that landed gag	Gag landings (lb gutted wt)	Dockside revenue from gag (2012 $)	'Other species' landings jointly landed with gag (lb gutted wt)	Dockside revenue from 'other species' jointly landed with gag (2012 $)	Total dockside revenue (2012 $) from trips with gag landings
2008	294	2,223	387,120	$1,852,063	1,966,853	$5,516,520	$7,368,583
2009	292	2,370	383,161	$1,775,484	1,772,776	$4,772,553	$6,548,037
2010	243	2,126	375,504	$1,767,592	1,457,171	$3,750,023	$5,517,616
2011	233	2,155	378,770	$1,914,339	1,503,104	$3,872,486	$5,786,825
2012	224	1,847	327,133	$1,634,956	1,187,337	$3,162,498	$4,797,454
Average	257	2,144	370,338	$1,788,887	1,577,448	$4,214,816	$6,003,703

On average, the vessels that harvested gag also took 4,892 trips per year without gag landings (**Figure 3.3.1.13**). The 2,144 average annual trips that these vessels took with gag landings represented approximately 30% of the average of all annual commercial trips of those vessels in the South Atlantic Region during the five years.

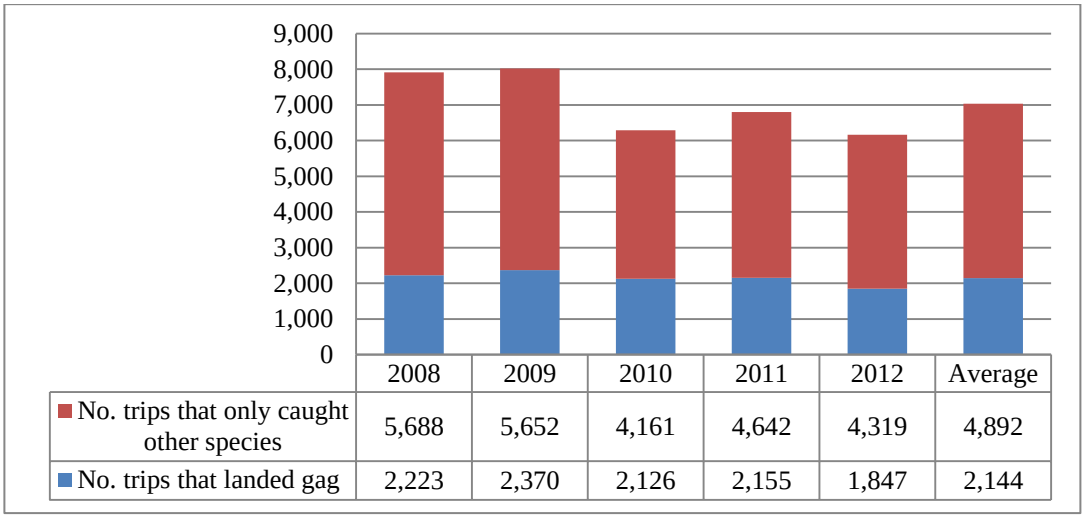


Figure 3.3.1.13. All annual trips by vessels that landed gag, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from gag landings represented, on average, approximately 14% of the total dockside revenue from all commercial landings for the 257 vessels from 2008 through 2012 (**Table 3.3.1.8**). Average annual dockside revenue per vessel from all landings was $48,287 as compared to $6,961 per vessel from gag only.

Table 3.3.1.8. Dockside revenues from all sources for vessels that landed gag, 2008 – 2012. Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed gag	Dockside revenue from gag landings (2012 $)	Dockside revenue from 'other species' jointly landed with gag (2012 $)	Dockside revenue from 'other species' landed on trips without gag (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	294	$1,852,063	$5,516,520	$7,568,710	$14,937,293	$50,807
2009	292	$1,775,484	$4,772,553	$6,725,173	$13,273,210	$45,456
2010	243	$1,767,592	$3,750,023	$6,129,659	$11,647,275	$47,931
2011	233	$1,914,339	$3,872,486	$5,711,228	$11,498,053	$49,348
2012	224	$1,634,956	$3,162,498	$5,930,498	$10,727,952	$47,893
Average	257	$1,788,887	$4,214,816	$6,413,054	$12,416,757	$48,287

Hook-and-line gears (hand lines, rod and reel, and electric or hydraulic reel) are the primary gear types used to harvest gag. Pots, traps and long lines are prohibited.

3.3.1.4 Greater Amberjack

Greater amberjack is within the jacks group of the snapper grouper fishery. From 2008 through 2012, greater amberjack's 5-year commercial landings ranked first among the six species within the group and its landings represented approximately 52% of the group's landings by weight and approximately 55% by dockside revenue over that time (NMFS ALS, confidential data excluded).

The commercial fishing season for greater amberjack is from May 1 through April 30 each year; however, its harvest is prohibited during April. Annual commercial landings of greater amberjack in the South Atlantic States ranged from just under 600,000 to 1,049,200 lb ww from the 2007/2008 through 2011/2012 fishing seasons and never exceeded its quota of approximately 1.17 million pounds (SERO ACL) (**Figure 3.3.1.14**). In 2012/2013, commercial landings reached 748,648 lb ww, which was less than the commercial ACL of 800,163 lb ww.

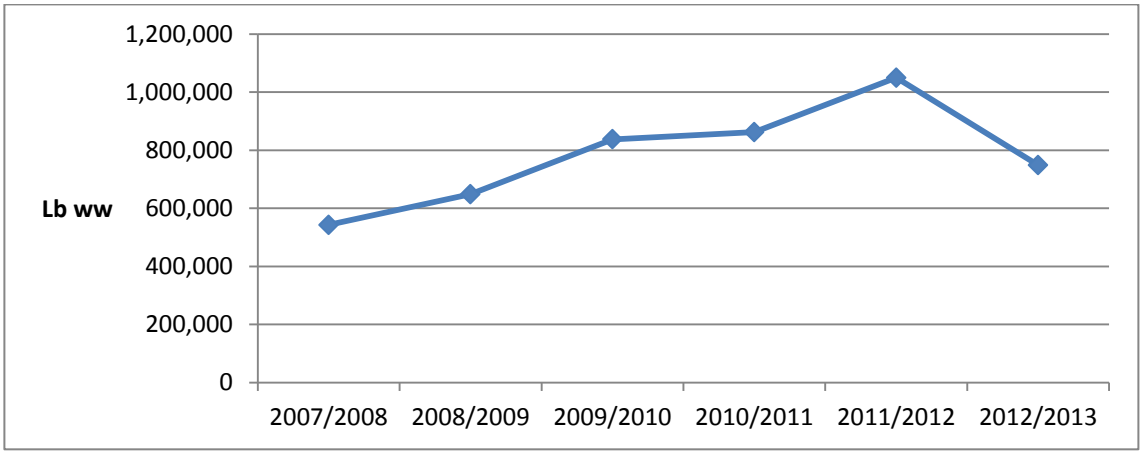


Figure 3.3.1.14. South Atlantic commercial landings (lb ww) of greater amberjack by fishing year from 2007/2008 – 2012/2013. Source: SERO ACL.

South Carolina and Florida's East Coast and Georgia account for almost all of commercial landings of greater amberjack during the 5-year period from 2008 through 2012. However, Florida's East Coast and Georgia accounted for the large majority (**Figure 3.3.1.15**). Over that time, the average dockside price ranged from $0.93 to $1.10 per pound ww (NMFS ALS, confidential data excluded).

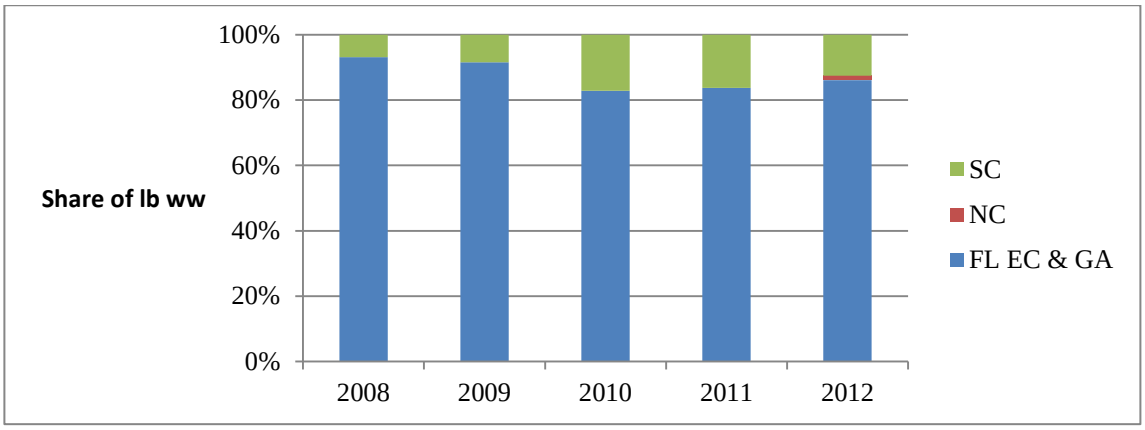


Figure 3.3.1.15. Percentages of South Atlantic commercial landings (lb ww) of greater amberjack by state by calendar year. Source: NMFS ALS, excluding confidential data.

From 2008 through 2012, an annual average of 310 vessels made 2,295 commercial trips that combined landed an average of 860,381 lb gw of greater amberjack annually with a dockside value (2012 dollars) of approximately $0.95 million (**Table 3.3.1.9**). The average trip with landings of the species sold 375 lb gw of greater amberjack yielding an average dockside revenue of $413. Average annual dockside revenue from greater amberjack landings represented approximately 16% of total dockside revenue from trips that landed greater amberjack from 2008 through 2012.

Table 3.3.1.9. Vessels and trips with greater amberjack landings (weight and revenue), 2008 – 2012 by calendar year.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed greater amberjack	Number trips that landed greater amber-jack	Greater amberjack landings (lb gutted wt)	Dockside revenue from greater amberjack (2012 $)	'Other species' landings jointly landed with greater amberjack (lb gutted wt)	Dockside revenue from 'other species' jointly landed with greater amberjack (2012 $)	Total dockside revenue (2012 $) from trips with greater amberjack landings
2008	346	2,192	693,237	$792,443	1,897,907	$5,949,313	$6,741,756
2009	385	2,516	821,106	$866,068	1,819,262	$5,430,762	$6,296,830
2010	300	2,370	944,966	$1,021,189	1,731,548	$5,020,689	$6,041,878
2011	269	2,345	918,627	$1,025,241	1,606,927	$4,831,318	$5,856,559
2012	248	2,054	923,966	$1,038,366	1,216,230	$3,703,365	$4,741,731
Average	310	2,295	860,381	$948,661	1,654,375	$4,987,089	$5,935,751

On average, the vessels that harvested greater amberjack also made 7,643 trips per year without landing greater amberjack (**Figure 3.3.1.16**). The 2,295 average annual trips that these vessels had with greater amberjack landings represented approximately 23% of the average of all annual commercial trips of those vessels in the South Atlantic Region during the five years.

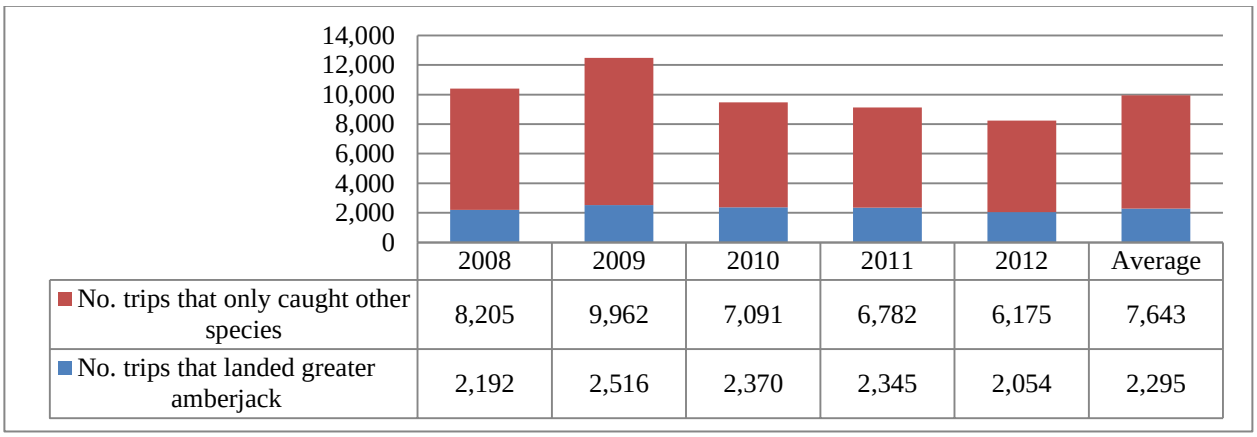


Figure 3.3.1.16. All annual trips by vessels that landed greater amberjack, 2008 – 2012 by calendar year.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from greater amberjack landings represented, on average, approximately 6% of the total dockside revenue from all commercial landings for an average of 310 vessels from 2008 through 2012 (**Table 3.3.1.10**). Average annual dockside revenue per vessel from all landings was $50,062 as compared to $3,060 per vessel from greater amberjack only.

Table 3.3.1.10. Dockside revenues from all sources for vessels that landed greater amberjack, 2008 – 2012 by calendar year. Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

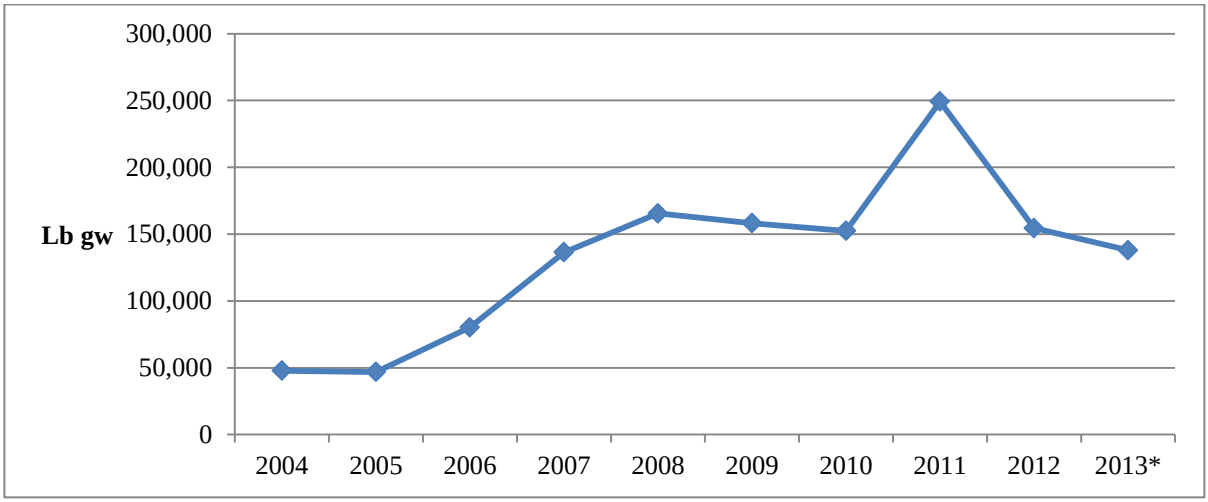
Year	Number vessels that landed greater amberjack	Dockside revenue from greater amber-jack (2012 $)	Dockside revenue from 'other species' jointly landed with greater amberjack (2012 $)	Dockside revenue from 'other species' landed on trips without greater amberjack (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	346	$792,443	$5,949,313	$10,260,715	$17,002,471	$49,140
2009	385	$866,068	$5,430,762	$10,983,414	$17,280,244	$44,884
2010	300	$1,021,189	$5,020,689	$8,831,839	$14,873,716	$49,579
2011	269	$1,025,241	$4,831,318	$8,793,439	$14,649,998	$54,461
2012	248	$1,038,366	$3,703,365	$9,047,264	$13,788,996	$55,601
Average	310	$948,661	$4,987,089	$9,583,334	$15,519,085	$50,733

Greater amberjack are harvested with a variety of gear types; however, the primary gears have been hand lines and reel (electric and hydraulic) and rod-and-reel. In 2012, "combined gear" replaced rod-and-reel as third most used gear by landings weight (NMFS ALS, excluding confidential data).

3.3.1.5 Red Porgy

Red porgy is within the porgies group of the snapper grouper fishery. From 2008 through 2012, the 5-year commercial landings of red porgy ranked second among the seven species within the group by weight and first by dockside revenue (NMFS ALS, confidential data excluded). Red porgy landings represented approximately 45% of porgies landings by weight and approximately 70% by dockside revenue.

The commercial fishing season is from January 1 through December 31; however, commercial harvest is prohibited from January 1 through April 30 each year. Its minimum size limit is 14 inches TL. Annual commercial landings of red porgy in the South Atlantic States have shown an increasing trend since 2006, and ranged from 46,835 to 249,216 lb gw from 2004 through 2013 (NMFS SERO) (**Figure 3.3.1.17**). In the early 2000s, the commercial trip limit was 50 lb; however, that changed to 120 fish in 2006.



*: Landings for 2013 may not be complete.

Figure 3.3.1.17. Annual commercial landings of red porgy, 2004 through 2013.
Source: NMFS SERO.

North Carolina ranked first in commercial landings of red porgy from 2008 through 2012, followed by South Carolina and Florida East Coast and Georgia (**Figure 3.3.1.18**). During that period, the average dockside price per lb ww ranged from $1.38 to $1.84, and showed an increasing trend after 2009 (NMFS ALS, confidential data excluded).

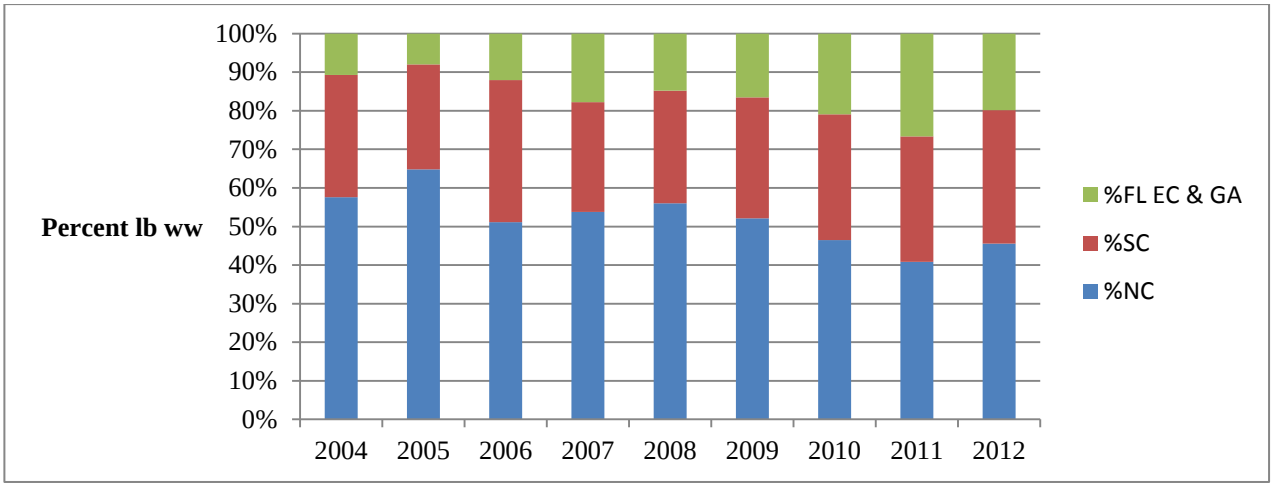


Figure 3.3.1.18. Percent of red porgy commercial landings by state, 2004 – 2012.
Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 180 vessels made commercial trips that combined landed an average of 136,549 lb gw of red porgy annually with a dockside value (2012 dollars) of approximately $244,114 (**Table 3.3.1.11**). The average trip with landings of the species sold 89 lb gw of red porgy yielding an average dockside revenue of $159. Average annual dockside revenue from red porgy landings represented approximately 4% of total dockside revenue from trips that landed red porgy from 2008 through 2012.

Table 3.3.1.11. Vessels and trips with red porgy landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed red porgy	Number trips that landed red porgy	Red porgy landings (lb gutted wt)	Dockside revenue from red porgy (2012 $)	'Other species' landings jointly landed with red porgy (lb gutted wt)	Dockside revenue from 'other species' jointly landed with red porgy (2012 $)	Total dockside revenue from trips/vessels that landed red porgy (2012 $)
2008	203	1,747	133,827	$227,421	2,208,562	$6,686,383	$6,913,804
2009	197	1,535	130,048	$210,057	1,862,196	$5,350,515	$5,560,572
2010	170	1,424	126,620	$231,964	1,770,625	$5,165,687	$5,397,651
2011	174	1,588	160,186	$300,309	1,866,052	$5,659,261	$5,959,570
2012	158	1,378	132,062	$250,818	1,487,385	$4,624,929	$4,875,747
Average	180	1,534	136,549	$244,114	1,838,964	$5,497,355	$5,741,469

On average, the vessels that harvested red porgy also made 2,709 trips per year without landing red porgy (**Figure 3.3.1.19**). The 1,534 average annual trips that these vessels had with red porgy landings represented approximately 36% of the average of all annual commercial trips of those vessels in the South Atlantic Region during the five years.

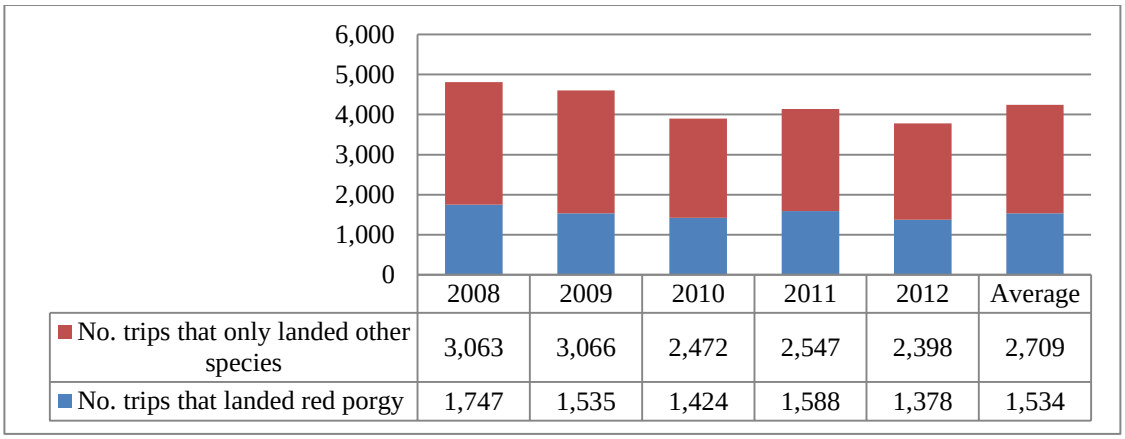


Figure 3.3.1.19. All annual trips by vessels that landed greater red porgy, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from red porgy landings represented, on average, approximately 2% of the total dockside revenue from all commercial landings for the average vessels from 2008 through 2012 (**Table 3.3.1.12**). Average annual dockside revenue per vessel from all landings was $60,047 as compared to $1,356 per vessel from red porgy landings only.

Table 3.3.1.12. Dockside revenues from all sources for vessels that landed red porgy, 2008 – 2012. Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed red porgy	Dockside revenue from red porgy (2012 $)	Dockside revenue from 'other species' jointly landed with red porgy (2012 $)	Dockside revenue from 'other species' landed on trips without red porgy (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	203	$227,421	$6,686,383	$6,158,864	$13,072,668	$64,397
2009	197	$210,057	$5,350,515	$6,310,805	$11,871,377	$60,261
2010	170	$231,964	$5,165,687	$4,837,173	$10,234,825	$60,205
2011	174	$300,309	$5,659,261	$4,155,819	$10,115,389	$58,134
2012	158	$250,818	$4,624,929	$4,168,124	$9,043,870	$57,240
Average	180	$244,114	$5,497,355	$5,126,157	$10,867,626	$60,047

From 2008 through 2012, the top two gear types to harvest red porgy in the South Atlantic Region were hand lines and reel (hydraulic and electric). Rod-and-reel ranked as third most used gear to land the species.

3.3.1.6 Red Snapper

Red snapper is within the snappers group of the snapper grouper fishery. From 2008 through 2012, red snapper's 5-year commercial landings ranked third among the 14 species within the group and its landings represented approximately 9% of the group's landings by weight and approximately 10% by revenue over that time (NMFS ALS, confidential data excluded). The average dockside price per pound (ww) fell from $3.67 in 2008 to $3.59 in 2009, and, when the fishery reopened in 2012 for a limited time, rose to $4.15.

Annual commercial landings of red snapper in the South Atlantic States ranged from 873 to 363,003 lb ww from 2008 through 2012 (SERO ACL). Dockside revenues from those landings ranged from $2,851 to approximately $1.39 million (2012 $) (**Figure 3.3.1.20**). The average price during those five years was $3.78 per pound ww (2012$). Commercial landings fell precipitously after 2009 when harvest of the species was prohibited beginning January 2010 and then permitted in 2012 with short durations and a 50-lb trip limit. In 2012, the commercial ACL was 20,818 lb ww and less than 8,000 lb ww were landed. Landings reached and exceeded the commercial ACL in 2013, and the season closed on October 8.

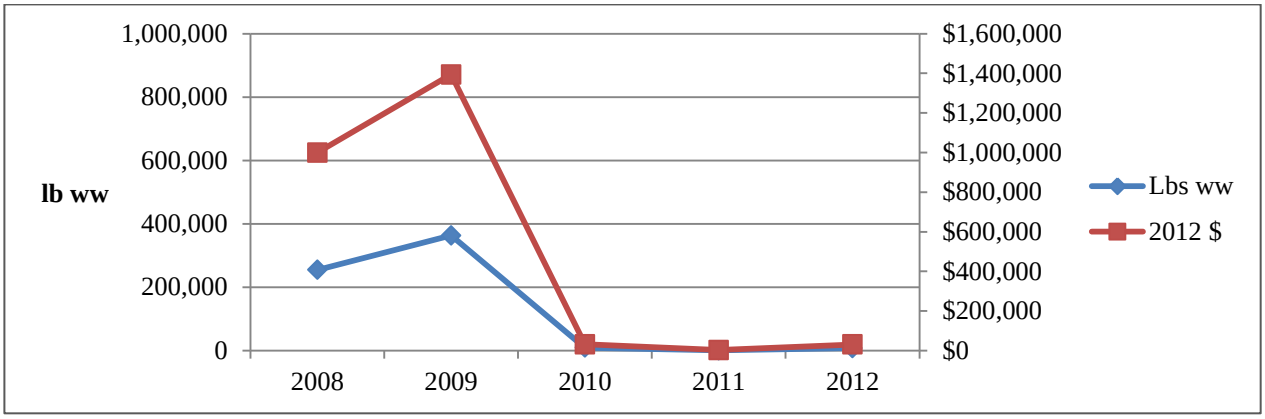


Figure 3.3.1.20. Commercial landings of red snapper by weight and revenue, 2008 – 2012.
Source: SERO ACL.

Florida's East Coast and Georgia combined ranked first in commercial landings of red snapper from 2008 through 2012, followed in turn by South Carolina and North Carolina (**Figure 3.3.1.21**).

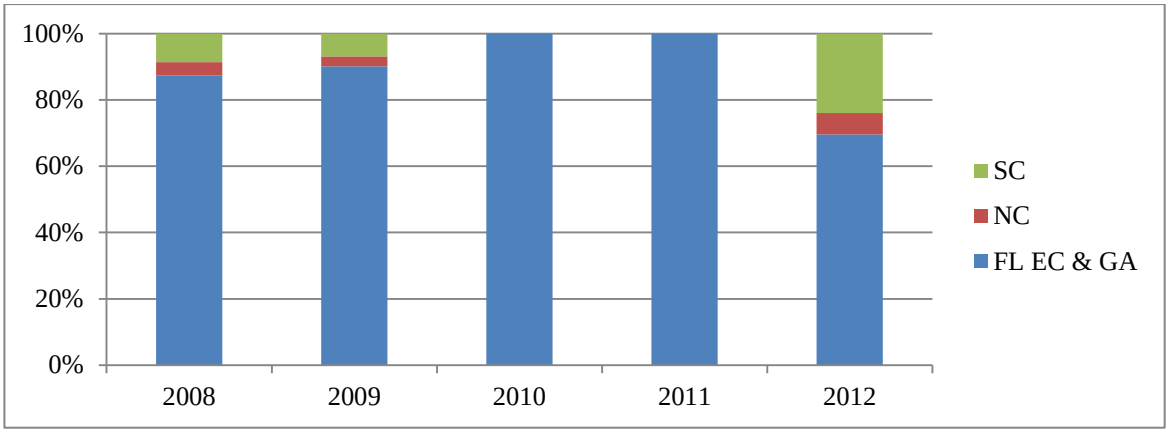


Figure 3.3.1.21. Commercial landings of red snapper by state, 2008 – 2012.
Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 123 vessels made 772 commercial trips that combined landed an average of 108,846 lb gw of red snapper annually with a dockside value (2012 dollars) of approximately $0.47 million (**Table 3.3.1.13**). The average trip with landings of the species sold 141 lb gw of red snapper yielding an average dockside revenue of $610. Average annual dockside revenue from red snapper landings represented approximately 18% of total dockside revenue from trips that landed red snapper from 2008 through 2012.

Table 3.3.1.13. Vessels and trips with red snapper landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed red snapper	Number trips that landed red snapper	Red snapper landings (lb gw)	Dockside revenue from red snapper (2012 $)	'Other species' landings jointly landed with red snapper (lb gw)	Dockside revenue from 'other species' jointly landed with red snapper (2012 $)	Total dockside revenue (2012 $) from trips with red snapper landings
2008	232	1,630	213,422	$939,310	1,862,706	$5,491,537	$6,430,847
2009	270	1,998	313,051	$1,339,409	1,866,757	$4,997,982	$6,337,392
2010	28	44	2,802	$11,449	25,474	$70,406	$81,855
2011	12	20	1,207	$4,224	13,019	$40,323	$44,547
2012	71	166	13,747	$60,270	108,647	$300,757	$361,028
Average	123	772	108,846	$470,933	775,321	$2,180,201	$2,651,134

On average, the vessels that harvested red snapper also made 2,835 trips per year without landing red snapper (**Figure 3.3.1.22**). The 123 average annual trips that these vessels had with red snapper landings represented approximately 4% of all the annual commercial trips of those vessels in the South Atlantic Region during the five years.

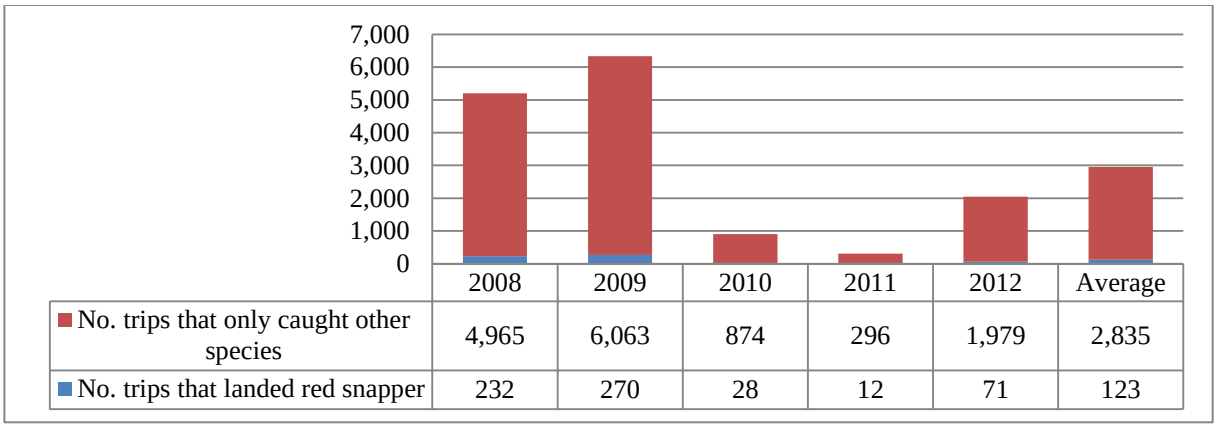


Figure 3.3.1.22. All annual trips by vessels that landed red snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from red snapper landings represented, on average, approximately 7% of the total dockside revenue from all commercial landings for an average of 123 vessels from 2008 through 2012 (**Table 3.3.1.14**). Average annual dockside revenue per vessel from all landings was $57,202 as compared to $3,829 per vessel from red snapper only.

Table 3.3.1.14. Dockside revenues from all sources for vessels that landed red snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed red snapper	Dockside revenue from red snapper (2012 $)	Dockside revenue from 'other species' jointly landed with red snapper (2012 $)	Dockside revenue from 'other species' landed on trips without red snapper (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	232	$939,310	$5,491,537	$8,158,362	$14,589,209	$62,885
2009	270	$1,339,409	$4,997,982	$7,687,625	$14,025,017	$51,945
2010	28	$11,449	$70,406	$1,684,191	$1,766,046	$63,073
2011	12	$4,224	$40,323	$556,765	$601,312	$50,109
2012	71	$60,270	$300,757	$3,836,601	$4,197,628	$59,122
Average	123	$470,933	$2,180,201	$4,384,709	$7,035,842	$57,389

3.3.1.7 Vermilion Snapper

Vermilion snapper is within the snappers group of the snapper grouper fishery. From 2008 through 2012, vermilion snapper's 5-year commercial landings ranked first among the 14 species within the group when ALS non-confidential data is excluded and second when not; vermilion snapper landings represented approximately 74% of the group's landings by weight and approximately 73% by dockside revenue over that time (NMFS ALS, confidential data excluded).

Annual commercial landings of vermilion snapper in the South Atlantic States ranged from approximately 0.8 million to 1.1 million lb ww from 2008 through 2012 (SERO ACL) (**Figure 3.3.1.23**). Landings from January 1 through June 30, 2013, were 319,818 lb ww and the second half of the year reached 574,462 lb ww; however, not all landings may have been reported or counted as of January 30, 2014.

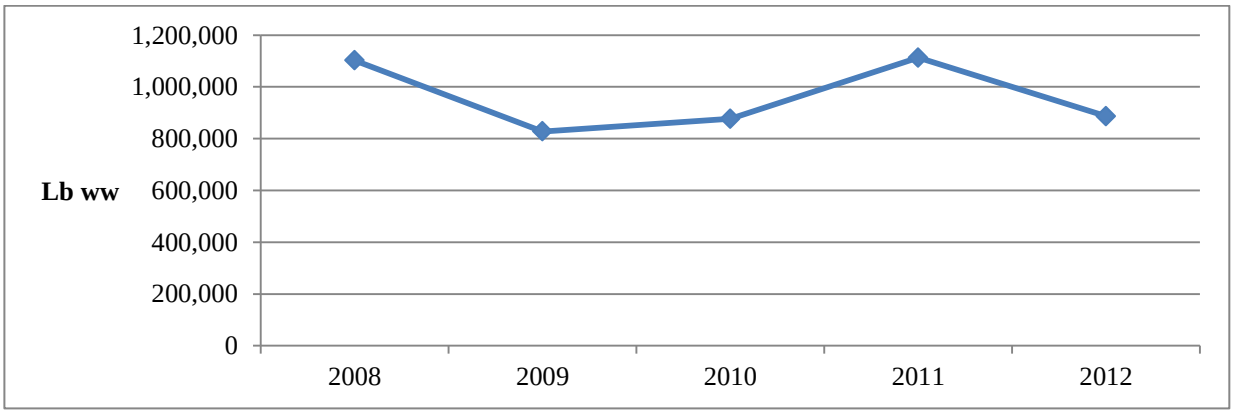


Figure 3.3.1.23. Annual landings of vermilion snapper by weight, 2008 – 2012.
Source: SERO ACL.

Over the 5-year period from 2008 through 2012, North Carolina ranked first in landings of vermilion snapper with approximately 39% of the landings by weight and dockside revenue (**Figure 3.3.1.24**). South Carolina ranked second with approximately 32% of the landings by weight and 33% by dockside revenue. The combined area of Florida's East Coast and Georgia had approximately 29% of landings by weight and 28% by dockside revenue. During this period, the average dockside price decreased from $2.93 in 2008 to $2.74 per pound ww in 2009, but increased to each year thereafter, and in 2012 was $3.15 per pound ww.

Figure 3.3.1.24. Share of vermilion snapper landings (lb ww) by state, 2008 – 2012.
Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 233 vessels made 1,759 commercial trips that combined landed an average of 893,250 lb gw of vermilion snapper annually with a dockside value (2012 dollars) of approximately $3.0 million (**Table 3.3.1.15**). The average trip with landings of the species sold 508 lb gw of vermilion snapper yielding an average dockside revenue of $1,720. Average annual dockside revenue from vermilion snapper landings represented approximately 47% of total dockside revenue from trips that landed vermilion snapper from 2008 through 2012.

Table 3.3.1.15. Vessels and trips with vermilion snapper landings (weight and revenue), 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed vermilion snapper	Number trips that landed vermilion snapper	Vermilion snapper landings (lb gutted wt)	Dockside revenue from vermilion snapper (2012 $)	'Other species' landings jointly landed with vermilion snapper (lb gutted wt)	Dockside revenue from 'other species' jointly landed with vermilion snapper (2012 $)	Total dockside revenue from all trips with vermilion snapper landings
2008	317	2,869	1,085,450	$3,790,432	2,387,565	$6,549,097	$10,339,529
2009	265	2,061	822,462	$2,662,620	1,747,417	$4,598,570	$7,261,190
2010	206	1,214	842,899	$2,795,006	860,798	$1,911,906	$4,706,912
2011	187	1,307	871,129	$2,995,494	929,852	$2,053,768	$5,049,261
2012	188	1,342	844,309	$2,879,883	823,342	$1,914,431	$4,794,314
Average	233	1,759	893,250	$3,024,687	1,349,795	$3,405,554	$6,430,241

On average, the 233 vessels that harvested vermilion snapper also made 4,298 trips per year without landing vermilion snapper (**Figure 3.3.1.25**). The 1,759 average annual trips that these vessels had with vermilion snapper landings represented approximately 29% of all the annual commercial trips of those vessels in the South Atlantic Region during the five years.

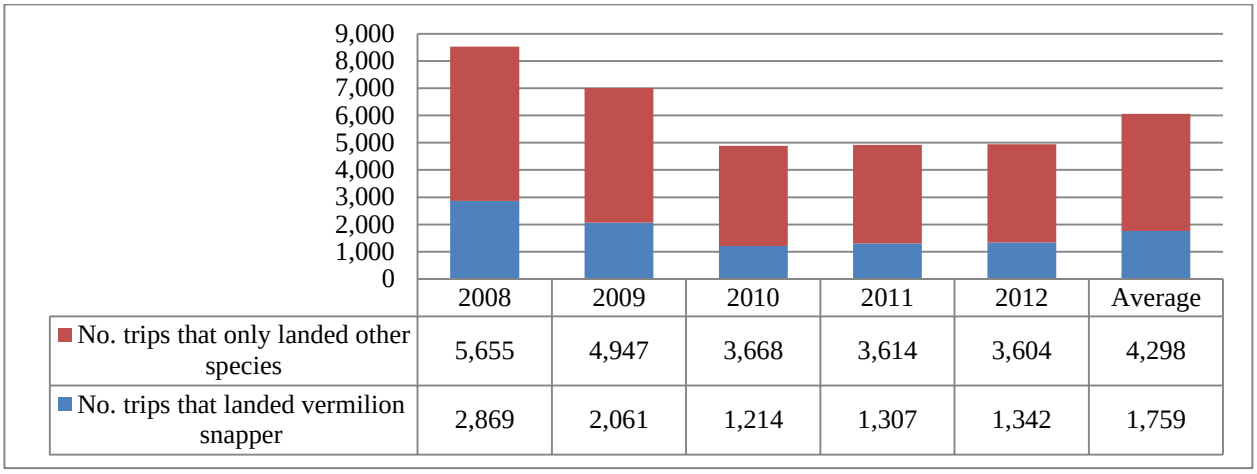


Figure 3.3.1.25. All annual trips by vessels that landed vermilion snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from vermilion snapper landings represented, on average, approximately 25% of the total dockside revenue from all commercial landings for the average 233 vessels from 2008 through 2012 (**Table 3.3.1.16**). Average annual dockside revenue per vessel from all landings was $53,259 as compared to $12,981 per vessel from vermilion snapper only.

Table 3.3.1.16. Dockside revenues from all sources for vessels that landed vermilion snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed vermilion snapper	Dockside revenue from vermilion snapper (2012 $)	Dockside revenue from 'other species' jointly landed with vermilion snapper (2012 $)	Dockside revenue from 'other species' landed on trips without vermilion snapper (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	317	$3,790,432	$6,549,097	$5,486,919	$15,826,447	$49,926
2009	265	$2,662,620	$4,598,570	$6,051,104	$13,312,294	$50,235
2010	206	$2,795,006	$1,911,906	$6,371,333	$11,078,245	$53,778
2011	187	$2,995,494	$2,053,768	$5,568,281	$10,617,543	$56,778
2012	188	$2,879,883	$1,914,431	$5,654,462	$10,448,775	$55,579
Average	233	$3,024,687	$3,405,554	$5,826,420	$12,256,661	$53,259

Reel (electric and hydraulic) and hand lines are the two primary gear types used to harvest vermilion snapper. From 2008 through 2012, these two gear types accounted for approximately 92% of landings by weight (NMFS ALS, excluding confidential data).

3.3.1.8 Yellowtail Snapper

Yellowtail snapper is within the snappers group of the snapper grouper fishery. From 2008 through 2012, yellowtail snapper's 5-year commercial landings ranked second among the 14 species within the group when ALS non-confidential data is excluded and second when not; yellowtail snapper landings represented approximately 13% of the group's landings by weight and approximately 12% by dockside revenue over that time (NMFS ALS, confidential data excluded).

Annual commercial landings of yellowtail snapper ranged from approximately 0.9 million to 1.4 million lb ww from 2008 through 2012, with dockside revenue from approximately $2.48 million to $4.36 million (2012 $) (**Figure 3.3.26**). The average dockside price ranged from $2.72 to $3.07 per pound ww (SERO ACL).

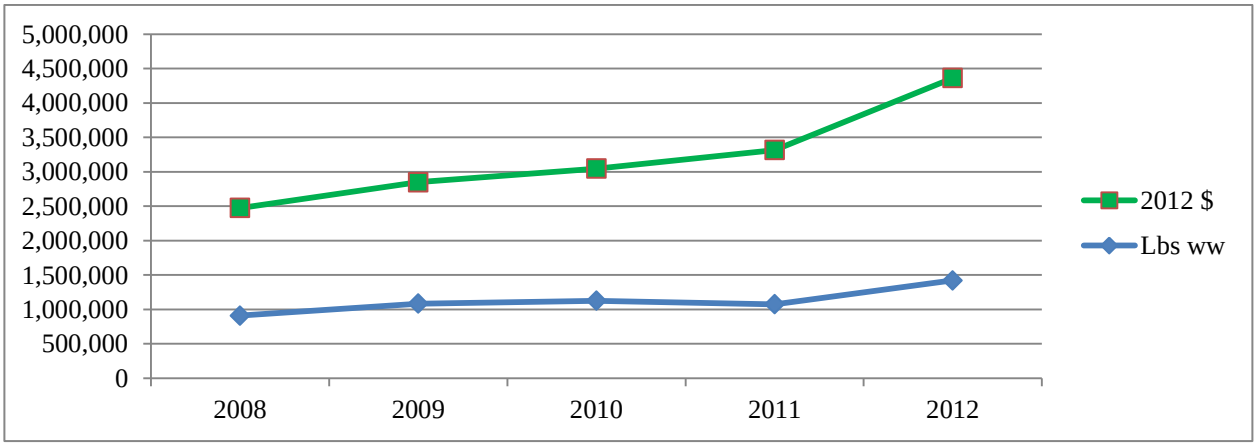


Figure 3.3.1.26. Weight (lb ww) and dockside revenue (2012 $) from yellowtail snapper landings, 2008 – 2012. Source: SERO ACL.

Over the 5-year period from 2008 through 2012, Florida's East Coast and Georgia ranked first in commercial landings of yellowtail snapper with over 99% of the landings by weight and dockside revenue (**Figure 3.3.1.27**). Most of the yellowtail snapper landings are from Monroe County in the Florida Keys.

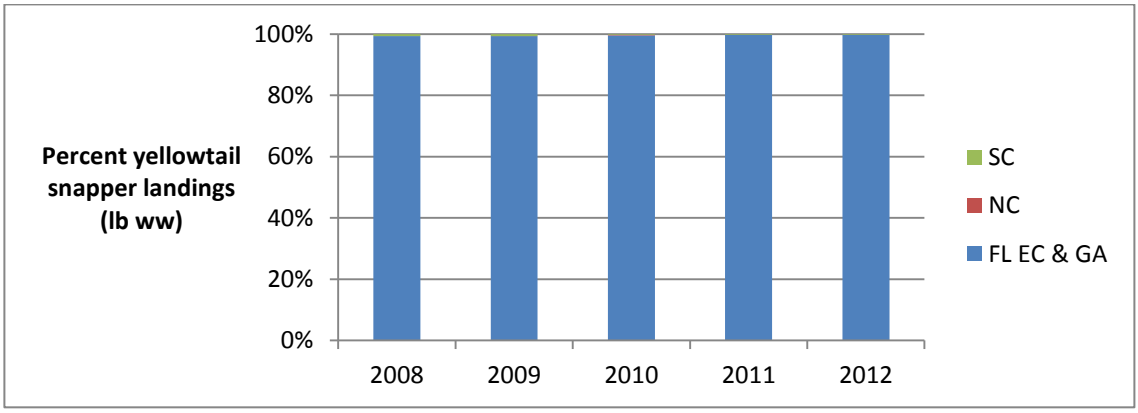


Figure 3.3.1.27. Percent of commercial yellowtail landings by state, 2008 – 2012. Source: NMFS ALS, confidential data excluded.

From 2008 through 2012, an annual average of 297 vessels made 4,121 commercial trips that combined landed an average of 985,344 lb gw of yellowtail snapper annually with a dockside value (2012 dollars) of approximately $3.0 million (**Table 3.3.1.17**). The average trip with landings of the species sold 239 lb gw of yellowtail snapper yielding an average dockside revenue of $722. Average annual dockside revenue from yellowtail snapper landings represented approximately 77% of total dockside revenue from trips that landed yellowtail snapper from 2008 through 2012.

Table 3.3.1.17. Vessels and trips with yellowtail snapper landings (weight and revenue), 2008 – 2012. Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	Number vessels that landed yellowtail snapper	Number trips that landed yellowtail snapper	Yellowtail snapper landings (lb gutted wt)	Dockside revenue from yellowtail snapper (2012 $)	'Other species' landings jointly landed with yellowtail snapper (lb gutted wt)	Dockside revenue from 'other species' jointly landed with yellowtail snapper (2012 $)	Total dockside revenue from trips with yellowtail snapper landings (2012 $)
2008	336	4,423	803,347	$2,377,269	362,057	$937,128	$3,314,397
2009	334	4,659	1,116,593	$3,071,246	423,651	$985,877	$4,057,123
2010	293	3,727	919,540	$2,721,870	437,446	$975,320	$3,697,190
2011	267	3,917	1,033,376	$3,316,462	366,465	$811,226	$4,127,688
2012	255	3,878	1,053,864	$3,388,007	388,850	$788,979	$4,176,985
Average	297	4,121	985,344	$2,974,971	395,694	$899,706	$3,874,677

On average, the 297 vessels that harvested yellowtail snapper also made 4,478 trips per year without landing yellowtail snapper (**Figure 3.3.1.28**). The 4,121 average annual trips that these vessels had with yellowtail snapper landings represented approximately 48% of all the annual commercial trips of those vessels in the South Atlantic Region during the five years.

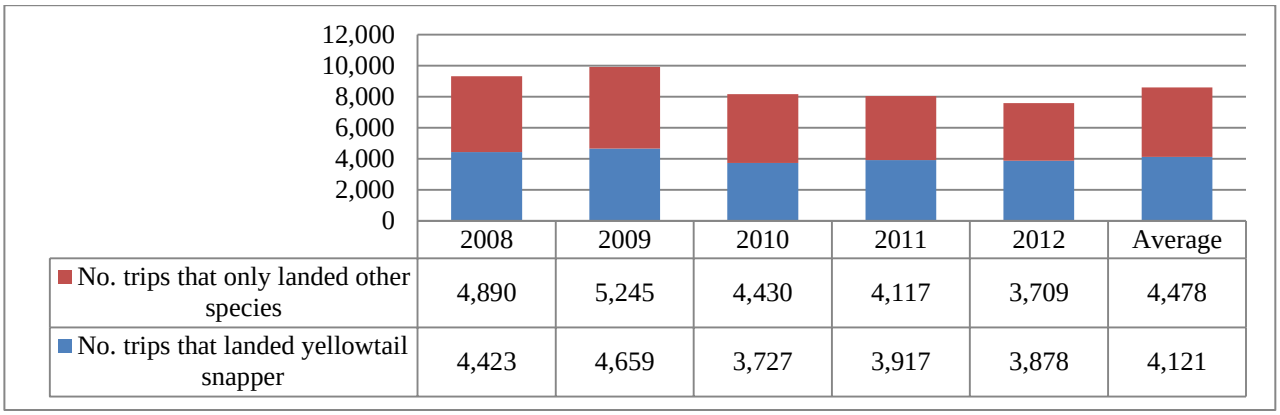


Figure 3.3.1.28. All annual trips by vessels that landed yellowtail snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook.

Average annual dockside revenue from yellowtail snapper landings represented, on average, approximately 31% of the total dockside revenue from all commercial landings for the average vessels from 2008 through 2012 (**Table 3.3.1.18**). Average annual dockside revenue per vessel from all landings was $33,141 as compared to $10,107 per vessel from yellowtail snapper only.

Table 3.3.1.18. Dockside revenues from all sources for vessels that landed yellowtail snapper, 2008 – 2012.
Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.

Year	No. vessels that landed yellowtail snapper	Dockside revenue from yellowtail snapper (2012 $)	Dockside revenue from 'other species' jointly landed with yellowtail snapper (2012 $)	Dockside revenue from 'other species' landed on trips without yellowtail snapper (2012 $)	Total dockside revenue (2012 $)	Average total dockside revenue per vessel (2012 $)
2008	336	$2,377,269	$937,128	$5,262,128	$8,576,525	$25,525
2009	334	$3,071,246	$985,877	$6,442,072	$10,499,195	$31,435
2010	293	$2,721,870	$975,320	$6,298,766	$9,995,956	$34,116
2011	267	$3,316,462	$811,226	$5,655,915	$9,783,603	$36,643
2012	255	$3,388,007	$788,979	$5,509,452	$9,686,438	$37,986
Average	297	$2,974,971	$899,706	$5,833,667	$9,708,343	$33,141

3.3.2 Economic Description of the Recreational Sector

The recreational sector of the snapper grouper fishery is comprised of the private sector and the for-hire sector. The private sector includes anglers fishing from shore (all land-based structures) and private/rental boats. The for-hire sector is composed of the charter boat and headboat (also called partyboat) sectors. Charter boats generally carry fewer passengers and charge a fee on an entire vessel basis, whereas headboats carry more passengers and payment is per person.

For-hire vessels that land or possess snapper grouper species must have a federal charter/headboat permit. As of February 3, 2014, there were a total 1,352 South Atlantic charter/headboat permits for snapper grouper.

The following description focuses on the recreational sector for the eight species that are subject of this action: black grouper, blueline tilefish, gag, greater amberjack, red porgy, red snapper, vermilion snapper, and yellowtail snapper. Additional information on the recreational sector of the snapper grouper fishery as a whole is contained in previous or concurrent amendments and is incorporated herein by reference [see Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Amendment 17A (SAFMC 2010a), Amendment 17B (SAFMC 2010b), Regulatory Amendment 9 (SAFMC 2011a), Regulatory Amendment 11 (SAFMC 2011b), Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011c), and Amendment 24 (SAFMC 2011d)].

3.3.2.1 Black Grouper

Black grouper is one of the 20 species within the sea basses and groupers group. It is also part of the shallow-water grouper group and, as such, recreational harvest is prohibited from January 1 through April 30 each year. Its minimum size limit is 24 inches TL.

Anglers landed 147,466 lb ww of black grouper in 2012, which represents 95% of the recreational ACL for that year (SERO ACL). Recreational landings data for 2013 as of January 29, 2014, show that through October of 2013, approximately 47% of the recreational ACL of 161,859 lb ww had been landed, although those figures are still preliminary.

3.3.2.2 Blueline Tilefish

Blueline tilefish is part of the deep-water complex. Consequently, its landings are incorporated into landings of the complex as a whole. The recreational sector is allocated 52.61% of the deep-water complex ACL. In 2012, recreational landings reached 32% of the recreational ACL for the year, which was 332,039 lb ww. Recreational landings data for 2013 as of January 29, 2014, show that through October of 2013, recreational landings reached 315,746 lb ww, which is approximately 94% of the complex's recreational ACL of 334,556 lb ww. If that daily rate continued through 2013, approximately 113% of the recreational ACL (379,103 lb ww) was landed.

Blueline tilefish recreational landings represented approximately 82% of recreational landings of the complex in 2012. If that proportion of harvest also occurred in 2013, blueline tilefish recreational landings may have reached 310,864 lb ww by the end of the year. The species' share of the recreational ACL for the deep-water complex was 315,243 lb ww in 2013.

Recreational landings of blueline tilefish varied considerably from 2002 through 2012, with substantially higher landings from 2006 through 2008 (**Figure 3.3.2.1**). The average annual harvest over those three years was 334,121 lb ww and the average harvest was 54,892 lb ww from 2002 through 2012 excluding those years. North Carolina leads the South Atlantic Region in recreational landings of blueline tilefish, averaging approximately 66% of annual recreational landings during those years.

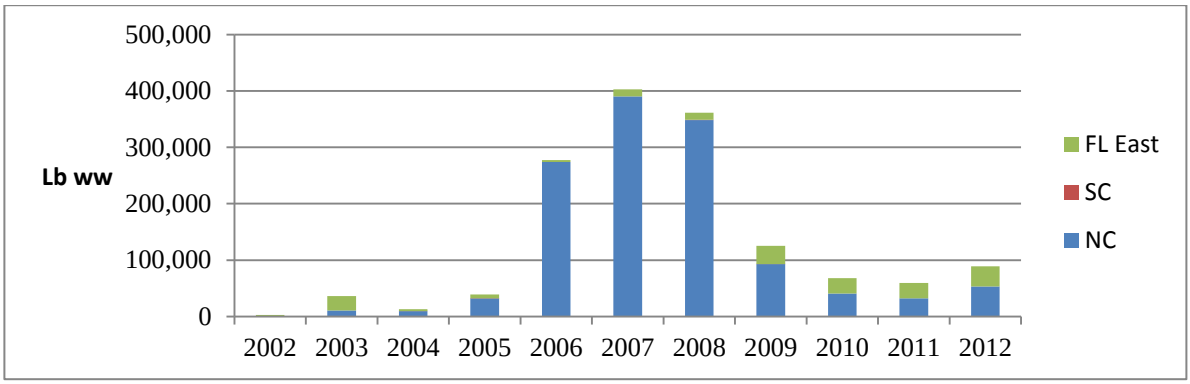


Figure 3.3.2.1. Recreational landings (lb ww) of blueline tilefish, 2002 – 2012.
Source: SEDAR 32 and NMFS ACL.

The recreational fishery is comprised of anglers engaged in private and for-hire fishing. Private fishing for deep-water species, such as blueline tilefish, is performed by anglers fishing offshore in private/rental boats and for-hire fishing is performed by anglers fishing offshore in charter vessels and headboats (also called party boats). From 2002 through 2011, for-hire fishing accounted for from 29% to 100% of annual recreational landings (lb ww) of blueline tilefish, and averaged 66% over this period (**Figure 3.3.2.2**). On average, charter boats accounted for 99.8% of the for-hire sector's annual blueline tilefish landings (SEDAR 32 2013). There is a 3-fish bag limit for grouper/tilefish, including blueline tilefish.

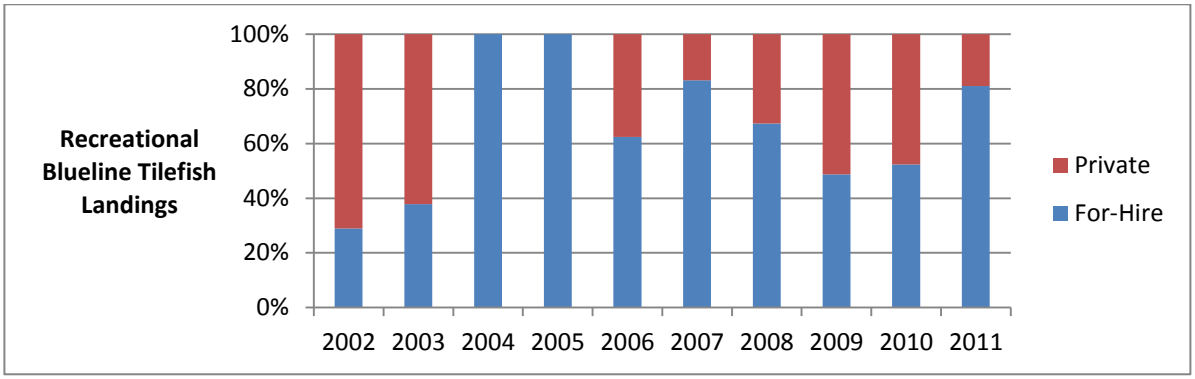


Figure 3.3.2.2. Percent of blueline tilefish recreational landings (lb ww) by private and for-hire recreational fishing from ME to FL East Coast, 2002 - 2011.
Source: SEDAR 32. **Note: This figure includes blueline tilefish catches from the entire east coast (ME to FL East Coast).**

3.3.2.3 Gag

Recreational landings of gag averaged 290,533 lb gw from 2007 through 2011 (**Table 3.3.2.1**) (SERO and SEFSC March 4-8, 2013). Anglers using private vessels accounted for an average of 76% of the average annual landings during that time.

In 2012, recreational landings reached 177,097 lb gw, which was approximately 52% of the recreational ACL for the year. As of October 2013, recreational landings were 65,639 lb gw, which represented 19% of the recreational ACL (SERO ACL).

Table 3.3.2.1. Annual recreational landings of gag grouper by mode, 2007 – 2011.
Source: SERO and SEFSC, South Atlantic Recreational Landings Update. Presented at March 4-8, 2013 SAFMC meeting.

Year	Lb gw				
	Charter	Headboat	Private	Shore	Total
2007	94,607	66,782	334,173	11,735	507,297
2008	58,671	33,140	435,252	23,453	550,516
2009	48,350	26,742	188,883	5,948	269,923
2010	23,263	27,428	121,149	0	171,840
2011	11,174	25,522	133,158	0	169,854
Average	35,365	28,208	219,611	7,350	290,533

3.3.2.4 Greater Amberjack

The recreational season for greater amberjack runs from May 1 through April 30 each year. From 2007/2008 through 2011/2012, annual recreational landings of greater amberjack varied from approximately 0.6 million to 1.3 million lb ww (**Table 3.3.2.2**). Anglers using private vessels accounted for approximately 47% of the average annual landings during that time and those on charter vessels approximately 46%. During the 2012/2013, approximately 125% (1,464,773 lb ww) of the recreational ACL was landed, although that figure is preliminary (SERO ACL). During the first six months of the 2013/2014 season, 524,021 lb ww were reported; however, that figure is also preliminary.

Table 3.3.2.2. Annual recreational landings of greater amberjack by mode, 2007 – 2011.
Source: SERO and SEFSC, March 4-8, 2013.

Year	Lb ww				
	Charter	Headboat	Private	Shore	Total
2007/2008	480,781	110,915	511,473	0	1,103,169
2008/2009	654,052	74,284	559,358	0	1,287,694
2009/2010	583,288	86,987	666,726	0	1,337,001
2010/2011	428,073	75,268	509,443	0	1,012,784
2011/2012	292,073	30,588	247,852	28,891	599,404
Average	489,372	66,782	495,845	7,223	1,059,221

3.3.2.5 Red Porgy

The recreational season for red porgy runs from January 1 through December 30 each year. Annual recreational landings from 2007 through 2011 ranged from 65,552 to 176,179 lb ww, averaging 93,997 lb ww (**Table 3.3.2.3**). Anglers on headboats accounted for approximately 43% of the average annual landings during that time, charterboats accounted for 15%, and those on private vessels, approximately

36%. During the 2012 season, 101,298 lb ww were landed, which was approximately 51% of the recreational ACL at that time. Preliminary data for the 2013 season, indicate 43,627 lb ww were landed through October (SERO ACL).

Table 3.3.2.3. Annual recreational landings of red porgy by mode, 2007 – 2011.
Source: SERO and SEFSC, March 4-8, 2013.

Year	Lb ww				
	Charter	Headboat	Private	Shore	Total
2007	42,452	117,254	16,473	0	176,179
2008	34,806	52,598	54,961	0	142,365
2009	12,720	33,752	49,300	0	95,772
2010	16,848	37,413	11,291	0	65,552
2011	11,685	39,191	21,421	0	72,297
Average	13,751	40,739	34,243	0	93,997

3.3.2.6 Red Snapper

The recreational season for red snapper runs from January 1 through December 31 each year, however, the fishery was closed from 2010 onwards with short openings in 2012 and 2013. Annual recreational landings from 2007 through 2011 ranged from 2,553 to approximately 0.9 million lb gw, averaging approximately 0.4 million lb gw (**Table 3.3.2.4**). Anglers on private vessels accounted for approximately 64% of the average annual landings during that time, following in turn by 16% on charter and 14% on headboats. Recreational harvest was prohibited in 2012 and 2013.

Table 3.3.2.4. Annual recreational landings of red snapper by mode, 2007 – 2011.
Source: SERO and SEFSC, March 4-8, 2013.

Year	Lb gw				
	Charter	Headboat	Private	Shore	Total
2007	69,091	33,747	219,595	0	322,433
2008	136,925	103,881	481,868	6,276	728,950
2009	201,405	127,104	581,681	8,718	918,908
2010	202	2,351	0	0	2,553
2011	0	7,802	0	5,011	12,813
Average	67,202	60,285	265,887	5,001	415,806

3.3.2.7 Vermilion Snapper

The recreational season for vermilion snapper runs from January 1 through December 31 each year. Annual recreational landings from 2007 through 2011 ranged from approximately 0.20 million to 0.76 million lb gw, averaging approximately 0.36 million lb gw (**Table 3.3.2.5**). Anglers on headboats accounted for approximately 55% of the average annual landings during that time, following in turn by approximately 26% on private and 19% on charter vessels. During the 2012 season, 194,499 lb gw were

landed, which was approximately 63% of the recreational ACL at that time. Preliminary data for the 2013 season indicate 92,413 lb ww was landed through October.

Table 3.3.2.5. Annual recreational landings of vermilion snapper by mode, 2007 – 2011.
Source: SERO and SEFSC, March 4-8, 2013.

Year	Lb gw				
	Charter	Headboat	Private	Shore	Total
2007	96,483	552,941	109,947	786	760,157
2008	69,074	271,329	134,841	0	475,244
2009	135,983	235,231	135,117	0	506,331
2010	46,802	153,026	58,466	0	258,294
2011	20,013	136,103	41,537	0	197,653
Average	67,599	198,922	92,490	0	359,381

3.3.2.8 Yellowtail Snapper

The recreational season for yellowtail snapper runs from January 1 through December 31 each year. Annual recreational landings from 2007 through 2011 ranged from approximately 0.35 million to 0.79 million lb ww, averaging approximately 0.48 million lb ww (**Table 3.3.2.6**). Anglers on private vessels accounted for approximately 57% of the average annual landings during that time, following in turn by approximately 24% on charter vessels and 18% on headboats. During the 2012 season, approximately 0.50 million lb ww were landed, which was approximately 44% of the recreational ACL at that time. Preliminary data for the 2013 season indicate approximately 0.56 million lb ww was landed through October.

Table 3.3.2.6. Annual recreational landings of yellowtail snapper by mode, 2007 – 2011.
Source: SERO and SEFSC, March 4-8, 2013.

Year	Lb ww				
	Charter	Headboat	Private	Shore	Total
2007	179,985	81,889	515,504	9,031	786,409
2008	125,889	91,142	521,504	7,778	746,313
2009	97,299	75,073	174,821	1,343	348,536
2010	138,801	85,552	208,675	1,231	434,259
2011	115,057	85,024	190,916	0	390,997
Average	117,052	84,198	273,979	2,588	480,026

3.3.3 Social Environment

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

Since 2003, South Atlantic Snapper Grouper Unlimited Permits and Snapper Grouper 225-Pound Trip Limit Permits have shown a downward trend (**Figure 3.3.3.1**).

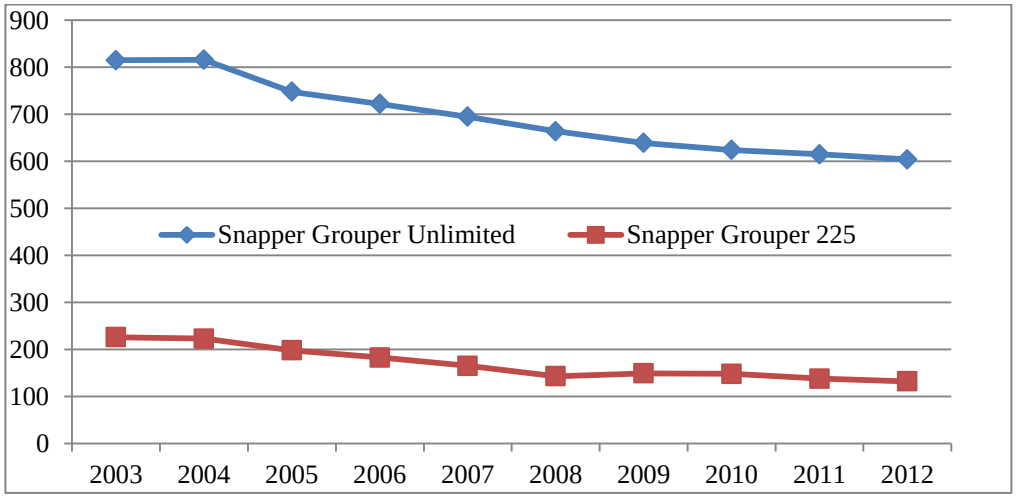


Figure 3.3.3.1. Snapper grouper Unlimited and 225-pound trip limit permits 2003-2012. Source: NMFS SERO (2013).

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

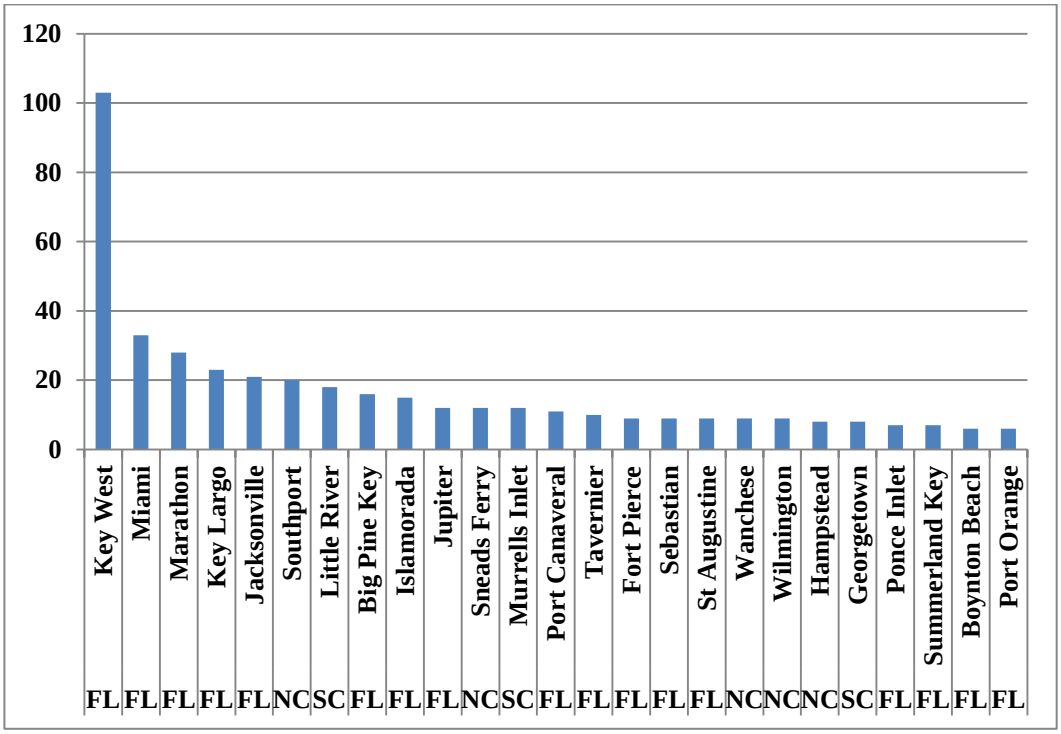


Figure 3.3.3.2. Snapper grouper unlimited permit (class 1) frequency by homeport.
Source: NMFS SERO (2012).

Florida communities have the majority of snapper grouper unlimited permits (class 1) with the only communities outside of Florida within the top ten communities being Southport, North Carolina and Little River, South Carolina **(Figure 3.3.3.2)**. Florida also dominates trip-limited snapper grouper permits, or class 2 permits, with Hatteras, North Carolina, being the only community outside of the state listed in the top twenty communities with class 2 permits **(Figure 3.3.3.3).**

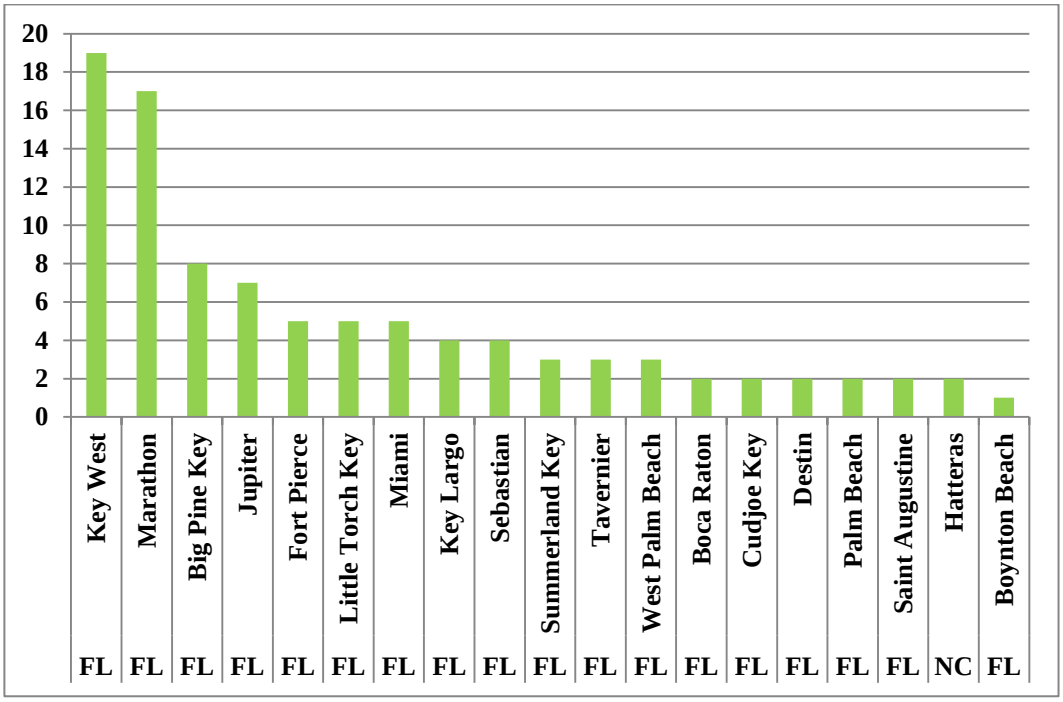


Figure 3.3.3.3. Snapper grouper 225-pound trip limit permits (class 2) frequency by homeport
Source: NMFS SERO (2011).

While the limited entry program has contributed to the reduced capacity, other factors have also contributed to this downward trend. Economic factors like increased imports, decreasing prices for domestic product, and rising prices for diesel fuel have had a widespread effect on commercial fishing throughout many regions of the U.S. In addition, the loss of working waterfronts has contributed to a growing loss of fishing infrastructure that may play a role in the decline in many fishing communities (Garrity-Blake and Nash 2012; Griffith 2011). For North Carolina, the losses have been substantial as over a decade there has been a 36% decline in the number of fish houses (Garrity-Blake and Nash 2012).

The factors that affect the loss of working waterfronts in fishing communities are coastal development, rising property taxes, decreasing access to waterfront due to increasing privatization of public resources, rising cost of dockage and fuel, lack of maintenance of waterways and ocean passages, competition with imported fish, and other less tangible (often political) factors. These, along with increasingly strict regulations, have combined to place a great deal of stress on many communities and their associated fishing sectors including commercial, charter/headboat, and private recreational.

While some of the same social factors above have affected the for-hire fishery in terms of loss of working waterfronts, other issues such as a downturn in the economy and competition have affected the growth of that sector. The recreational fishery has also been subjected to permit requirements in the for-hire sector as vessels in the South Atlantic are required to have a snapper grouper for-hire permit to fish for or possess snapper grouper species in the EEZ.

The number of for-hire permits issued in the South Atlantic snapper grouper fishery increased over the period 2003-2007 from 1,477 permits in 2003 to 1,754 permits in 2007. Increases occurred for those vessels that were strictly for-hire businesses, since permits issued for vessels operating as for-hire and commercial entities were flat from 2005 to 2006 and fell in 2007. Today there are approximately 1,448

snapper grouper charter permits in effect (SERO Permits 2013). Most of these for-hire permitted vessels were home-ported in Florida, with vessels also home-ported in North Carolina and South Carolina.

While studies on the general identification of fishing communities have been undertaken in the past few years, little social or cultural investigation into the nature of the snapper grouper fishery itself has occurred. A socioeconomic study by Waters et al. (1997) covered the general characteristics of the fishery in the South Atlantic, but those data are now over 10 years old and do not capture more recent important changes in the fishery. Cheuvront and Neal (2004) conducted survey work with the North Carolina commercial snapper grouper fishery south of Cape Hatteras, but did not include ethnographic research on communities dependent upon fishing.

Communities with substantial landings of snapper grouper species were identified in Amendment 17A (SAFMC 2010a) and the Comprehensive ACL Amendment (SAFMC 2011c) with demographic descriptions for many of those communities included.

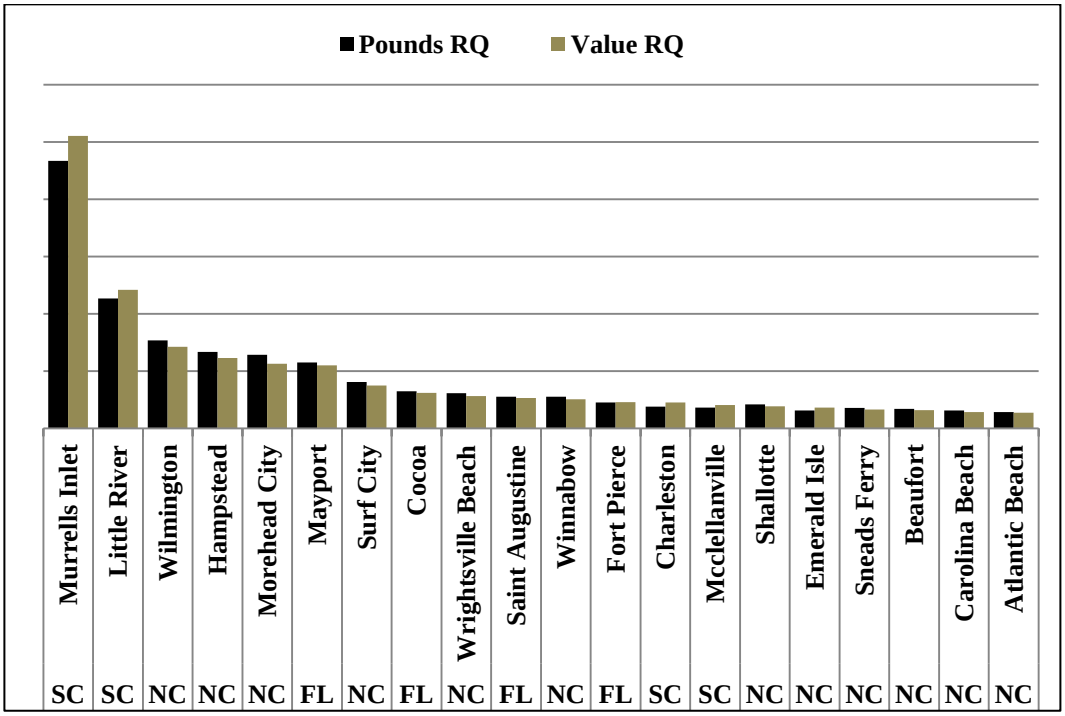


Figure 3.3.3.4. Regional quotient of pound and value for gag by community in 2011
Source: NMFS SERO (2013).
*The quotients are not revealed in the x-axis to maintain confidentially.

For actions affecting the gag component of the snapper grouper fishery, **Figure 3.3.3.4** provides a ranking of communities based upon their regional quotient (Rq) of gag landings. A regional quotient is the amount of local landings and/or value divided by the total landings and value for the region. For this analysis, total landings for gag in the Florida Keys communities were included in the South Atlantic region as we are unable to disaggregate landings at the community level to Gulf or Atlantic at this time. Values for regional quotient of pounds and value are not reported to address confidentiality concerns, yet they offer a good perspective on those communities that land a good proportion of a particular species. In **Figure 3.3.3.4,** most gag is landed in South and North Carolina, with Murrells Inlet having the highest regional quotient.

Vermilion snapper is also an important species in Murrells Inlet and Little River, South Carolina; however, Mayport, Florida has the highest regional quotient for this species (**Figure 3.3.3.5**). St. Augustine is the only other Florida community within the top ten for regional quotient; all other communities are in either in South or North Carolina.

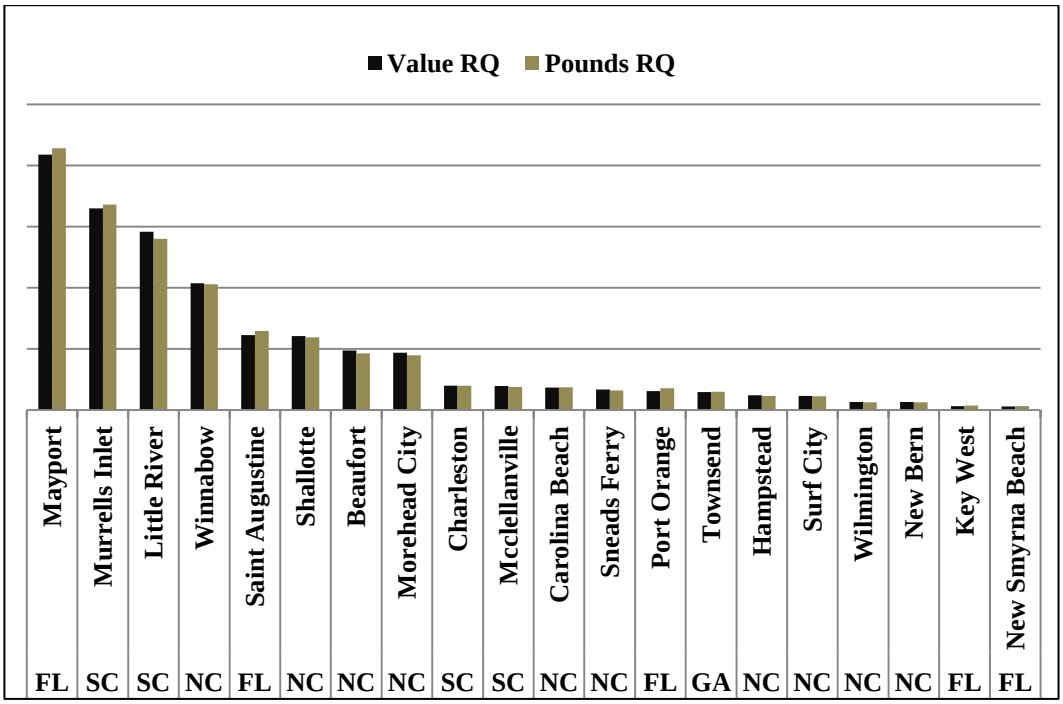


Figure 3.3.3.5. Regional quotient of pound and value for vermilion snapper by community in 2011
Source: NMFS SERO (2013).
*The quotients are not revealed in the x-axis to maintain confidentially.

Greater amberjack seems to be primarily a Florida fishery (**Figure 3.3.3.6**) as the only community outside of Florida in the top ten for regional quotient is Murrells Inlet, South Carolina. Cocoa, Key Largo, and Miami are the top three Florida communities and seem to outpace the others considerably.

Figure 3.3.3.7 provides a depiction of blueline tilefish regional quotient pounds and value of landings for South Atlantic communities. The community of Wanchese, North Carolina leads all other communities in terms of RQ for blueline tilefish by a wide margin.

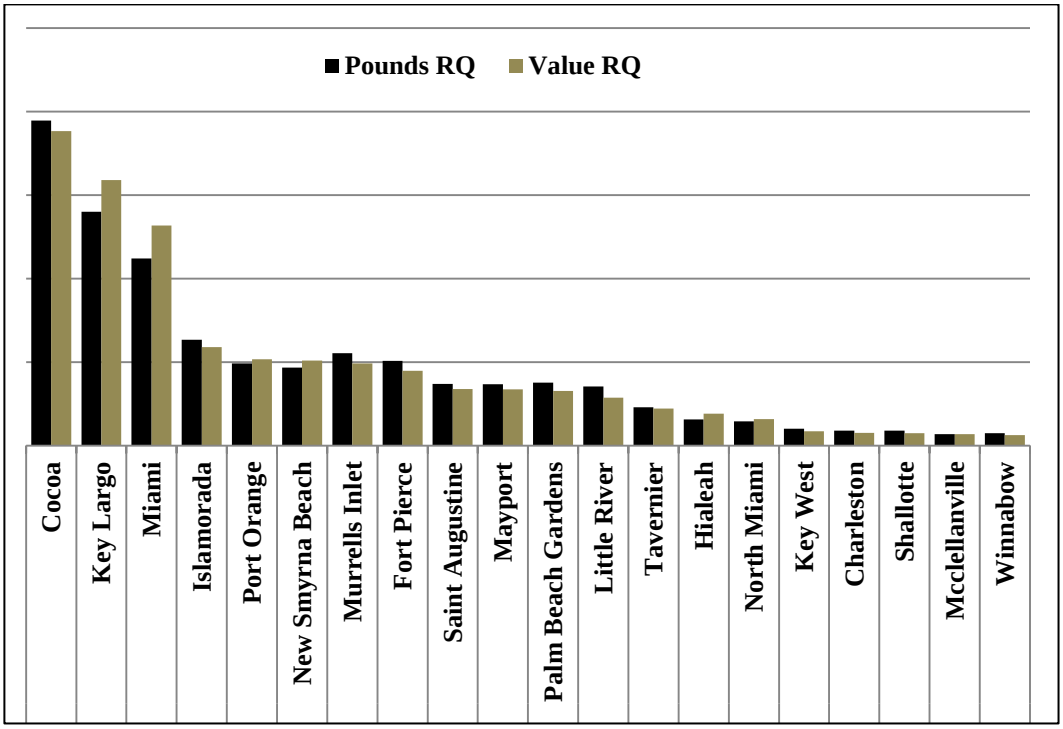


Figure 3.3.3.6. Regional quotient of pound and value for greater amberjack by community in 2011
Source: NMFS SERO (2013).
*The quotients are not revealed in the x-axis to maintain confidentially.

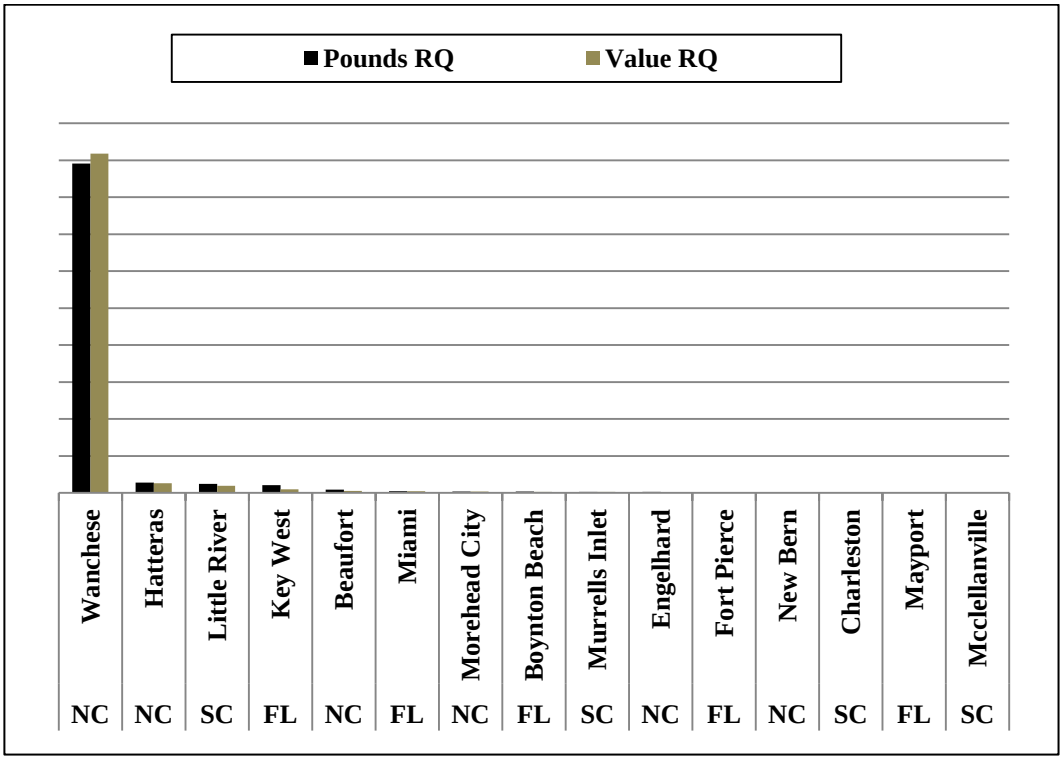


Figure 3.3.3.7. Regional quotient of pound and value for blueline tilefish by community in 2011
Source: NMFS SERO (2013).
*The quotients are not revealed in the x-axis to maintain confidentially.

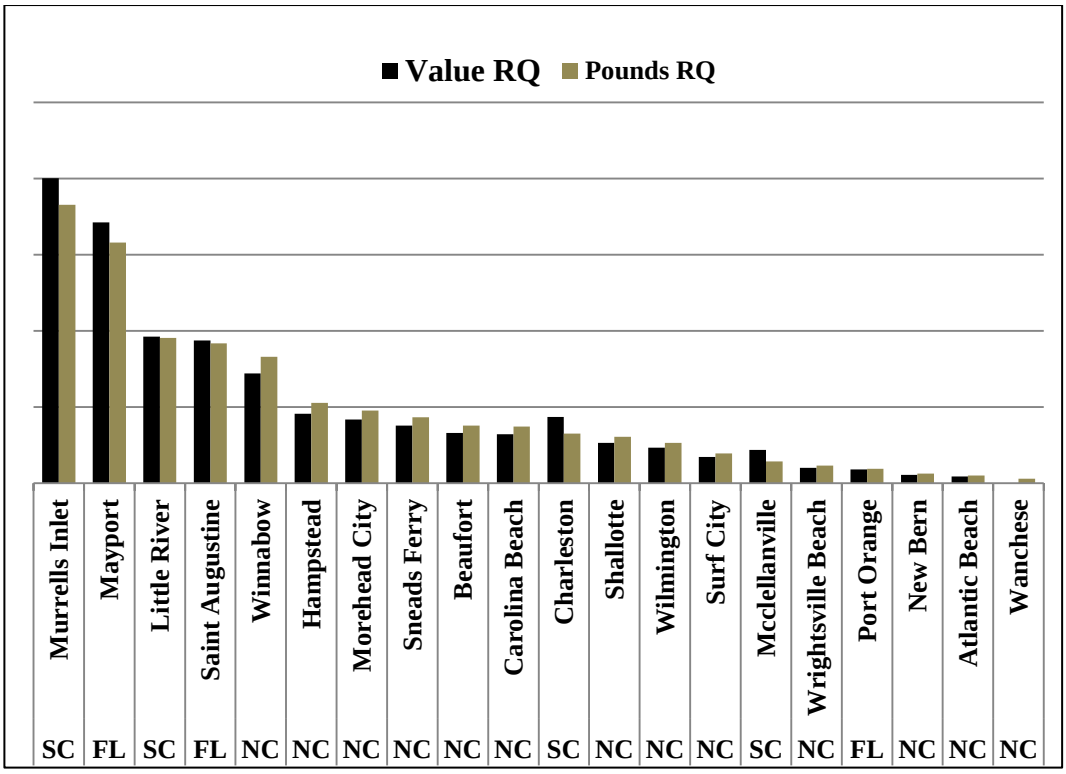


Figure 3.3.3.8. Regional quotient of pound and value for red porgy by community in 2011
Source: NMFS SERO (2014).
*The quotients are not revealed in the x-axis to maintain confidentially.

The regional quotient of landings and value for red porgy appear in **Figure 3.3.3.8**. The first five communities show a much higher regional quotient with Murrells Inlet, South Carolina and Mayport, Florida outpacing all other communities in terms of value and pounds.

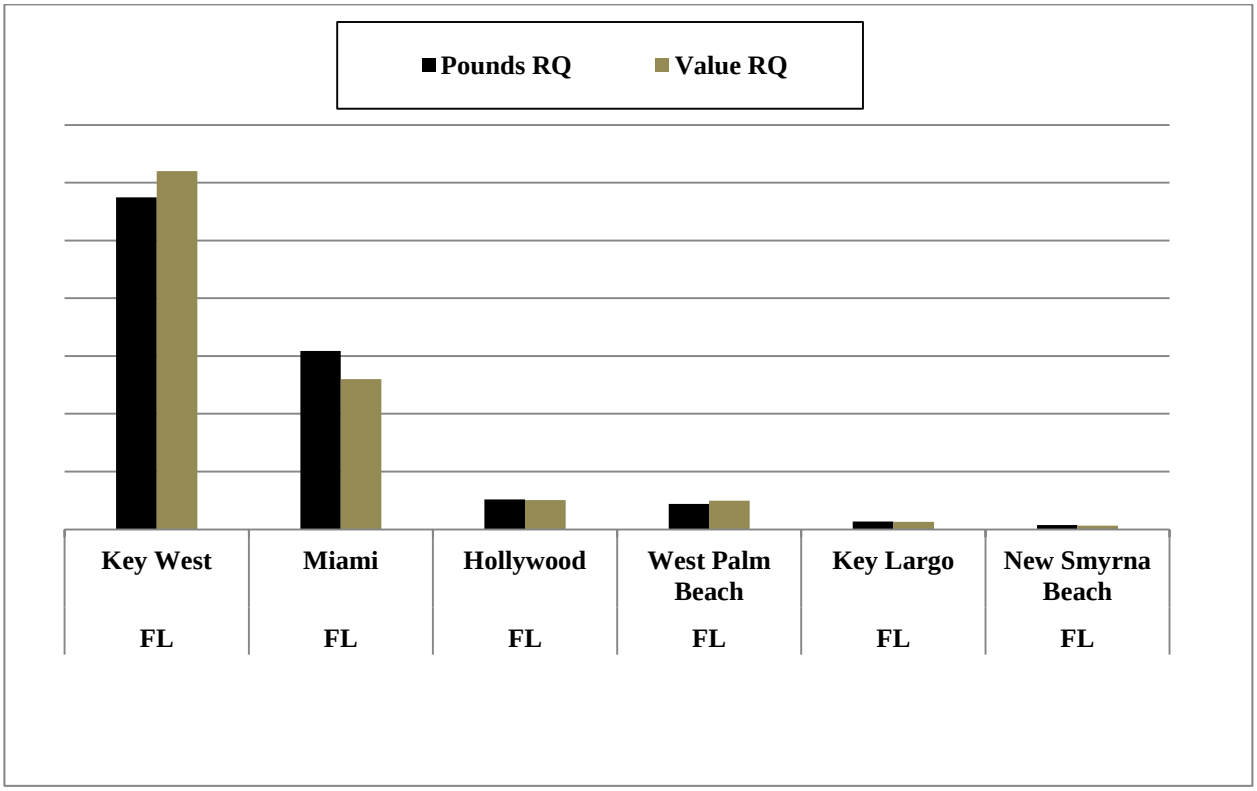


Figure 3.3.3.9. Regional quotient of pound and value for red snapper by community in 2011
Source: NMFS SERO (2014).
*The quotients are not revealed in the x-axis to maintain confidentially.

Because red snapper was closed, the landings in **Figure 3.3.3.9** are most likely red snapper landed from the Gulf as all are from southern Florida where vessels can easily move between both the Gulf and Atlantic.

As seen in **Figure 3.3.3.10**, all South Atlantic fishing communities with high regional quotient values for weight and value of yellowtail snapper are located in Florida. All other communities were lower.

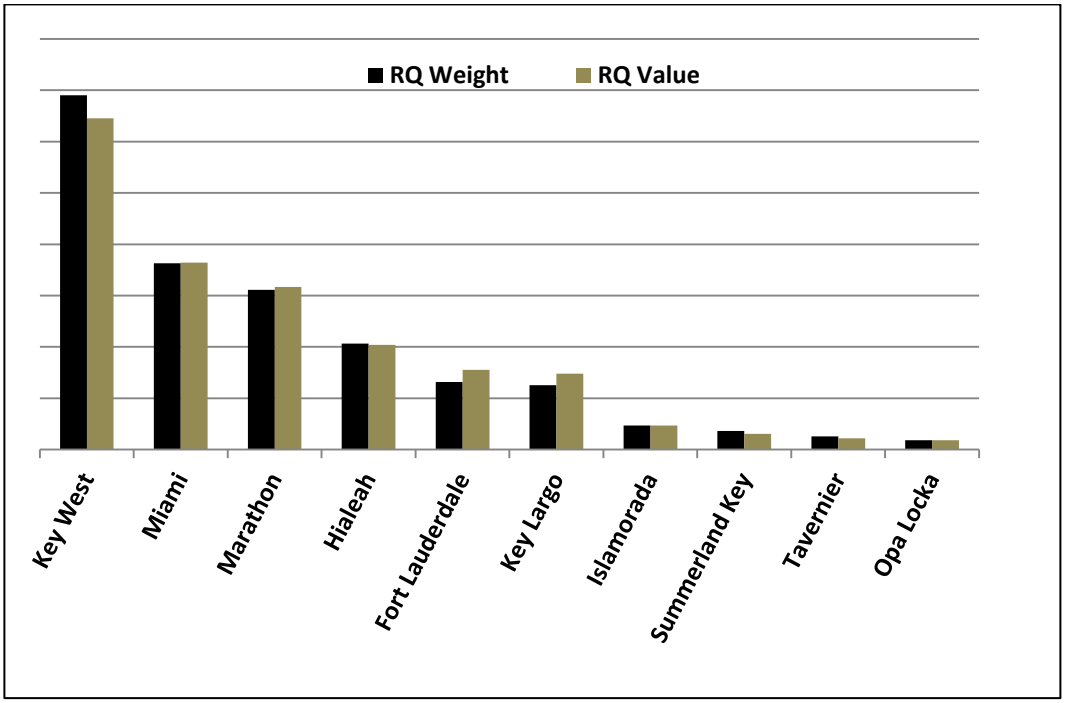


Figure 3.3.3.10. Regional quotient of pound and value for yellowtail snapper by community in 2011
Source: NMFS SERO (2014).
*The quotients are not revealed in the x-axis to maintain confidentially.

Southeast Commercial and Recreational Engagement and Reliance on Fishing

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

Using a principal component and single solution factor analysis, each community receives a factor score for each index to compare to other communities. Using the 35 communities that were identified in the regional quotient figures, factor scores of both engagement and reliance for commercial fishing were plotted onto bar graphs (census data were not available for Mayport and Summerland Key, Florida nor Winnabow and Hampstead, North Carolina nor Townsend, Georgia and therefore do not have indices developed at this time). Each community's factor score is represented by a colored bar. Two thresholds of 1 and ½ standard deviation above the mean are plotted onto the graphs as trend lines to help determine a threshold for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation. A score above ½ standard deviation is considered moderately engaged or reliant, while over 1 standard deviation is considered very engaged or reliant.

Several of the Florida communities in **Figure 3.3.3.11** exhibit both high commercial and recreational engagement. The Florida communities of Fort Lauderdale, Fort Pierce, Islamorada, Key Largo, Key

West, Miami, and St. Augustine are all highly engaged in both. The communities of Islamorada, Key West, and Marathon exceed the thresholds for both reliance on and engagement in commercial and recreational fishing, while the communities of St. Augustine and Tavernier, Florida exhibit high engagement and reliance upon recreational fishing.

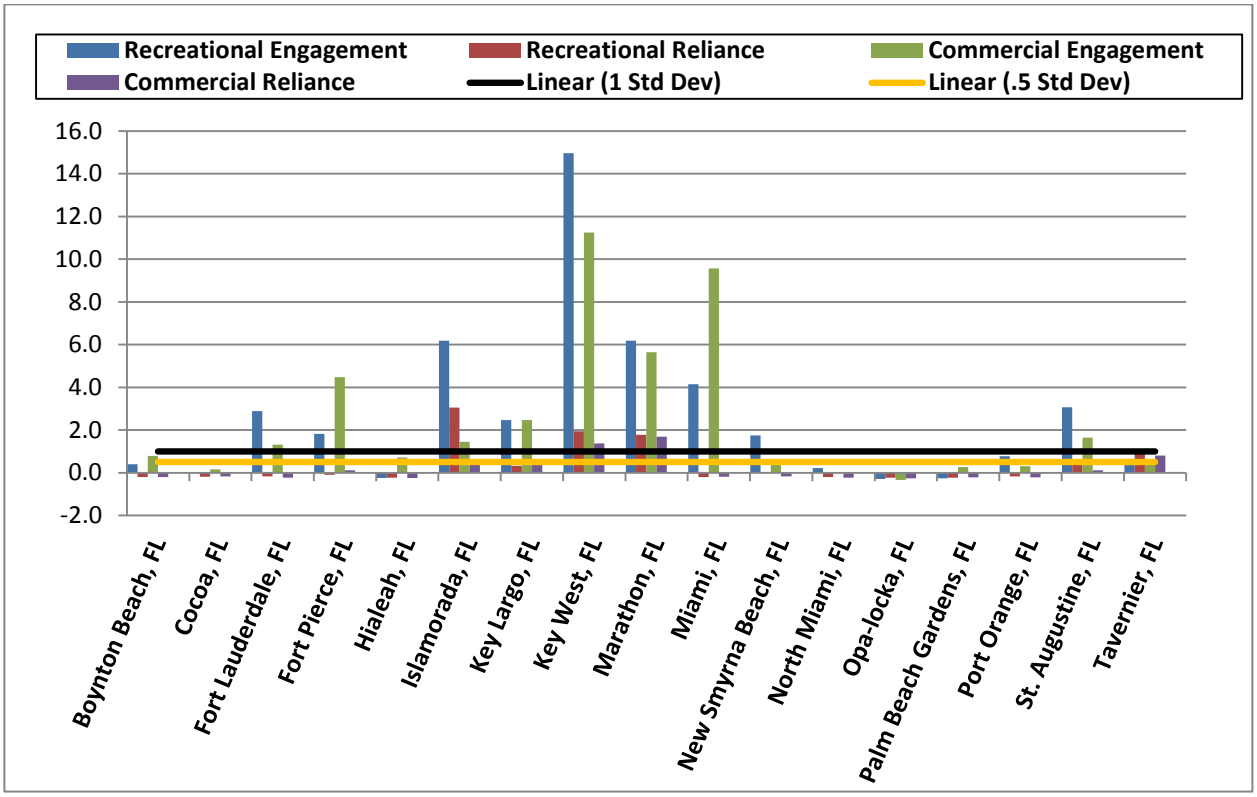


Figure 3.3.3.11. Commercial and recreational fishing engagement and reliance for fishing communities (FL) with landings of species in Regulatory Amendment 21
Source: SERO Social Indicators Database 2014.

With regard to North and South Carolina communities in **Figure 3.3.3.12**, only two communities exceed both thresholds for commercial and recreational engagement and reliance: Wanchese and Beaufort, NC. Seven communities exceed the thresholds for at least three indices: Beaufort, Carolina Beach, Morehead City, Sneads Ferry, Wrightsville Beach, and Wilmington, North Carolina; and Little River and Murrells Inlet, South Carolina. The communities of Atlantic Beach, Beaufort, Shallotte, Sneads Ferry, and Wanchese, North Carolina, all exceed the thresholds for both engagement and reliance on commercial fishing and would therefore be likely to have a substantial portion of their economies depend upon commercial fishing. McClellanville, is the one South Carolina community that stands out as highly dependent upon commercial fishing. Atlantic Beach, Carolina Beach, Morehead City, Wanchese, Wrightsville Beach are all North Carolina communities engaged and reliant upon recreational fishing, while the South Carolina communities of Little River and Murrells Inlet are similarly engaged and reliant upon recreational fishing.

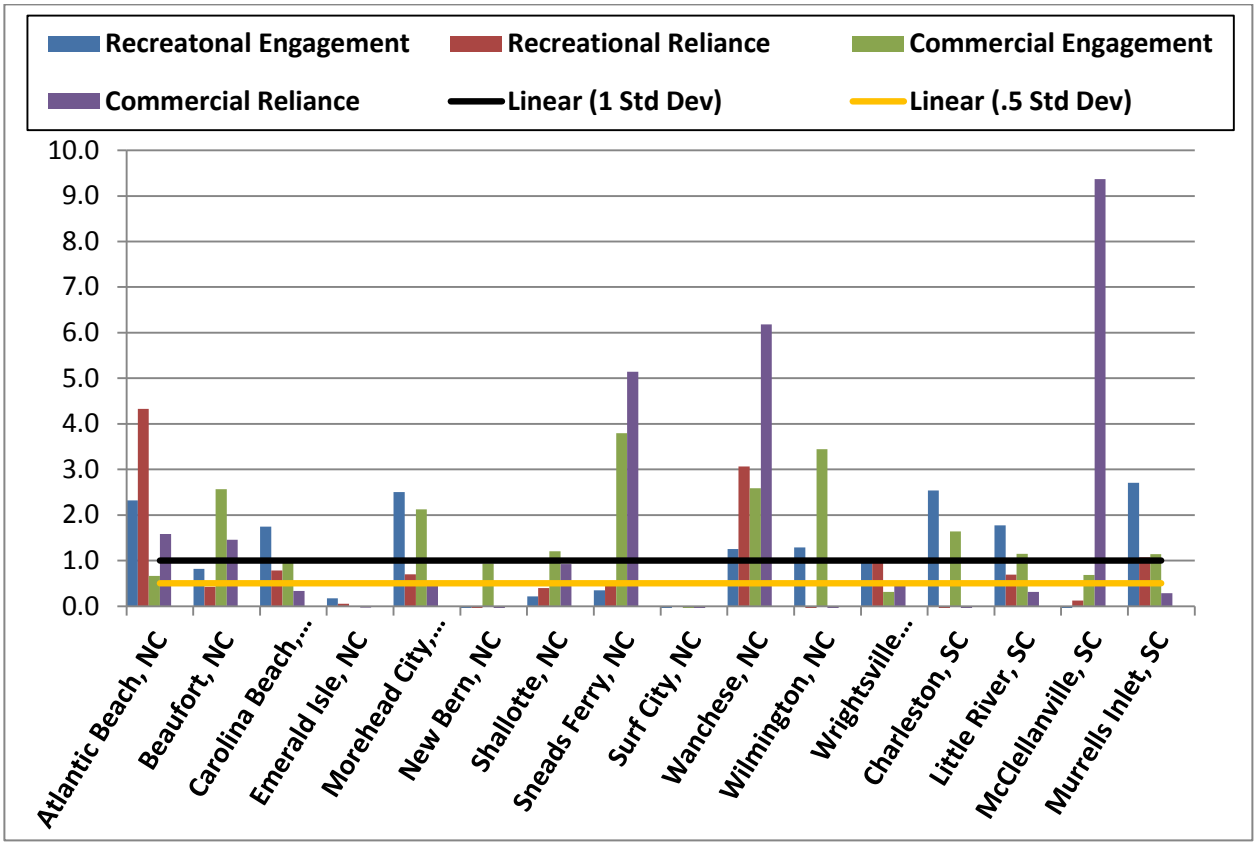


Figure 3.3.3.12. Recreational fishing engagement and reliance for fishing communities (FL & SC) with landings of species in Regulatory Amendment 21.
Source: SERO Social Indicators Database.

There were five communities that exceed the thresholds for both commercial and recreational engagement and reliance Atlantic Beach, Beaufort, Morehead City, and Wanchese in North Carolina. These five communities would be expected to have a substantial part of their economies dependent upon fishing overall. If they also exhibit social vulnerabilities below, they may be susceptible to negative effects from any adverse regulatory change if they have high regional quotients for a particular species affected by alternatives contained within this amendment.

3.3.4 Environmental Justice

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

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

The aforementioned suite of indices was created to examine the social vulnerability of coastal communities and is depicted in **Figure 3.3.3.13** and **Figure 3.3.3.14**. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability (Jepson and Colburn 2013; Jacob et al. 2013). Indicators such as increased poverty rates for different groups, more single female-headed households and households with children under the age of 5, disruptions such as higher separation rates, higher crime rates and unemployment all are signs of populations experiencing vulnerabilities. These vulnerabilities signify that it may be difficult for someone living in these communities to recover from significant social disruption that might stem from a change in their ability to work or maintain a certain income level.

There are seven Florida communities that exceed thresholds for all three social vulnerability indices in **Figure 3.3.3.13**: Cocoa, Fort Lauderdale, Fort Pierce, Hialeah, Miami, North Miami, and Opa-Locka. All other communities in Florida except Boyton Beach, which demonstrates some vulnerabilities, are below both thresholds and therefore do not exhibit social vulnerabilities.

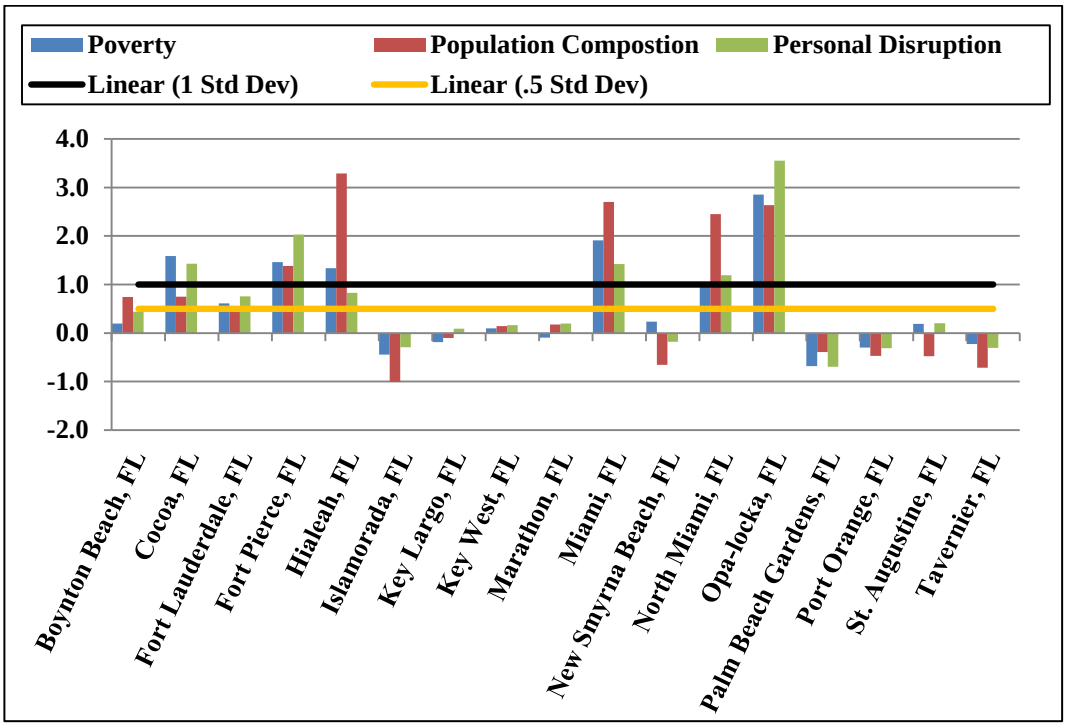


Figure 3.3.3.13. Social Vulnerability Indices for South Atlantic Fishing Communities (FL). Source: SERO Social Indicators Database.

There are four communities that exceed the poverty threshold in North Carolina: Morehead City, New Bern, Wanchese, and Wilmington (**Figure 3.3.3.14**). Only one community exceeds the thresholds for population composition index and that is New Bern. As for personal disruption there were five communities that exceed at least one threshold: Beaufort, Carolina Beach, New Bern, Surf City, and Wilmington. New Bern is the only community that exceeds both thresholds for all three indices. None of the South Carolina communities exceed thresholds for any of the vulnerability indices.

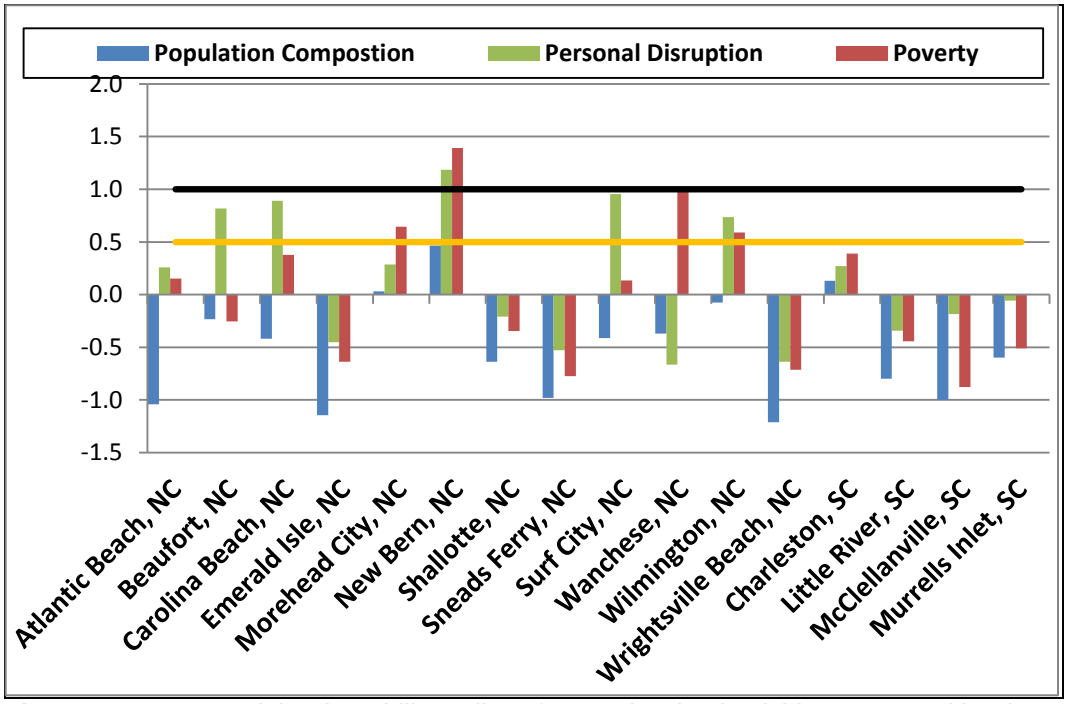


Figure 3.3.3.14. Social Vulnerability Indices for South Atlantic Fishing Communities (NC & SC). Source: SERO Social Indicators Database.

In summary, five communities exhibit high social vulnerabilities: Cocoa, Fort Pierce, Hialeah, Miami, North Miami, and Opa Locka, Florida; and New Bern, North Carolina. The communities of Beaufort, Carolina Beach, Morehead City, Surf City, Wanchese, and Wrightsville Beach, all in North Carolina, show moderate vulnerabilities.

Those communities that exhibit high social vulnerabilities may experience negative social effects if the alternatives within this amendment have adverse impacts. This is not to say that these communities will be negatively affected, but they may experience difficulties if there were to be adverse impacts from the actions within this amendment. These are the communities that would be most at risk depending upon their fishing engagement and reliance. Of course, there are communities that do not show high vulnerabilities and may have high involvement without exhibiting high engagement and reliance. Murrells Inlet and Little River, South Carolina both have moderate engagement and reliance on both recreational and commercial fishing, yet do not exhibit high vulnerabilities. In these cases, there could be specific populations within those communities that might be vulnerable. However, we are not able to demonstrate that type of vulnerability at this time. In other cases, like Mayport and Summerland Key, Florida, or Hampstead and Winabow, North Carolina, and Townsend, Georgia, we do not have sufficient information to determine their social vulnerabilities.

Although we have information concerning the community's overall status with regard to minorities and poverty and other social indicators, we do not have such information for fishermen themselves. Therefore, we can only place fishing activity within the community as a proxy for understanding the role that minorities and poverty and social vulnerability overall have in those being affected by regulatory change. While subsistence fishing is also an activity that can be affected by regulatory change, we have very little, if any, data on this activity at this time. We assume that the effects to other sectors will be similar to those that affect subsistence fishermen who may rely on the snapper grouper species included here.

3.4 Administrative Environment

3.4.1 The Fishery Management Process and Applicable Laws

3.4.1.1 Federal Fishery Management

Federal fishery management is conducted under the authority of the Magnuson-Stevens 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, conducting stock assessments, 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 miles 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. South Atlantic Council members serve three-year terms and are recommended by state governors and appointed by the Secretary from lists of nominees submitted by state governors. Appointed members may serve a maximum of three consecutive terms.

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

3.4.1.2 State Fishery Management

The state governments of North Carolina, South Carolina, Georgia, and Florida have the authority to manage fisheries that occur in waters extending three nautical miles from their respective shorelines. North Carolina's marine fisheries are managed by the Marine Fisheries Division of the North Carolina Department of Environment and Natural Resources. The Marine Resources Division of the South Carolina Department of Natural Resources regulates South Carolina's marine fisheries. Georgia's marine fisheries are managed by the Coastal Resources Division of the Department of Natural Resources. The Marine Fisheries Division of the Florida Fish and Wildlife Conservation Commission is responsible for managing Florida's marine fisheries. Each state fishery management agency has a designated seat on the South Atlantic Council. The purpose of state representation at the South Atlantic Council level is to ensure state participation in federal fishery management decision-making and to promote the development of compatible regulations in state and federal waters.

The South Atlantic States are also involved through the Atlantic States Marine Fisheries Commission (ASMFC) in management of marine fisheries. This commission was created to coordinate state regulations and develop management plans for interstate fisheries. It has significant authority, through the Atlantic Striped Bass Conservation Act and the Atlantic Coastal Fisheries Cooperative Management Act, to compel adoption of consistent state regulations to conserve coastal species. The ASFMC is also represented at the South Atlantic Council level, but does not have voting authority at the South Atlantic Council level.

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

3.4.1.3 Enforcement

Both the National Oceanic and Atmospheric Administration (NOAA) Fisheries 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 Schedules can be found at http://www.gc.noaa.gov/enforce-office3.html.

Chapter 4.
Environmental Consequences and Comparison of Alternatives

4.1 Proposed Action. Re-define Minimum Stock Size Threshold for Select Species in the Snapper Grouper Fishery Management Unit

4.1.1 Biological Effects

Alternative 1 (No Action) would retain the Minimum Stock Size Threshold (MSST) definition established in Amendment 11 to the Snapper Grouper FMP (SAFMC 1998) for the snapper grouper species addressed in this amendment. If it is determined that biomass is below the MSST, a stock is overfished, and the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires a rebuilding plan, which could result in harvest reductions. The current definition for snapper grouper species addressed by this Regulatory Amendment 21 (**Tables 4.1.1-4.1.3**) requires MSST to be at least one half of SSB_{MSY}, but allows for it to be greater than this value if natural mortality (M) is suitably low. If (1-M) is equal to 0.5, then the value obtained from this alternative would be the same as that obtained from **Alternative 3**.

The estimate of natural mortality for species addressed by Regulatory Amendment 21 is very small ranging from 0.08 to 0.23 (**Tables 4.1.1 to 4.1.3**). Therefore, under **Alternative 1 (No Action)** the biomass threshold for determining if a stock is overfished is very close to the biomass associated

Alternatives for the Proposed Action

Alternative 1 (No Action). Retain the current definition of minimum stock size threshold (MSST) for species in the snapper grouper fishery management unit (FMU). For golden tilefish, red grouper, and snowy grouper, MSST equals 75% of SSB_{MSY}. For the remaining species in the snapper grouper FMU, MSST equals SSB_{MSY}*(1-M or 0.5, whichever is greater).

Preferred Alternative 2. Change the MSST for select species in the snapper grouper FMU to 75% of SSB_{MSY}.

Sub-alternative 2a. Change MSST if the estimation of M is 0.15 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Sub-alternative 2b. Change MSST if the estimation of M is 0.20 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Preferred Sub-alternative 2c. Change MSST if the estimation of M is 0.25 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Alternative 3. Change the MSST for select species in the snapper grouper FMU with low natural mortality rates to 50% of SSB_{MSY}.

with a stock when it is not considered overfished (SSB_{MSY}). Since **Alternative 1 (No Action)** nearly eliminates the buffer between MSST and SSB_{MSY} for stocks with low natural mortality rates, a stock would never be permitted to fall below SSB_{MSY} without triggering an "overfished" determination and a mandatory development of a rebuilding plan. The most biologically conservative alternative is **Alternative 1 (No Action)** because it would ensure that rebuilding plans are developed for overfished species; however, under **Alternative 1 (No Action)** rebuilding plans may also be required when they are not biologically necessary. The biological benefits of **Alternative 1 (No Action)** would take the form of increased harvest restrictions that would be implemented with the intent to rebuild a particular stock according to the current MSST threshold criterion. **Preferred Alternative 2** and its sub-alternatives would still require the development of a rebuilding plan for species determined to be overfished, but would reduce the risk of requiring a rebuilding plan for species with decreased biomass due to natural variations in recruitment. **Alternative 3** would be the least biologically beneficial since it would allow biomass to decrease significantly before triggering the rebuilding plan requirements for overfished species.

Additionally, if the same management measures are used to rebuild a stock under **Alternative 1 (No Action)** through **Alternative 3**, the stock would be expected to rebuild fastest under **Alternative 1 (No Action)** because the overfished threshold (MSST) would be closest to the rebuilt threshold SSB_{MSY}. Therefore, **Alternative 1 (No Action)** could be considered to have the greatest biological benefit among alternatives considered in this action. The tradeoff associated with the assurance provided by this conservative definition of MSST is that natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt condition (biomass at SSB_{MSY}), even if the fishing mortality rate applied to the stock was within the limits specified by the maximum fishing mortality threshold (MFMT). If realized, this situation, as explained in **Sections 4.1.2-4.1.4** could result in administrative and socio-economic burdens related to developing and implementing multiple rebuilding plans that may not be biologically necessary. However, simulations on a wide variety of species by Restrepo et al. (1998) indicated that stocks at biomass levels approximating 75%SSB_{MSY} can rebuild to SSB_{MSY} fairly quickly with little constraint on fishing mortality. Therefore, it is not biologically necessary to have extremely small buffers between overfished and rebuilt thresholds.

Preferred Alternative 2 and **Alternative 3** would redefine the MSST for select snapper grouper species that would establish a larger buffer between the biomass at the rebuilt and overfished conditions (**Tables 4.1.1-4.1.3**). **Preferred Alternative 2**, which would set MSST equal to 75% SSB_{MSY}, is consistent with how the South Atlantic Council has approached defining MSST for other snapper grouper stocks with low natural mortality estimates. The South Atlantic Council has changed the MSST definition to 75%SSB_{MSY} for snowy grouper, golden tilefish, and red grouper in previous snapper grouper amendments (SAFMC 2008a; SAFMC 2008b; SAFMC 2011d). These species have low estimates of natural mortality, and the overfished threshold from the status quo MSST definition is very close to the biomass threshold when stocks are not considered overfished. The biological benefits of **Preferred Alternative 2**, which would trigger a rebuilding plan when biomass is at 75% of SSB_{MSY}, would be expected to be greater than **Alternative 3**, which would have a lower biomass threshold for an overfished determination (50%SSB_{MSY}) because biomass would not be allowed to decrease as much as it would under **Alternative 3** before triggering implementation of a rebuilding plan. At their October 2013 meeting, the South Atlantic Council's Scientific and Statistical Committee acknowledged that the 75%SSB_{MSY} approach, currently being considered by the South Atlantic Council in Regulatory

Amendment 21, is an acceptable choice for MSST, and they voiced no concern regarding the adoption of this management reference point for South Atlantic Council managed species.

Preferred Alternative 2 and its sub-alternatives would affect from four to eight snapper grouper species based on their estimated level of natural mortality (**Tables 4.1.1-4.1.3**). Under **Sub-alternative 2a**, red snapper, blueline tilefish, gag, and black grouper would have their MSST's defined at the 75%SSB_{MSY} level (**Table 4.1.1**).

Table 4.1.1. Snapper grouper species with natural mortality (M) estimates below 0.15 (Sub-alternative 2a).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14

Sub-alternative 2b would add yellowtail snapper to the list (**Table 4.1.2**) whereas **Preferred Sub-alternative 2c** would include, in addition to yellowtail snapper, red porgy, vermilion snapper, and greater amberjack (**Table 4.1.3**)

Table 4.1.2. Snapper grouper species with natural mortality (M) estimates below 0.20 (Sub-alternative 2b).

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19

Table 4.1.3. Snapper grouper species with natural mortality (M) estimates below 0.25 (Sub-alternative 2c) and would also be impacted under Alternative 3.

Species	M
Red snapper	0.08
Blueline Tilefish	0.10
Gag	0.14
Black Grouper	0.14
Yellowtail snapper	0.19
Vermilion snapper	0.22
Red porgy	0.23
Greater amberjack	0.23

MSST values for snapper grouper species under each of the alternatives is shown in **Table 4.1.4**.

Table 4.1.4. Minimum Stock Size Threshold (MSST), natural mortality (M), and Spawning Stock Biomass at MSY (SSB_{MSY}) values under each alternative for snapper grouper species addressed in Regulatory Amendment 21.

				MSST				
Stock	**M**	**SSB_{MSY}**	**Units**	**Alt. 1**	**Alt. 2a**	**Alt. 2b**	**Alt. 2c**	**Alt. 3**
Black Grouper	0.14	5,920,000	lb ww	5,091,200	4,440,000	4,440,000	4,440,000	2,960,000
Blueline Tilefish	0.10	543,660	lb ww	489,294	407,745	407,745	407,745	271,830
Gag	0.14	7,925,000	lb gw	6,815,500	5,943,750	5,943,750	5,943,750	3,962,500
Greater Amberjack	0.23	4,277,000	lb ww	3,293,290	3,293,290	3,293,290	3,207,750	2,138,500
Red Porgy	0.23	8,671,000	lb ww	6,676,670	6,676,670	6,676,670	6,503,250	4,335,500
Red Snapper	0.08	344,000	lb ww	316,480	258,000	258,000	258,000	172,000
Vermilion Snapper	0.22	5.98	1e12 eggs	4.66	4.66	4.66	4.49	2.99
Yellowtail Snapper	0.19	6,773,000	lb ww	5,418,400	5,418,400	5,079,750	5,079,750	3,386,500

Like **Preferred Sub-alternative 2c**, **Alternative 3** would change the MSST definition for species with natural mortality rates equal to or less than 0.25. Sub-alternatives based on M are not considered under **Alternative 3**. **Preferred Alternative 2** creates a biomass threshold (MSST) of 75% of SSB_{MSY} that is equivalent 1-M when M = 0.25. Therefore, under **Alternative 3**, which creates a MSST equal to 50% SSB_{MSY}, using M is not as useful in determining the separation between MSST and SSB_{MSY} as it is under **Preferred Alternative 2**. The MSST definition specified in **Alternative 3** would apply to red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack (**Table 4.1.3**). **Alternative 3** is the least conservative of the alternatives considered, because it would allow stock biomass to decrease to 50% of the stock biomass at the maximum sustainable yield (MSY) level before an overfished determination is made, regardless of stock productivity. Such a low threshold for determining an overfished status could be problematic for snapper grouper species that are particularly vulnerable to overfishing. This alternative could make it more difficult to rebuild the stocks from an overfished condition within the allowed time, and would likely result in more severe catch restrictions following an overfished determination. This scenario would likely result in negative biological impacts in the form of reduced biomass, compared to **Alternative 1 (No Action)** and **Alternative 2**. However, it would eliminate the potential administrative burdens (i.e., time and resources required for development of a rebuilding plan and implementation of restrictive management measures) associated with setting MSST close to SSB_{MSY} by establishing a larger buffer between what is considered to be an overfished and rebuilt condition.

The proposed action would not significantly alter the way in which the snapper grouper fishery is conducted in the South Atlantic Region. Therefore, no impacts on Endangered Species Act-listed marine species, essential fish habitat, Habitat Areas of Particular Concern (HAPCs), or coral HAPCs are expected as a result of updating the MSST definition for the subject snapper grouper species.

4.1.2 Economic Effects

Redefining the MSST of a stock does not alter the current level of harvest or use of the resource because it does not change the annual catch limits or accountability measures. Instead, MSST is a biomass threshold used to determine if a stock is overfished. If overfished, the Magnuson-Stevens Act requires a rebuilding plan, which could have negative economic effects due to harvest constraints. If biomass is above the MSST, the stock is not overfished. If a stock was overfished and biomass is at or above SSB_{MSY}, the stock is considered to be rebuilt. This amendment would not implement a rebuilding plan or regulatory change for the subject species found in **Tables 4.1.1-4.1.3**. Consequently, **Alternatives 1 (No Action)**, **2,** and **3** would not affect current harvest or use of stocks, and would have no direct economic impact beyond the status quo. Any indirect impacts would be dependent on future management actions resulting from a determination of whether a stock is overfished. For example, if a stock is determined to be overfished, harvest and/or effort controls would be mandated as part of a rebuilding plan. These harvest and/or effort controls would directly affect those who exploit the resource, as well as other individuals and businesses.

Since there would be no direct effects on resource harvest or use because of this amendment, there would be no direct effects on fishery participants, associated industries, or communities. Direct effects only accrue to actions that alter harvest or other use of the resource. Redefining MSST, however, establishes the platform for future management, specifically from the perspective of bounding allowable harvest levels. The relationship between and implications of the harvests levels implied by the MSST alternatives relative to the status quo are discussed in the following section (**Section 4.1.3**).

Fishery management decisions influence public perception of responsible government control and oversight. These perceptions in turn influence public behavior. This behavior may be positive, such as cooperative participation in the management process, public hearings, and data collection initiatives, or negative, such as non-cooperation with data initiatives, legal action, or pursuit of political relief from management action. Positive behavior supports the efficient use of both the natural resource and the economic and human capital resources dedicated to the management process. Negative behavior harms the integrity of the information on which management decisions are based, induces inefficient use of management resources, and may prevent or delay efficient use of the natural resource. The specific benefits and costs of these behaviors cannot be calculated. Although disagreement with the exact specifications contained in the MSST alternatives may occur, any of the alternatives satisfy the technical guidelines and would establish the required platform from which future action can be taken. However, the alternatives vary in implications for total allowable harvest and constituents who favor more liberal harvests would likely prefer the alternatives in the decreasing order of the potential harvest implied by the alternative specifications, while those who favor more conservative harvests would likely hold the opposing preferences. The net effect of the behavioral responses from these opposing constituent groups cannot be determined.

Administrative costs of fishery management accrue from the time and labor involved in developing new regulations, permitting systems, or other management actions. To the extent that **Alternatives 1 (No Action)**, **2,** and **3** provide fishery scientists and managers with specific, objective, and measurable criteria to use in assessing the status and performance of the fishery, the economic effects of the various alternatives on administrative costs are indistinguishable. However, the more conservative (lower) the

equivalent allowable harvest level, the greater the potential for an overfished determination, necessitating additional management action, with associated administrative costs.

The higher the value of the MSST, the greater the likelihood the size of the stock may fall below that value, resulting in an overfished determination, which would require a rebuilding plan that implements additional restrictive management measures. Among the alternative MSST specifications in Action 1**, Alternative 1 (No Action)** has the greatest probability of causing the subject species to reach an overfished status. When M is relatively small, such as 0.10, the current definition of MSST for some species would trigger a rebuilding plan if biomass fell slightly below SSB_{MSY}, in the above case, at less than 90% SSB_{MSY}. Natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt status. To avoid this, the South Atlantic Council previously redefined the MSST for red grouper, snowy grouper, and golden tilefish, which have low natural mortalities. The MSST for those species was set at 75% of SSB_{MSY} to provide a more appropriate buffer between the levels at which the stock is considered to be at rebuilt (SSB_{MSY}) and overfished (MSST) levels. However, other snapper grouper stocks that also have lower natural mortality, such as red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack, have not similarly had their MSST redefined. Consequently, **Alternative 1 (No Action)** may result in implementation of unnecessary rebuilding plans, which would unnecessarily reduce landings and net economic benefits from those landings.

Sub-alternatives 2a, 2b and **2c (Preferred)** would redefine MSST for snapper grouper stocks with a low natural mortality to establish a more appropriate buffer between SSB_{MSY} and the MSST. **Sub-alternative 2a** would allow for larger reductions in the biomass of red snapper, blueline tilefish, gag, and black grouper before implementing catch restrictions that reduce net economic benefits from those stocks. **Sub-alternative 2b** would add yellowtail snapper to the above list of four stocks, and **Preferred Sub-alternative 2c** would add to the above five, greater amberjack, red porgy and vermilion snapper. Consequently, **Preferred Sub-alternative 2c**, which could avoid unnecessary catch restrictions for eight species, could have the largest long-run net economic benefit and **Sub-alternative 2a** could have the smallest long-run net economic benefit of the three sub-alternatives. **Alternative 3** would allow for the largest reduction in biomass of each of the above eight stocks, which could have the largest short-run net economic benefit of the three alternatives, but the magnitude of the long-term net economic costs to rebuild the stock could be substantial. Therefore, **Alternative 3** could have lower long-run net economic benefits than **Alternative 1 (No Action)**.

The alternatives and sub-alternatives in order of decreasing probability of reaching an overfished determination are **Alternative 1 (No Action)**, **Sub-alternative 2a**, **Sub-alternative 2b**, **Preferred Sub-alternative 2c**, and **Alternative 3**. However, if a MSST was set very low, the magnitude of the adverse long-term economic impacts to rebuild the stock to SSB_{MSY} could be substantial.

4.1.3 Social Effects

Social effects of revised biological parameters such as MSST for a stock would be associated with both the biological and economic effects of the modified MSST value. The estimated SSB as compared to MSST serves as a methodology for determining if a stock is overfished. If the methodology is not accurately representing the stock status, the outcomes of the 'overfished' designation when a stock is not

overfished can have negative long- and short-term social effects associated with restricted or no access to the fish. Conversely, if an inaccurate methodology results in a stock designated as not overfished when it *is* overfished, the fishing fleets, associated businesses, and communities could be negatively impacted in the long term due to a decline in the stock, and negative broader biological impacts of overfishing. Lastly, an inaccurate methodology that causes a stock to fluctuate between overfished and not overfished would likely have negative effects on fishermen by requiring changes in regulations on harvest too often. This could negatively affect stability and planning for fishing businesses, in addition to fishing opportunities for recreational anglers, due to inconsistent access to the resource. Although for some fishermen, any access to a stock would be beneficial, the positive effects of consistency in regulations (even if access is restricted) and stability in the fishery would also be expected from a more fixed designation as overfished or not overfished.

Because any individual with the commercial unlimited or limited snapper grouper permit can harvest all species in the snapper grouper FMU, the alternatives in this action could affect any participant in the commercial sector of the snapper grouper fishery. Under **Alternative 1 (No Action)**, permit holders may be affected by continued or future restricted access to a specific species due to an overfished designation, which could have negative effects on associated fishing businesses and communities. **Preferred Alternative 2** and **Alternative 3** could reduce the number of species that are designated as overfished, which could improve access to these economically important species. Similar effects would be expected for the recreational sector of the snapper grouper fishery.

Under **Preferred Alternative 2**, potential commercial access to several important species in the snapper grouper fishery could be improved with a revised threshold for the overfished designation. There could be some fishing communities that could be affected more than others (described in detail in **Section 3.3.3**). For gag, vermilion snapper, and red porgy, changes to the MSST would be expected to benefit the communities of Murrells Inlet, South Carolina; Little River, South Carolina; Mayport, Florida; Winnabow, North Carolina; and Morehead City, North Carolina (**Figures 3.3.3.4**, **3.3.3.5**, and **3.3.3.8**) because of the higher relative commercial landings and value of these species in these communities. For greater amberjack, changes would most likely be beneficial to Florida communities that have the highest commercial landings, including Cocoa, Key Largo, Miami, Islamorada, Port Orange and Fort Pierce (**Figure 3.3.3.6**). South Florida communities including Key West, Miami, Marathon and Hialeah would also be the most likely to be affected by changes for yellowtail snapper (**Figure 3.3.3.10**), and Wanchese, North Carolina, would be the primary community affected by changes for blueline tilefish (**Figure 3.3.3.7**). Because red snapper is such an important species in the South Atlantic, almost all communities would expect to benefit from changes to the MSST for red snapper.

Overall, social benefits would be expected from increased commercial access to stocks that are currently overfished or could be designated as overfished, as long as the MSST value is accurate and catch would not harm the stock. Access to the stocks for the recreational sector would be expected to improve fishing opportunities and support for-hire businesses by allowing harvest of popular species. Commercial access to more fish would be expected to benefit the commercial sector by allowing harvest of popular and economically valuable species such as red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. In addition, it would provide an opportunity for commercial fishermen to participate in multiple components in the snapper grouper fishery and maximize returns on fishing trips depending on prices, demand, and environmental

conditions. In general, short-term social effects would be most beneficial under **Alternative 3** because this would allow for the greatest decrease in stock biomass before triggering a rebuilding plan with harvest restrictions. However, long-term benefits may be lower if the stock becomes overfished and more restrictive measures became necessary. Under **Preferred Alternative 2**, benefits to the commercial and recreational sectors would be expected to be greatest under **Preferred Sub-alternative 2c**, followed by **Sub-alternative 2b**, then **Sub-alternative 2a**, because more MSST values would be changed under **Preferred Sub-alternative 2c.** Under **Alternative 1 (No Action)**, the fewest benefits to commercial businesses, recreational anglers, for-hire businesses, and fishing communities would be expected, and continued restricted access for some species could have negative social effects if the MSST value could be changed and an 'overfished' designation be removed.

4.1.4 Administrative Effects

Alternative 1 (No Action) would result in no administrative benefits because it would maintain the status quo situation where several snapper grouper species (see species in **Tables 4.1.1-4.1.3**) may frequently alternate between rebuilt and overfished conditions. When a species is designated as overfished, a plan must be developed to rebuild the stock in accordance with provisions in the Magnuson-Stevens Act. Rebuilding plans most often take the form of amendments to the Snapper Grouper FMP, which are administratively burdensome in the short term, and may continue to require administrative resources in the long term depending upon what management measures are included in the amendment. Therefore, any option that would reduce the likelihood a snapper grouper species is designated as overfished would subsequently reduce the administrative burden associated with development and implementation of rebuilding plans.

Relative to **Alternative 1 (No Action)**, **Preferred Alternative 2** would reduce the risk that snapper grouper species with low natural mortality rates are designated as overfished due to natural variations in biomass. Under **Preferred Alternative 2**, the buffer between MSST and SSB_{MSY} is smaller than under **Alternative 3**, and therefore, would result in overfished determinations more frequently than **Alternative 3**. Based on the probability of requiring a rebuilding plan based on an overfished determination, the administrative effects would be greatest for **Alternative 1 (No Action)**, and least for **Alternative 3**. However, because **Alternative 3** would allow for the greatest decrease in biomass before triggering a rebuilding plan, there could be large administrative costs associated with rebuilding the stock.

Chapter 5. Reasoning for Council's Choice of Preferred Alternative

5.1 Proposed Action. Re-define Minimum Stock Size Threshold for Select Species in the Snapper Grouper Fishery Management Unit

Snapper Grouper Advisory Panel (AP) Comments and Recommendations

The Snapper Grouper AP reviewed Regulatory Amendment 21 via e-mail. The draft document was sent to AP members on February 26, 2014, with a request to submit comments by March 6, 2014. Unfortunately, due to the shortened timeframe for preparing this amendment, the AP did not have the benefit of receiving a presentation from South Atlantic Fishery Management Council (South Atlantic Council) staff nor the opportunity to ask questions or solicit clarification. Hence, some of the written comments that were submitted clearly indicate that the proposed action was poorly understood by some AP members, perhaps due to its technical nature and the limited amount of time available to review the document. Five of the individuals who submitted written comments supported **Alternative 1 (No Action)** whereas three individuals stated their support for **Preferred Sub-alternative 2c**.

Law Enforcement Advisory Panel (LEAP) Comments and Recommendations

The Law Enforcement AP reviewed Regulatory Amendment 21 during their meeting on March 3, 2014. The LEAP had no comments or recommendations on the amendment.

Alternatives for the Proposed Action

Alternative 1 (No Action). Retain the current definition of minimum stock size threshold (MSST) for species in the snapper grouper fishery management unit (FMU). For golden tilefish, red grouper, and snowy grouper, MSST equals 75% of SSB_{MSY}. For the remaining species in the snapper grouper FMU, MSST equals SSB_{MSY}*(1-M or 0.5, whichever is greater).

Preferred Alternative 2. Change the MSST for select species in the snapper grouper FMU to 75% of SSB_{MSY}.

Sub-alternative 2a. Change MSST if the estimation of M is 0.15 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Sub-alternative 2b. Change MSST if the estimation of M is 0.20 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Preferred Sub-alternative 2c. Change MSST if the estimation of M is 0.25 or lower based on the estimation of the natural mortality rate (M) from a peer-review report (e.g., a SEDAR stock assessment).

Alternative 3. Change the MSST for select species in the snapper grouper FMU with low natural mortality rates to 50% of SSB_{MSY}.

Scientific and Statistical Committee (SSC) Comments and Recommendations

The South Atlantic Council's SSC reviewed the issue of defining MSST for species with low natural mortality rates at their October 2013 meeting. They provided the following recommendation regarding MSST for red grouper after reviewing Southeast Fisheries Science Center (SEFSC) analyses and Amendment 24 to the Snapper Grouper FMP (Attachment 10): "The SSC reviewed the document provided by SEFSC (Attachment 9) and the earlier Council conclusions (Attachment 10) on alternative definitions of MSST. The Committee felt that the alternative definitions of MSST described in the document are reasonable. However, without a full evaluation of the long-term performance of each alternative (perhaps through management strategy evaluation) it is impossible to make an objective, science-based recommendation on the Committee's preferred option. Nevertheless, the SSC acknowledges that the 75% SSB_{MSY} approach being currently considered by the Council is an acceptable choice for MSST and voiced no concern regarding the adoption of this management reference point for SAFMC-managed stocks."

Further, the SSC Chair offered similar comments on behalf of the SSC during the December 2013 South Atlantic Council meeting, when the South Atlantic Council discussed the need to develop Regulatory Amendment 21 and requested that staff proceed accordingly. The SSC has provided similar MSST recommendations for snowy grouper, golden tilefish, and red grouper, and the MSST for those species was subsequently changed to 75%SSB_{MSY} in Amendments 15A, 15B, and 24, respectively.

South Atlantic Fishery Management Council's (South Atlantic Council) Choice for Preferred Alternative

The South Atlantic Council has typically set the MSST level at one minus the natural mortality (M) (or 0.5, whichever is greater) times the spawning stock biomass at MSY (SSB_{MSY}). However, when M is relatively small (i.e., less than 0.25), the current definition of MSST would trigger a rebuilding plan if biomass fell slightly below SSB_{MSY}. In this situation, natural variation in recruitment could cause stock biomass to frequently alternate between an overfished and rebuilt condition. This may lead to administrative and potentially adverse economic impacts, as the occurrence of unnecessary rebuilding plans coupled with their correspondingly restrictive management plans would increase. To avoid this, the South Atlantic Council is redefining the MSST level in this amendment for specific snapper grouper stocks with a low natural mortality. **Preferred Alternative 2** and its sub-alternatives (including **Preferred Sub-alternative 2c**) would set the MSST at 75% of SSB_{MSY} and thus provide a larger buffer than the current one between the levels at which the stock is considered to be at equilibrium (SSB_{MSY}) and the overfished level (MSST).

Many regions in the U.S. have been setting MSSTs at 50% of SSB_{MSY}, and **Alternative 3** considers setting MSST at this level. If MSST is set at 50% of SSB_{MSY}, by the time a stock is found to be overfished, significant management measures may be required to rebuild the stock due to the low biomass levels.

It is noted that the latest stock assessment (SEDAR 32 2013) for blueline tilefish indicates the stock is above 75% of SSB_{MSY}. However, the assessment found the stock to be overfished under the current biological benchmarks and, therefore, the South Atlantic Council would be required to implement a rebuilding plan to bring the population to the SSB_{MSY} level. The South Atlantic Council choosing **Preferred Alternative 2** as their preferred is consistent with how they have approached setting of the MSSTs for other snapper grouper stocks with a low natural mortality, and a rebuilding plan would not be required. The South Atlantic Council changed the MSST definition to 75%SSB_{MSY} for snowy grouper, golden tilefish, and red grouper through Amendments 15A, 15B, and 24, respectively, for the same reasons they are proposing a change in the MSST for select species in the snapper grouper Regulatory Amendment 21: the 1-M definition puts the overfished threshold (MSST) very close to the threshold for a rebuilt stock (SSB_{MSY}) for species with a relatively low estimate of M.

The biological impacts of changing the definition of MSST could be adverse if the biomass threshold for MSST is lowered to levels below those expected through natural variations in recruitment before fishery managers are made aware of the overfished condition. The negative biological effects would be expected to be more pronounced for **Alternative 3** than **Preferred Alternative 2** (including **Preferred Sub-alternative 2c**) because **Alternative 3** would establish a larger buffer between MSST and SSB_{MSY} than **Preferred Alternative 2**. However, since the reauthorization of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), setting of a rebuilding plan may have become less important in specifying allowable harvest and conserving the stock. As stated in the SEFSC evaluation of the MSST issue contained in **Appendix D in Snapper Grouper Amendment 24**: "When specifying an appropriate buffer between the biomass limit and biomass target […], it may be worth considering that biomass controls are the second tier of a two-tiered system. With reauthorization of the Magnuson-Stevens Act came stricter requirements on fishing mortality (the first tier) through the use of annual catch limits and accountability measures. The intent of ACLs and AMs is to end overfishing for all managed stocks. Their use is expected to help accomplish management objectives, including rebuilding stocks that are marginally below an optimal level. Thus, formal rebuilding plans may be less critical for conservation than they were prior to the reauthorization, and perhaps they should be triggered only for those stocks that are more severely depleted." As stated above, the SSC concurred with this point. For example, addressing overfishing for blueline tile is where substantial adverse social and economic impacts are going to occur and the rebuilding plan required under the existing MSST to address a barely overfished stock would be a minor adjustment compared with addressing overfishing.

In December 2013, the South Atlantic Council requested staff develop Regulatory Amendment 21 in time for the March 2014 meeting because of the results and projections from the recent blueline tilefish SEDAR assessment, and concerns about the overfished threshold for other snapper grouper species with low estimates of natural mortality. Under the existing MSST definition, the blueline tilefish stock is just barely overfished (the ratio of SSB/MSST = 0.909; a stock is overfished if this ratio is less than 1). Even without declaring blueline tilefish overfished, ending overfishing would increase stock biomass as the population increases to the biomass equilibrium expected at the target fishing mortality (F). Since the target F must be below the fishing mortality that would produce MSY (F_{MSY}), the resulting biomass fishing at this level would increase to above SSB_{MSY}. This is the expected outcome even without a rebuilding

plan. In fact, many of the rebuilding plans considered by the South Atlantic Council for other stocks included alternatives where the fishing mortality rate for the rebuilding period ($F_{rebuild}$) could actually be higher than the F that would be applied to the rebuilt stock. Most recently, this occurred with red grouper, and the South Atlantic Council chose a conservative strategy, rebuilding at an exploitation of 75% the F_{MSY} level, rather than the higher $F_{rebuild}$. The South Atlantic Council has taken action in the past to establish MSST at 75% of SSB_{MSY} for other snapper grouper stocks with low natural mortality, namely red grouper, golden tilefish, and snowy grouper.

During the December 2013 South Atlantic Council meeting, the SSC Chair noted that the proposed definition of MSST would allow for incorporation of natural fluctuations in population levels, due to factors such as annual changes in recruitment as a result of environmental variability. Allowing for this ensures that a stock is not fluctuating between an "overfished" and "not overfished" status with each update to an assessment, when fishing activity is not the cause of a change in biomass. Changing the MSST definition also minimizes the likelihood of implementing a rebuilding plan when one is not needed, only to have to spend similar time and resources potentially removing it several years later with the next assessment update.

It is important to note that the designation of "overfished" is based *only* on the spawning stock biomass (SSB) in the final year of an assessment – not the entire time series, and there is always a certain level of uncertainty around this estimate. Because of that uncertainty, the SSC has been recommending more frequent (every 3+ years) updates for many of the assessments, as catch level recommendations for future years use that final value of SSB as a starting point. In addition, catch level projections for the years following an assessment are based on maintaining F below a level that would result in overfishing (i.e., killing fish at too high of a rate – typically F_{MSY}). It is that requirement to put measures in place to end overfishing immediately – and keep it below some F level – that carries the potential for negative socio-economic impacts, not the implementation of rebuilding plans. However, implementation of rebuilding plans can have substantial administrative impacts. Keeping harvest below the F rate that results in overfishing is expected to result in stock growth. It is when F increases above the threshold that managers have to implement restrictive management measures (i.e., reductions in bag limits, trip limits, etc.).

The change in MSST definition could result in some stocks being declared "not overfished" that would otherwise be declared "overfished" without this change. However, as noted previously, the requirement to prevent overfishing ensures that even these stocks would be subjected to fishing mortality rates that would increase biomass to levels above SSB_{MSY}, even without a formal rebuilding plan. Therefore, little risk to long-term sustainability can be expected from this change.

An additional, and very practical, reason for considering setting MSST at 75% of SSB_{MSY} is based on changes in the estimation of natural mortality over time. When the 1-M approach was developed, natural mortality was treated simply as a constant value applied across all ages and years in assessments. While this obviously was not necessarily realistic, that was the option available. However, assessment science is constantly evolving. Assessments today routinely allow natural mortality to vary across ages, assume it is estimated with uncertainty, and consider multiple methods of estimating natural mortality. Some assessments even allow natural

mortality to vary across time. The end result is that it is difficult, and potentially subjective, to determine what natural mortality value should be applied in the 1-M adjustment to biomass for deriving MSST. Another difficulty in understanding this issue is that M is not calculated on a linear scale of 0 (zero) to 1 – even though it may appear that way.

The South Atlantic Council understands the importance of incorporating the impacts of environmental variability on fish populations and the uncertainty around stock assessment estimates in the management process. The South Atlantic Council's choice of **Preferred Alternative 2**, **Preferred Sub-alternative 2c**, reflects this commitment. Further, **Preferred Alternative 2**, **Preferred Sub-alternative 2c** best meets the purpose of modifying the definition of MSST for select snapper grouper species with low natural mortality rates and the need to prevent those stocks from frequently alternating between overfished and rebuilt conditions due to natural variation in recruitment and other environmental factors. **Preferred Alternative 2**, **Preferred Sub-alternative 2c** also best meet the objectives of the Snapper Grouper FMP, as amended, while complying with the requirements of the Magnuson-Stevens Act and other applicable law.

Chapter 6. Cumulative Effects

6.1 Biological

1. Identify the significant cumulative effects issues associated with the proposed action and define the assessment goals.

The Council on Environmental Quality (CEQ 1997) cumulative effects guidance states that this step is done through three activities. The three activities and the location in the document are as follows:

I. The direct and indirect effects of the proposed actions **(Chapter 4)**;
II. Which resources, ecosystems, and human communities are affected **(Chapter 3)**; and
III. Which effects are important from a cumulative effects perspective **(information revealed in this Cumulative Effects Analysis (CEA)**

2. Establish the geographic scope of the analysis.

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 **Section 3.2**. **Section 3.1.3** describes the essential fish habitat designation and requirements for species affected by this amendment.

3. Establish the timeframe for the analysis.

The timeframe for information used for this CEA begins with the establishment of the FMP in 1983 through 2013, when the most recent Southeast Data, Assessment, and Review (SEDAR) stock assessments for species affected by this amendment were completed. Additionally, actions expected to affect the snapper grouper fishery in the future (within 2-3 years), are also considered.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern (the cumulative effects to the human communities are discussed in Section 4).

Listed 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 environment.

I. Fishery-related actions affecting the species addressed in this amendment.

A. Past

Several past amendments to the Snapper Grouper FMP have been implemented that directly and indirectly affected the snapper grouper fishery including the species and communities impacted by Regulatory Amendment 21. A list of those past fishery-related actions can be found in **Appendix D** of this amendment.

B. Present

The Joint Generic Dealer Reporting Amendment requires that all dealers report landings information electronically on a weekly basis to improve the timeliness and accuracy of landings data. This amendment will apply to all fishery management plans (FMPs) with the exception of the Gulf of Mexico and South Atlantic Shrimp FMPs. The Notice of Availability for the amendment published on December 19, 2013, and the comment period ended on February 18, 2014. The proposed rule published on January 2, 2014, and comment period ended on February 3, 2014.

The South Atlantic Headboat Reporting Amendment, which was implemented on January 27, 2014, requires that all federally permitted headboats on the South Atlantic report their landings information electronically, and on a weekly basis in order to improve the timeliness and accuracy of harvest data.

Amendment 27 to the Snapper Grouper FMP, which was implemented on January 27, 2014, allows captains and crew of for-hire vessels to retain bag limit quantities of all snapper grouper species, updates the Snapper Grouper Framework Process to allow for expedited changes to harvest levels, and accountability measures (AMs).

Regulatory Amendment 14 to the FMP Snapper Grouper would modify the commercial and recreational fishing years for greater amberjack and black sea bass; modify trip limits for gag; and revise the recreational AMs for black sea bass and vermilion snapper. The South Atlantic Council sent Regulatory Amendment 14 to NMFS for formal review on January 15, 2014.

An Emergency rule is under development to address the 2013 overfishing and overfished determination for blueline tilefish. The emergency rule would set the blueline tilefish ACL at the equilibrium yield at 75%F_{MSY} = 224,100 pounds whole weight (lb ww); apply the allocations for blueline tilefish to the 224,100 lb ww ACL (commercial = 112,207 lb ww and recreational = 111,893 lb ww); and adjust the deep-water complex ACLs accordingly.

C. Reasonably Foreseeable Future

Regulatory Amendment 17 is currently under development and this amendment would modify existing or establish new marine protected areas to enhance protection for speckled hind and warsaw grouper as well as other snapper grouper species.

Amendment 32 to the FMP would establish a rebuilding plan and modify harvest levels and management measures for blueline tilefish. This amendment would also remove blueline tilefish from the deep-water complex.

Amendment 29 to the FMP would update the ABC control rule for snapper grouper species using the only reliable catch stocks (ORCS) methodology, and update management measures for gray triggerfish to lengthen the fishing season.

II. Non-Council and other non-fishery related actions, including natural events affecting the species addressed in this amendment.

A. Past
B. Present
C. Reasonably foreseeable future

In terms of natural disturbances, it is difficult to determine the effect of non-Council and non-fishery related actions on stocks of snapper grouper species. Annual variability in natural conditions such as water temperature, currents, food availability, predator abundance, etc. can affect the abundance of young fish, which survive the egg and larval stages each year to become juveniles (i.e., recruitment). This natural variability in year class strength is difficult to predict as it is a function of many interactive and synergistic factors that cannot all be measured (Rothschild 1986). Furthermore, natural factors such as storms, red tide, cold water upwelling, etc. can affect the survival of juvenile and adult fishes; however, it is very difficult to quantify the magnitude of mortality these factors may have on a stock. Alteration of preferred habitats for snapper grouper species could affect survival of fish at any stage in their life cycles. However, estimates of the abundance of fish, which utilize any number of preferred habitats, as well as, determining the impact habitat alteration may have on snapper grouper species, is problematic.

How global climate changes will affect the snapper grouper fishery is unclear. Climate change can impact marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise, increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH due to absorption of anthropogenic carbon dioxide emissions may impact a wide range of organisms and ecosystems, particularly organism that absorb calcium from surface waters, such as corals and crustaceans (IPCC 2007, and references therein).

The BP/Deepwater Horizon oil spill event, which occurred in the Gulf of Mexico on April 20, 2010, did not impact fisheries operating the South Atlantic. Oil from the spill site was not detected in the South Atlantic region, and did not likely pose a threat to the South Atlantic snapper grouper species addressed in this amendment.

5. Characterize the resources, ecosystems, and human communities identified in scoping in terms of their response to change and capacity to withstand stress.

Information on species most affected by this framework action is provided in **Section 3.2** of this document. The Snapper Grouper FMP managed species are part of a vast marine ecological environment, the health of which is dependent upon strong predator-prey relationships, habitat availability and health, fishing pressure, and natural variables such as current and temperature. Actions implemented under the Snapper Grouper FMP are intended to fortify the role of snapper grouper species of commercial and recreational importance within the larger ecosystem and maintain the ecological balance that would enable those species to thrive. Such Snapper Grouper FMP actions may help to increase snapper grouper species' ability to withstand stress from natural and anthropogenic sources.

The cumulative effects of the actions in this amendment and those past, present and future action affecting the snapper grouper fishery, are not expected to be significant. The actions in this amendment, combined with the actions in past and future amendments to the Snapper Grouper FMP are intended to not only support biological resiliency of snapper grouper stocks but also aid the fishing industry in their ability to withstand stress caused by market and ecological fluctuations.

The species most likely to be impacted by alternatives considered in this amendment are red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. Trends in the condition of these species are determined through the SEDAR process. Stock status information for the species affected by this amendment is found in **Section 3.2** of this document, and in **Appendix E (Bycatch Practicability Analysis)**.

6. Characterize the stresses affecting these resources, ecosystems, and human communities and their relation to regulatory thresholds.

Fish populations

A complete discussion of fish populations including stock status may be found in **Section 3.2** of this document. Definitions of overfishing and overfished for snapper grouper species affected by this amendment can be found in the most recent stock assessment sources, which may be found at http://www.sefsc.noaa.gov/sedar/.

Stock assessments take into account the past and current regulatory environment and establish sustainability thresholds based on how stocks respond to those management measures as well as biological and environmental factors affecting each species. Stock assessments and stock assessment updates are completed periodically dependent upon the amount and type of information available for the species and their commercial importance. Detailed discussions of the science and processes used to determine the stock status of assessed snapper grouper species is contained in the SEDAR stock assessment and assessment updates completed for snapper grouper species and are hereby incorporated by reference.

Climate change

Global climate changes could have significant effects on South Atlantic fisheries. However, the extent of these effects is not known at this time. Possible impacts include temperature changes in coastal and marine ecosystems that can influence organism metabolism and alter ecological processes such as productivity and species interactions; changes in precipitation patterns and a rise in sea level which could change the water balance of coastal ecosystems; altering patterns of wind and water circulation in the ocean environment; and influencing the productivity of critical coastal ecosystems such as wetlands, estuaries, and coral reefs (IPCC 2007; Kennedy et al. 2002).

It is unclear how climate change would affect snapper grouper species in the South Atlantic. Climate change can affect factors such as migration, range, larval and juvenile survival, prey availability, and susceptibility to predators. In addition, the distribution of native and exotic species may change with increased water temperature, as may the prevalence of disease in keystone animals such as corals and the occurrence and intensity of toxic algae blooms. Climate change may or may not significantly impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time.

7. Define a baseline condition for the resources, ecosystems, and human communities.

The purpose of defining a baseline condition for the resource and ecosystems in the area of the proposed action is to establish a point of reference for evaluating the extent and significance of expected cumulative effects. The SEDAR assessments show trends in biomass, fishing mortality, fish weight, and fish length going back to the earliest periods of data collection. For some species such as snowy grouper, assessments reflect initial periods when the stock was above B_{MSY} and fishing mortality was fairly low. However, some species were heavily exploited or possibly overfished when data were first collected. As a result, the assessment must make an assumption of the biomass at the start of the assessment period thus modeling the baseline reference points for the species.

For a detailed discussion of the baseline conditions of red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack, the species most likely to be impacted by this amendment, the reader is referred to **Section 3.2** of this amendment.

8. Identify the important cause-and-effect relationships between human activities and resources, ecosystems, and human communities.

Appendix D. History of Management, includes a description of the regulatory actions affecting the snapper grouper resource, the South Atlantic marine ecosystem, and the human communities that rely on the snapper grouper resource. Many actions such as adjustments to harvest limits, implementation of AMs, and protections of habitat and spawning stocks are needed to protect the fishing resource from human activities, which can degrade or deplete the resource. In compliance with the Magnuson-Stevens Act, all actions promulgated to protect the

snapper grouper resource and support sustainable fishing practices are also intended to minimize adverse socioeconomic impacts to the maximum extent practicable.

9. Determine the magnitude and significance of cumulative effects.

The actions contained in Regulatory Amendment 21, in combination with actions that have been implemented in the past, or will be implemented in the future, are not expected to result in any significant cumulative impacts. Modifying the MSST definition is necessary to ensure that overfished determinations and rebuilding plans are developed only when biologically necessary without accruing significant positive or adverse cumulative impacts.

The proposed action 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 Exclusive Economic Zone (EEZ). This action is not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific, cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The U.S. Monitor, Gray's Reef, and Florida Keys National Marine Sanctuaries are within the boundaries of the South Atlantic EEZ. The proposed 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.

10. Modify or add alternatives to avoid, minimize, or mitigate significant cumulative effects.

The cumulative effects on the biophysical environment are expected to be negligible. Avoidance, minimization, and mitigation are not applicable.

11. Monitor the cumulative effects of the selected alternative and adopt management.

The effects of the proposed action are, and will continue to be, monitored through collection of data by National Marine Fisheries Service, states, stock assessments and stock assessment updates, life history studies, and other scientific observations.

6.2 Socioeconomic Cumulative Impacts

A description of the human environment, including a description of commercial and recreational fisheries for species in Regulatory Amendment 21, and associated key fishing communities, is contained in **Chapter 3**. A description of the history of management of the snapper grouper fishery is contained in **Appendix D**.

Participation in and the economic performance of the fisheries addressed in this document have been affected by a combination of regulatory, biological, social, and external economic factors. Regulatory measures have obviously affected the quantity and composition of harvests of species addressed in this document, through the various size limits, seasonal restrictions, trip or bag limits, and quotas. The limited access program implemented in 1998/1999 substantially affected the number of participants in the snapper grouper fishery. Entry into the snapper grouper commercial fishery requires access to additional capital and two available permits to purchase (due to the passive reduction that requires two permits be eliminated for each new permit), which may limit opportunities for new entrants. Additionally, almost all fishermen or businesses with a snapper grouper commercial or for-hire permit also hold at least one (and usually multiple) additional commercial or for-hire permit to maintain the opportunity to participate in other fisheries. Commercial fishermen, for-hire vessel owners and crew, and private recreational anglers commonly participate in multiple fisheries throughout the year. Even within the snapper grouper fishery, effort can shift from one species to another due to environmental, economic, or regulatory changes. Overall, changes in management of one species in the snapper grouper fishery can impact effort and harvest of another species (in the snapper grouper fishery or in another fishery) because of multi-fishery participation that is characteristic in the South Atlantic region.

Biological forces that either motivate certain regulations or simply influence the natural variability in fish stocks have likely played a role in determining the changing composition of the fisheries addressed by this document. Additional factors, such as changing career or lifestyle preferences, stagnant to declining prices due to imports, increased operating costs (gas, ice, insurance, dockage fees, etc.), and increased waterfront/coastal value leading to development pressure for other than fishery uses have impacted both the commercial and recreational fishing sectors. In general, the regulatory environment for all fisheries has become progressively more complex and burdensome, increasing the pressure on economic losses, business failure, occupational changes, and associated adverse pressures on associated families, communities, and businesses. Some reverse of this trend is possible and expected through management. However, certain pressures would remain, such as total effort and total harvest considerations, increasing input costs, import induced price pressure, and competition for coastal access.

A description of the human environment, including a description of the snapper grouper fishery, as well as associated key fishing communities is contained in **Section 3.3** and a description of the history of management of the fisheries addressed in this document is contained in **Appendix D**. A detailed description of the expected social and economic impacts of the action in this document is contained elsewhere in **Section 4**.

The proposed action in this amendment is part of the larger management program for snapper grouper, with primary management working through annual catch limits (ACLs) and AMs. The actions in the Comprehensive ACL Amendment (SAFMC 2011c) established ACLs and AMs for species that are not experiencing overfishing. Actions in the Comprehensive ACL Amendment, however, are expected to have different effects in different areas. At any rate, the action contained in this document is expected to prevent overfishing from occurring and to support the achievement of optimum yield for the respective species over time, resulting in social and economic gains. In addition to the species included in the Comprehensive ACL Amendment, the ACLs, AMs, and management measures have been developed and revised in multiple amendments in recent years (see **Appendix D**).

Several species could be affected by the action in this amendment are important to both the commercial and recreational sectors. In particular, harvest of red snapper was prohibited for a few years, followed by very limited openings in 2012 and 2013. Any increased access to red snapper could significantly help commercial and for-hire businesses, in addition to improving recreational fishing opportunities.

The cumulative social and economic effects of past, present, and future amendments may be described as limiting fishing opportunities in the short-term, with some exceptions of actions that alleviate some negative social and economic impacts. The intent of these amendments is to improve prospects for sustained participation in the respective fisheries over time and the proposed actions in this amendment are expected to result in some important long-term benefits to the commercial and for-hire fishing fleets, fishing communities and associated businesses, and private recreational anglers. The proposed changes in this amendment that could affect access to several important species in the South Atlantic region may contribute to changes in the snapper grouper fishery within the context of the current economic and regulatory environment at the local and regional level.

Chapter 7. List of Preparers

Table 7.1.1. List of preparers of the document.

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

Table 7.1.2. List of interdisciplinary plan team members for the document.

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NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, EFH = Essential Fish Habitat, GC = General Counsel, Eco=Economics, NEPA = National Environmental Policy Act, SEFSC=Southeast Fisheries Science Center, OLE = Office of Law Enforcement

Chapter 8. Agencies and Persons Consulted

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NMFS, Southeast Region
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List of Agencies, Organizations, and Persons Consulted
SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
SAFMC Information and Education Advisory Panel
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. Alternatives Considered but Eliminated from Detailed Analysis

There are no rejected alternatives.

Appendix B. Glossary

Acceptable 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 percent 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 waters sproduced 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.

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.

Head Boat: 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 Fisheries Statistics Survey (MRFSS): 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: Percent 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 that 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. Other Applicable Law

1.1 Administrative Procedures Act

All federal rulemaking is governed under the provisions of the Administrative Procedures Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. 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. This amendment complies with the provisions of the APA through the South Atlantic Fishery Management Council's (South Atlantic 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.

1.2 Information Quality Act

The Information Quality Act (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 Information Quality Act (IQA). This document has used the best available information and made a broad presentation thereof. The process of public review of this document provides an opportunity for comment and challenge to this information, as well as for the provision of additional information.

The information contained in this document was developed using best available scientific information. Therefore, Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 21) and Environmental Assessment are in compliance with the IQA.

1.3 Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act (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 South Atlantic 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. Based on the analysis of the environmental consequences of the proposed actions in Section 4.0, the South Atlantic Council has concluded this amendment would improve federal management of the of the snapper grouper fishery and is consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina. This determination will be

submitted to the responsible state agencies under Section 307 of the CZMA administering approved Coastal Zone Management Programs in the States of Florida, South Carolina, Georgia, and North Carolina.

1.4 Endangered Species Act

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. NMFS completed a biological opinion (NMFS 2006) in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and Amendment 13C to the Snapper Grouper FMP on ESA-listed species (see **Chapter 3**). The opinion stated the fishery was not likely to adversely affect North Atlantic right whale critical habitat, seabirds, or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. See NMFS (2006) for a full discussion of impacts to smalltooth sawfish.

Table C-1. Three-year South Atlantic anticipated takes sea turtles in the snapper grouper fishery.

Species	Amount of Take	Total
Green	Total Take	39
	Lethal Take	14
Hawksbill	Total Take	4
	Lethal Take	3
Kemp's Ridley	Total Take	19
	Lethal Take	8
Leatherback	Total Take	25
	Lethal Take	15
Loggerhead	Total Take	202
	Lethal Take	67

Source: NMFS 2006. NMFS (National Marine Fisheries Service). 2006. Endangered Species Act Section 7 consultation on the continued authorization of snapper grouper fishing under the Snapper Grouper FMP and Proposed Amendment 13C. Biological Opinion. June 7.

Sea turtles are vulnerable to capture by bottom longline and vertical hook-and-line gear. The magnitude of the interactions between sea turtles and the South Atlantic snapper grouper fishery was

evaluated in NMFS (2006) using data from the Supplementary Discard Data Program (SDDP). Three loggerheads and three unidentified sea turtles were caught on vertical lines; one leatherback and one loggerhead were caught on bottom longlines, all were released alive. The effort reported in the program represented between approximately 5% and 14% of all South Atlantic snapper-grouper fishing effort. These data were extrapolated in NMFS (2006) to better estimate the number of interactions between the entire snapper-grouper fishery and ESA-listed sea turtles. The extrapolated estimate was used to project future interactions (**Table C-1**).

The SDDP does not provide data on recreational fishing interactions with ESA-listed sea turtle species. However, anecdotal information indicates that recreational fishermen occasionally take sea turtles with hook-and-line gear. The biological opinion also used the extrapolated data from the SDDP to estimate the magnitude of recreational fishing on sea turtles (**Table C-1**).

Regulations implemented through Amendment 15B to the Snapper Grouper FMP (74 FR 31225; June 30, 2009) required all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles and smalltooth sawfish. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles and smalltooth sawfish.

Subsequent to the June 7, 2006, biological opinion, elkhorn and staghorn coral (*Acropora cervicornis* and *Acropora palmata*) were listed as threatened. In a consultation memorandum dated July 9, 2007, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery is not likely to adversely affect these *Acropora* species. On November 26, 2008, an *Acropora* critical habitat was designated. In a consultation memorandum dated December 2, 2008, NMFS concluded the continued authorization of the snapper grouper fishery is not likely to adversely affect *Acropora* critical habitat.

Additionally, on September 22, 2011, NMFS and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine distinct population segments (DPSs) (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper-grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic (NWA) DPS, which remains listed as threatened. Five DPSs of Atlantic sturgeon were also listed since the completion of the 2006 biological opinion. In a consultation memorandum dated February 15, 2012, NMFS concluded the continued authorization of the South Atlantic snapper grouper fishery is not likely to adversely affect the Atlantic sturgeon. The February 15, 2012, memorandum also stated that because the 2006 biological opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the NWA DPS, the opinion's conclusion that the fishery is not likely to jeopardize the continued existence of loggerhead sea turtles remains valid.

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 amendment and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 13132 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. The RIR is included as **Appendix H**.

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

1.7 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 including, but not limited to, developing joint partnerships; promoting the restoration of recreational fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. 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 South Atlantic 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 amendment are consistent with the directives of E.O. 12962.

1.8 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 amendment are consistent with the directives of E.O. 13089.

1.9 Executive Order 13158: Marine Protected Areas

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 (MPAs). The E.O. defined MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources". The alternatives considered in this amendment are consistent with the directives of E.O. 13158.

1.10 Marine Mammal Protection Act

The Marine Mammal Protection Act (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 snapper grouper fishery in the South Atlantic is listed as a Category III fishery in the 2014 List of Fisheries (79 FR 14418, March 14, 2014). No incidentally, killed or injured marine mammal species has been documented in this fishery.

1.11 Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act (MBTA) implemented several bilateral treaties for bird conservation between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and the former Union of Soviet Socialists Republics. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill, possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird, included in treaties between the countries listed above, except as permitted by regulations issued by the Department of the Interior (16 U.S.C. 703-712). Violations of the MBTA carry criminal penalties. Any equipment and means of transportation used in activities in violation of the MBTA may be seized by the United States government and, upon conviction, must be forfeited to it.

Executive Order 13186 directs each federal agency taking actions that have, or are likely to have, a measurable negative effect on migratory bird populations to develop and implement a memorandum of understanding (MOU) with the U.S. Fish and Wildlife Service (USFWS) to conserve those bird populations. In the instance of unintentional take of migratory birds, NMFS would develop and use principles, standards, and practices that will lessen the amount of unintentional take in cooperation with the USFWS. Additionally, the MOU would ensure that NEPA analyses evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern.

An MOU was signed on August 15, 2012, which will address the incidental take of migratory birds in commercial fisheries under the jurisdiction of NMFS. NMFS must monitor, report, and take steps to reduce the incidental take of seabirds that occurs in fishing operations. The United States has already developed the U.S. National Plan of Action for Reducing Incidental Catch of Seabirds in Longline Fisheries. Under that plan, many potential MOU components are already being implemented. The alternatives considered in this amendment are consistent with the directives of E.O. 13186.

1.12 National Environmental Policy Act

Regulatory Amendment 21 has been written and organized in a manner that meets National Environmental Policy Act (NEPA) requirements, and thus is a consolidated NEPA document, including a draft Environmental Assessment as described in NOAA Administrative Order (NAO) 216-6, Section 6.03.a.2.

Purpose and Need for Action
The purpose and need for this action are described in Section 1.4.

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.

1.14 Paperwork Reduction Act

The purpose of the Paperwork Reduction Act (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 OMB. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. PRA requires NMFS to obtain approval from the OMB before requesting most types of fishery information from the public.

1.15 Regulatory Flexibility Act

The Regulatory Flexibility Act (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 (SBA). Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the Act 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 Act's provisions.

The SBA recently modified the small entity size criteria for all major industry sectors in the U.S., including fish harvesters. A business involved in finfish harvesting is classified as a small business if independently owned and operated, is not dominant in its field of operation (including its affiliates), and its combined annual receipts are not in excess of $19.0 million (NAICS code 114111, finfish fishing) for all of its affiliated operations worldwide. For for-hire vessels, all qualifiers apply except that the annual receipts threshold is $7.0 million (NAICS code 487210, recreational industries). The SBA periodically reviews and changes, as appropriate, these size criteria. On June 20, 2013, the SBA issued a final rule revising the small business size standards for several industries effective July 22, 2013 (78 FR 37398). This rule increased the size standard for commercial finfish harvesters from $4.0 million to $19.0 million. Neither this rule, nor other recent SBA rules, changed the size standard for for-hire vessels. The RFA analysis is included as **Appendix H**.

1.16 Small Business Act

Enacted in 1953, the Small Business Act requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the act 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 fishery management plan (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. Therefore, this amendment proposes neither procedures for making management adjustments due to vessel safety problems nor procedures to monitor, evaluate, or report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

Appendix D. History of Management

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

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.
Notice of Control Date	09/24/90	55 FR 39039	-Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed.
Regulatory Amendment #3 (1989)	11/02/90	PR: 55 FR 28066 FR: 55 FR 40394	-Established artificial reef at Key Biscayne, FL as SMZ. Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ.
Amendment #2 (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

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.
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
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 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.

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 #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 -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 south of Cape Canaveral, FL -spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June -charter/headboats and excursion boat possession limits extended

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 #5 (1992a)	04/06/92	PR: 56 FR 57302 FR: 57 FR 7886	-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	-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	-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	-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 S. Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed
Amendment #6 (1993)	07/27/94	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 bsb pot fishery off S. Atlantic states after 04/23/97 was not assured of future access if limited entry program developed

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 #8 (1997)	12/14/98	PR: 63 FR 1813 FR: 63 FR 38298	-Established program to limit initial eligibility for snapper grouper fishery: Must demonstrate landings of any species in the snapper grouper (SG) FMU in 1993, 1994, 1995 or 1996; and have held valid SG permit between 02/11/96 and 02/11/97 -Granted transferable permit with unlimited landings if vessel landed ≥ 1,000 pounds (lb) of snapper grouper species in any of the years -Granted non-transferable permit with 225 lb trip limit to all other vessels -Modified problems, objectives, optimum yield (OY), and overfishing definitions -Expanded 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.
Regulatory Amendment #7 (1998a)	01/29/99	PR: 63 FR 43656 FR: 63 FR 71793	-Established 10 SMZs at artificial reefs off South Carolina.
Interim Rule Request	1/16/98		-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
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

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 #9 (1998b)	2/24/99	PR: 63 FR 63276 FR: 64 FR 3624	-Red porgy: 14" TL (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April -Black sea bass: 10" TL (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots -Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lb; began fishing year May 1; prohibited coring -Specified size limits for several snapper grouper species (indicated in parentheses in inches TL): including yellowtail snapper (12), mutton snapper (16), red snapper (20); red grouper, yellowfin grouper, yellowmouth grouper, and scamp (20) -Vermilion snapper: 11" TL (recreational), 12" TL commercial -Gag: 24" TL (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April -Black grouper: 24" TL (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April -Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination) -All snapper grouper without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runner -Vessels with longline gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish
Amendment #9 (1998b) resubmitted	10/13/00	PR: 63 FR 63276 FR: 65 FR 55203	-Commercial trip limit for greater amberjack
Emergency Interim Rule	09/08/99, expired 08/28/00	64 FR 48324 and 65 FR 10040	-Prohibited harvest or possession of red porgy
Emergency Action	9/3/99	64 FR 48326	-Reopened the Amendment 8 permit application process
Amendment #10 (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

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 #11 (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}
Regulatory Amendment #8 (2000a)	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 #12 (2000b)	09/22/00	PR: 65 FR 35877 FR: 65 FR 51248	-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 comm. trip limit May-December; modified management options and list of possible framework actions
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 spp. within the *Oculina* Experimental Closed Area
Notice of Control Date	10/14/05	70 FR 60058	-The Council is considering management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding wreckfish)
Amendment #13C (2006)	10/23/06	PR: 71 FR 28841 FR: 71 FR 55096	- End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006. 1. Snowy Grouper Commercial: Quota = 151,000 lb gutted

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.
			weight (gw) in year 1, 118,000 lb gw in year 2, and 84,000 lb gw in year 3 onwards. Trip limit = 275 lb gw in year 1, 175 lb gw in year 2, and 100 lb gw in year 3 onwards Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit. 2. Golden Tilefish Commercial: Quota of 295,000 lb gw, 4,000 lb gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lb gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1. Recreational: Limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit. 3. Vermilion Snapper Commercial: Quota of 1,100,000 lb gw. Recreational: 12" TL size limit. 4. Black Sea Bass Commercial: 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. Require 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. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31. Recreational: Recreational allocation of 633,000 lb gw in year 1, 560,000 lb gw in year 2, and 409,000 lb gw in year 3 onwards. Increase minimum size limit from 10" to 11" in year 1 and to 12" in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31. 5. Red Porgy Commercial and recreational: 1. Retain 14" TL size limit and seasonal closure (retention limited to the bag limit); 2. Specify 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; 3. Increase commercial trip limit from 50 lb ww to 120 red porgy (210 lb gw) during May through December; 4. Increase recreational bag limit from one to three red porgy per person per day.
Notice of Control Date	3/8/07	72 FR 60794	-The Council may consider 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	-Establish 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	- Establish rebuilding plans and status determination criteria for snowy grouper, black sea bass, and red porgy
Amendment #15B (2008b)	2/15/10	PR: 74 FR 30569 FR: 74 FR 58902	-Prohibit the sale of bag-limit caught snapper grouper species -Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish -Adjust commercial renewal periods and transferability

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.
			requirements -Implement plan to monitor and assess bycatch -Establish reference points for golden tilefish -Establish allocations for snowy grouper (95% com & 5% rec) and red porgy (50% com & 50% rec)
Amendment #16 (SAFMC 2009a)	7/29/09	PR: 74 FR 6297 FR: 74 FR 30964	-Specify status determination criteria for gag and vermilion snapper -For gag: Specify interim allocations 51% com & 49% rec; rec & com shallow water grouper spawning closure January through April; directed com quota= 352,940 lb gw; -reduce 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: Specify interim allocations 68% com & 32% rec; directed com quota split Jan-June=315,523 lb gw and 302,523 lb gw July-Dec; reduce bag limit from 10 to 5 and a rec closed season November through March -Require dehooking tools
Amendment #19 (Comprehensive Ecosystem-Based Amendment 1; SAFMC 2009b)	7/22/10	PR: 75 FR 14548 FR: 75 FR 35330	-Provide presentation of spatial information for EFH and EFH-HAPC designations under the Snapper Grouper FMP - Designation of deepwater coral HAPCs
Amendment #17A (SAFMC 2010a)	12/3/10 red snapper closure; circle hooks March 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 north of 28 deg. N latitude in the South Atlantic EEZ -Specify an ACL and an AM for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL -Specify a rebuilding plan for red snapper -Specify status determination criteria for red snapper -Specify a monitoring program for red snapper
Emergency Rule	12/3/10	75 FR 76890	- Delay the effective date of the area closure for snapper grouper species implemented through Amendment 17A
Amendment #17B (SAFMC 2010b)	January 31, 2011	PR: 75 FR 62488 FR: 75 FR 82280	-Specify ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing -Modify management measures as needed to limit harvest to the ACL or ACT -Update the framework procedure for specification of total allowable catch -Prohibited harvest of 6 deepwater species seaward of 240 feet to curb bycatch of speckled hind and warsaw grouper
Notice of Control Date	12/4/08	74 FR 7849	-Establishes a control date for the golden tilefish portion of the snapper grouper fishery in the South Atlantic

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.
Notice of Control Date	12/4/08	74 FR 7849	-Establishes control date for black sea bass pot sector in the South Atlantic
Regulatory Amendment #10 (SAFMC 2010c)	5/31/11	PR: 76 FR 9530 FR: 76 FR 23728	-Eliminate closed area for snapper grouper species approved in Amendment 17A
Regulatory Amendment #9 (SAFMC 2011a)	Bag limit: 6/22/11 Trip limits: 7/15/11	PR: 76 FR 23930 FR: 76 FR 34892	- Establish trip limits for vermilion snapper and gag, increase trip limit for greater amberjack, and reduce bag limit for black sea bass
Regulatory Amendment #11 (2011b)	5/10/12	PR: 76 FR 78879 FR: 77 FR 27374	- Eliminate 240 ft harvest prohibition for six deepwater species
Amendment # 25 (Comprehensive ACL Amendment) (SAFMC 2011c)	4/16/12	PR: 76 FR 74757 Amended PR: 76 FR 82264 FR: 77 FR 15916	-Establish acceptable biological catch (ABC) control rules, establish ABCs, annual catch limits (ACLs), and accountability measures (AMs) for species not undergoing overfishing -Remove some species from South Atlantic FMU and designate others as ecosystem component species -Specify allocations between the commercial and, recreational sectors for species not undergoing overfishing -Limit the total mortality for federally managed species in the South Atlantic to the ACLs
Amendment #24 (SAFMC 2011d)	7/11/12	PR: 77 FR 19169 FR: 77 FR 34254	-Specify MSY, rebuilding plan (including ACLs, AMs, and OY), and allocations for red grouper
Amendment #23 (Comprehensive Ecosystem-based Amendment 2; SAFMC 2011e)	1/30/12	PR: 76 FR 69230 FR: 76 FR 82183	- Designate the Deepwater MPAs as EFH-HAPCs - Limit harvest of snapper grouper species in SC SMZs to the bag limit - Modify sea turtle release gear
Amendment #20B	TBD	TBD	-Update wreckfish ITQ according to reauthorized Magnuson-Stevens Act
Amendment #18A (SAFMC 2012a)	7/1/12	PR: 77 FR 16991 FR: 77FR3 2408	- Limit participation and effort in the black sea bass sector - Modifications to management of the black sea bass pot sector - Improve the accuracy, timing, and quantity of fisheries statistics
Amendment #20A (SAFMC 2012b)	10/26/12	PR: 77 FR 19165 FR: 77 FR 59129	-Redistribute latent shares for the wreckfish ITQ program.

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.
Regulatory Amendment #12 (SAFMC 2012c)	10/9/12	FR: 77 FR 61295	-Adjust the ACL and OY for golden tilefish -Consider specifying a commercial Annual Catch Target (ACT) -Revise recreational AMs for golden tilefish
Amendment #18B (SAFMC 2013a)	5/23/13	PR: 77 FR 75093 FR: 77 FR 23858	-Limit participation and effort in the golden tilefish commercial sector through establishment of a longline endorsement -Modify trip limits -Specify allocations for gear groups (longline and hook and line)
Amendment # 26 (Comprehensive Ecosystem-Based Amendment 3)	TBD	TBD	-Modify bycatch and discard reporting for commercial and for-hire vessels
Regulatory Amendment #13 (SAFMC 2013b)	7/17/13	PR: 78 FR 17336 FR: 78 FR 36113	-Revise the ABCs, ACLs (including sector ACLs), and ACTs implemented by the Comprehensive ACL Amendment (SAFMC 2011c). The revisions may prevent a disjunction between the established ACLs and the landings used to determine if AMs are triggered.
Regulatory Amendment #14	TBD	TBD	-Modify the fishing year for greater amberjack -Modify the fishing year for black sea bass -Revise the AMs for vermilion snapper and black sea bass -Modify the trip limit for gag
Regulatory Amendment #15 (SAFMC 2013c)	9/12/13	PR: 78 FR 31511 FR: 78 FR 49183	-Modify the existing specification of OY and ACL for yellowtail snapper in the South Atlantic -Modify the existing gag commercial ACL and AM for gag that requires a closure of all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) in the South Atlantic when the gag commercial ACL is met or projected to be met
Regulatory Amendment #16	TBD	TBD	-Consider removal of the November-April prohibition on the use of black sea bass pots
Amendment #27	1/27/14	PR: 78 FR 78770 FR: 78 FR 57337	-Establish the South Atlantic Council as the responsible entity for managing Nassau grouper throughout its range including federal waters of the Gulf of Mexico -Modify the crew member limit on dual-permitted snapper grouper vessels -Modify the restriction on retention of bag limit quantities of some snapper grouper species by captain and crew of for-hire vessels -Minimize regulatory delay when adjustments to snapper

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.
			grouper species' ABC, ACLs, and ACTs are needed as a result of new stock assessments -Address harvest of blue runner by commercial fishermen who do not possess a South Atlantic Snapper Grouper Permit
Amendment #28 (SAFMC 2013d)	8/23/13	PR: 78 FR 25047 FR: 78 FR 44461	-Establish regulations to allow harvest of red snapper in the South Atlantic
Regulatory Amendment #18 (SAFMC 2013e)	9/5/13	PR: 78 FR 26740 FR: 78 FR 47574	-Adjust ACLs for vermilion snapper and red porgy, and remove the 4-month recreational closure for vermilion snapper
Regulatory Amendment #19 (SAFMC 2013f)	ACL: 9/23/13 Pot closure: 10/23/13	PR: 78 FR 39700 FR: 78 FR 58249	-Adjust the ACL for black sea bass and implement an annual closure on the use of black sea bass pots from November 1 to April 30
Regulatory Amendment #17	TBD	TBD	-Adjust or establish new MPAs to enhance protection of speckled hind and warsaw grouper
Amendment #22	TBD	TBD	-Establish a recreational tagging program for snapper grouper species with small ACLs

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Appendix E. Bycatch Practicability Analysis

1 Population Effects for the Bycatch Species

1.1 Background

Regulatory Amendment 21 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 21) would modify the definition of minimum stock size threshold (MSST) for select snapper grouper species with low natural mortality rates. The MSST is a biomass threshold to determine if a stock is overfished and a rebuilding plan is needed. This action is intended to prevent identified snapper grouper stocks with low natural mortality rates from frequently alternating between overfished and rebuilt conditions (SSB_{MSY}) due to natural variation in recruitment and other environmental factors.

The current overfished definition for snapper grouper species addressed by this Regulatory Amendment 21 specified MSST as equal to SSB_{MSY}*(1-M or 0.5, whichever is greater). If the value of the natural mortality for a species is very small, then there is very little difference between the biomass threshold for being overfished (MSST) and the biomass threshold for being rebuilt (SSB_{MSY}). The estimate of natural mortality for species addressed by Regulatory Amendment 21 is very small ranging from 0.08 to 0.23. Therefore, even small fluctuations in biomass due to natural variations not related to fishing related mortality may cause a stock with a low natural mortality estimate to be classified as being overfished. When a species is identified as being overfished, the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) requires that a rebuilding plan be implemented to rebuild the stock biomass to levels above the overfished threshold associated with the biomass at the maximum sustainable yield (SSB_{MSY}).

A number of snapper grouper species with low natural mortality rates have a MSST definition that may cause them to be classified as being overfished when the overfished designation may not be appropriate. Redefining MSST for these species would help prevent overfished designations when small decreases in biomass are due to natural variation in recruitment or other environmental variables, and ensure that rebuilding plans are applied to stocks for which they are truly appropriate.

1.2 Finfish Bycatch Mortality

Release mortality rates are unknown for most managed species. Recent Southeast Data, Assessment, and Review (SEDAR) assessments include estimates of release mortality rates based on published studies. Stock assessment reports can be found at http://www.sefsc.noaa.gov/sedar/.

SEDAR 17 (2008) recommended a release mortality rate for vermilion snapper of 41% for the commercial sector and 38% for the recreational sector. The recent stock assessment for yellowtail snapper chose a rate of 10% release mortality as an approximation for the lower bound on release mortality for yellowtail snapper (FWRI 2012). SEDAR 10 (2006) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. SEDAR 24 (2010) used release mortality rates of 48% commercial; 41% for-hire, and 39% private recreational for red snapper. Commercial and recreational release mortality rates were estimated as 20% for black grouper

and red grouper in SEDAR 19 (2010). SEDAR 15 (2008) estimated a 20% release mortality rate for greater amberjack. SEDAR 32, which is under development assumes a 12.5% release mortality rate for gray triggerfish. Snowy grouper are primarily caught in water deeper than 300 feet and golden tilefish are taken at depths greater than 540 feet; therefore, release mortality of the species are probably near 100% (SEDAR 4 2004, SEDAR 25 2011).

Release mortality of black sea bass is considered to be low (7% for the recreational sector and 1% for the commercial sector) (SEDAR 25; 2011) indicating minimum size limits are probably an effective management tool for black sea bass. Collins et al. (1999) reported venting of the swim bladder yielded reductions in release mortality of black sea bass, and the benefits of venting increased with capture depth. The same study was analyzed by Wilde (2009) to suggest that venting increased the survival of black sea bass, although this was an exception to the general findings of Wilde's (2009) study. Commercial sector discard mortality for red porgy is 35%, and 8% for the recreational sector (2012 SEDAR 1 Update). SEDAR 32 (2013), estimates discard mortality for blueline tilefish is 100%, consistent with other deepwater species (i.e., snowy grouper, and golden tilefish); however, if new management is implemented to reduce the discard mortality rate, it might be appropriate for population projections to consider something lower than 100% (SEDAR 32 2013).

According to SEDAR 23 (2011), several data workshop participants observed that goliath grouper in the southeastern US (i.e., South Atlantic and Gulf of Mexico waters) are subject to unknown but significant levels of release mortality, especially adult specimens brought up from depth. Fishing mortality due to release mortality also occurs when goliath grouper are caught as incidental catch (i.e., when other species are targeted) and when fishers target (some repeatedly) goliath grouper for catch-and release fishing. Amendment 20A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (SAFMC 2012b) states that there is very little information on bycatch in the wreckfish portion of the snapper grouper fishery; however, the mortality rate of any released wreckfish is likely to be 100%, because the fish are typically harvested in waters deeper than 300 m (Machias et al. 2003; SAFMC 1991).

1.3 Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality

Expected Impacts on Bycatch for the Regulatory Amendment 21 Action

The preferred alternative and sub-alternative for the action in Regulatory Amendment 21 is not likely to change the current level of bycatch of target or non-target species in the South Atlantic. Modifying the definition of MSST for species with low natural mortality rates is likely to reduce the frequency with which those species are determined to be overfished. Therefore, regulatory discards of the affected species are expected to be reduced in the long-term because the need to implement harvest restrictions in compliance with rebuilding plans triggered by overfished designations may occur less frequently.

An example of the effects this amendment may have on specific stocks is illustrated by the recent overfished designation of blueline tilefish. SEDAR 32 (2013), which assessed blueline tilefish in the South Atlantic, indicates the species is currently overfished when applying the current MSST defined as SSB_{MSY}*(1-M or 0.5, whichever is greater). The National Marine Fisheries Service (NMFS) informed the South Atlantic Fishery Management Council (South Atlantic Council) of the overfished/overfishing

determination in a letter dated December 6, 2013. This notification initiated the development of a rebuilding plan (Amendment 32 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region [Amendment 32]) required by the Magnuson-Stevens Act for overfished species.

The South Atlantic Council's Scientific and Statistical Committee (SSC) has reviewed the blueline tilefish assessment, and though the SSC cannot change the current overfished designation for the species, they did recommend that MSST for blueline tilefish and other species with similarly low natural mortality rates should be redefined as 75%SSB_{MSY}. The SSC made their recommendation based on the premise that the current overfished threshold is slightly below the rebuilt threshold (SSB_{MSY}), which may cause the stock to fluctuate between an overfished and rebuilt condition frequently due to natural environmental conditions. The SSC expressed support for modifying the MSST definition during their October 2013 meeting, and voiced no concern regarding the adoption of this updated management reference point.

During the December 2013 South Atlantic Council meeting, potential impacts of maintaining the status quo definition of MSST were discussed again. South Atlantic Council members agreed that modifying the MSST definition for select species, consistent with the SSC's recommendation, would prevent the previously mentioned fluctuation between overfished and rebuilt conditions while eliminating the need to develop rebuilding plans when they may not be necessary.

This amendment offers two alternatives for a new MSST definition including 75% of SSB_{MSY} (Alternative 2) and 50% of SSB_{MSY} (Alternative 3). If a species is determined to be overfished, and more restrictive harvest limits and management measures are implemented to rebuild the stock, bycatch of the target species may increase as effort may shift to other co-occurring species, while bycatch of non-target species may decrease due to reduced directed fishing effort applied to the overfished stock. The current MSST definition of SSB_{MSY}*(1-M or 0.5, whichever is greater) has the greatest chance of triggering a rebuilding plan, whereas a MSST set at 50% of SSB_{MSY} is least likely to result in an overfished determination. Overall, bycatch of target and non-target species is not expected to significantly increase or decrease under either alternative.

1.4 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 2011c) included actions that removed harvest of octocorals off Florida from the Coral, Coral Reefs, and Live/Hard Bottom Habitat FMP (Coral FMP); set the octocoral annual catch limit (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 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 ocotocoral 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 could reduce bycatch of regulatory discards around SMZs by restricting commercial harvest in the area, but it would probably have very little effect on the magnitude of overall bycatch of snapper grouper species in the South Atlantic.

Other actions have been taken in recently implemented amendments that could reduce bycatch of and bycatch mortality of federally managed species in the South Atlantic. Amendment 13C to the FMP for Snapper Grouper in the South Atlantic Region (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 could still reduce handling time in removing hooks, 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 is expected to reduce bycatch mortality of snapper grouper species. Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) established ACLs and accountability measures (AMs) and addressed overfishing for the following species in the snapper grouper management complex that were listed as undergoing overfishing: golden tilefish, snowy grouper, speckled hind, warsaw grouper, black sea bass, gag, red grouper, black grouper, and vermilion snapper. Golden tilefish, black sea bass, red grouper, black grouper, and vermilion snapper are no longer experiencing overfishing.

The Comprehensive ACL Amendment (SAFMC 2011a) implemented ACLs and AMs for species not undergoing overfishing in the FMPs for snapper grouper, dolphin and wahoo, golden crab, and Sargassum, in addition to other actions such as allocations and establishing annual catch targets for the recreational sector. The Comprehensive ACL Amendment (SAFMC 2011a) also established additional measures to reduce bycatch in the snapper grouper fishery with the establishment of species complexes based on biological, geographic, economic, taxonomic, technical, social, and ecological factors. ACLs were assigned to these species complexes, and when the ACL for the complex is met or projected to be met, fishing for species included in the entire species complex is prohibited for the fishing year. ACLs and AMs likely has reduced bycatch of target species and species complexes as well as incidentally caught species.

Amendment 18A to the Snapper grouper FMP (SAFMC 2012a), included actions that could reduce bycatch of black sea bass and the potential for interactions with protected species. Actions in Amendment 18A limits the number of participants in the black sea bass pot sector, requires fishermen bring pots back to port at the completion of a trip, and limits the number of pots a fishermen can deploy. Amendment 24 to the Snapper grouper FMP (SAFMC 2011b) established a rebuilding plan for red grouper, which was overfished and undergoing overfishing. Red grouper is no longer overfished or undergoing overfishing. Amendment 24 (SAFMC 2011b) also established ACLs and AMs for red grouper, which could help to reduce bycatch of red grouper and co-occurring species.

Other amendments are currently under development, which could reduce bycatch of snapper grouper species. The final rule (78 FR 23858; April 23, 2013) for Amendment 18B to the Snapper grouper FMP (SAFMC 2013a), established an endorsement program for the commercial golden tilefish longline sector, which could have positive effects for habitat and protected species. Regulatory Amendment 14 to the Snapper Grouper FMP (SAFMC 2014) includes actions that could adjust management measures for a number of snapper grouper species, some of which could reduce the magnitude of discards. The final rule (78 FR 49183; September 12, 2013) for Regulatory Amendment 15 to the Snapper Grouper FMP (SAFMC 2013b) included actions for yellowtail snapper and gag that are expected to reduce bycatch of

snapper grouper species. Regulatory Amendment 17 to the Snapper Grouper FMP includes actions that affect marine protected areas, and could reduce bycatch of many snapper grouper species, especially speckled hind and warsaw grouper.

The South Atlantic Council's For-Hire Reporting Amendment has changed the reporting frequency by headboats from monthly to weekly, and requires that reports be submitted electronically. The action is expected to provide more timely information on landings and discards. Improved information on landings would help ensure ACLs are not exceeded. Furthermore, more timely and accurate information would be expected to provide a better understanding of the composition and magnitude of catch and bycatch, enhance the quality of data provided for stock assessments, increase the quality of assessment output, and lead to better decisions regarding additional measures to reduce bycatch. Management measures that affect gear and effort for a target species can influence fishing mortality in other species. Therefore, enhanced catch and bycatch monitoring would provide better data that could be used in multi-species assessments.

The South Atlantic Council will develop a joint amendment with the Gulf of Mexico Fishery Management Council (Gulf of Mexico Council) to require that all federally permitted charter vessels report landings information weekly to the Southeast Fisheries Science Center (SEFSC) electronically. Additionally, the Gulf of Mexico and South Atlantic Councils will also begin development of a joint amendment to require that all federally permitted commercial fishing vessels in the southeast also report their logbook landings information electronically. These future actions will help to improve estimates on the composition and magnitude of catch and bycatch of snapper grouper species affected by Regulatory Amendment 21, as well as all other federally managed species in the southeast region.

Based on the outcome of the new 2013 SEDAR stock assessment for blueline tilefish, and the subsequent determination that the stock is overfished and undergoing overfishing, the South Atlantic Council has requested an emergency rule to remove blueline tilefish from the deepwater complex and modify the commercial and recreational ACLs consistent with the equilibrium yield at 75%F_{MSY}. Additionally, long-term management measures for blueline tilefish and a rebuilding plan are being developed in Amendment 32. These actions may reduce harvest of blueline tilefish and, therefore, may also reduce bycatch of non-target species most often harvested with blueline tilefish.

Additional information on fishery related actions from the past, present, and future considerations can be found in Chapter 6 (Cumulative effects) of Regulatory Amendment 21.

1.5 Ecological Effects Due to Changes in the Bycatch

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. As mentioned in the above section, the South Atlantic For-Hire Reporting Amendment includes an action to enhance landings data reporting in the headboat sector. 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. 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. These improvements in harvest monitoring efforts in the headboat sector, will also be extended to the charter and commercial sectors of all fisheries in the southeast region.

Modifying the definition of MSST for species in the snapper grouper fishery is unlikely to result in significant ecological effects, positive or negative, due to changes in bycatch. Bycatch of target and non-target species is not likely to change unless a snapper grouper species is determined to be overfished under the new MSST definition, which is less likely compared to the status quo. Required reductions in harvest, and subsequent bycatch, of the affected snapper grouper species may not occur as often compared to the status quo because they would be less likely to be designated as overfished when minor shifts in biomass are due to natural environmental fluctuations. Bycatch of target or non-target species would not increase as a result of the action in this amendment.

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

Regulatory Amendment 21 is not expected to result in major changes in bycatch of other fish species. The discard mortality rates of various snapper grouper species are discussed in Section 1.2 of this bycatch practicability analysis. Alternatives 2 and 3 would allow biomass to decrease to 75% and 50% of SSB_{MSY}, respectively, before an overfished determination is made. Therefore, these alternatives would be expected to result in maintaining the status quo level of bycatch of non-target species until an overfished determination is made when harvest limits may need to be reduced under a rebuilding plan. Unless the new MSST is met, changes in bycatch of other fish species associated with harvest of the affected snapper grouper species are not expected to change as a result of the action in this amendment.

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 2014 LOF classifies as a Category II (79 FR 14418, March 14, 2014). Gear types used in these fisheries are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2000. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper grouper in the South Atlantic are classified in the 2014 LOF as Category III fisheries.

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). There are no known interactions between the black sea bass pot sector and large whales. NMFS' biological opinion on

the continued operation of the South Atlantic snapper grouper fishery determined the possible adverse effects resulting from the fishery are extremely unlikely. Thus, the continued operation of the snapper grouper fishery in the southeast U.S. Atlantic exclusive economic zone is not likely to adversely affect sperm, fin, sei, and blue whales (NMFS 2006).

North Atlantic right and humpback whales may overlap both spatially and temporally with the black sea bass pot sector. The 2007 revisions to the Atlantic Large Whale Take Reduction Plan folded the Atlantic mixed species trap/pot fisheries into the plan (72 FR 193; October 5, 2007). The new requirements (78 FR 58249; September 23, 2013) to prohibit the use of black sea bass pots during November through April each year will help further reduce the likelihood of North Atlantic right and humpback whale entanglement in black sea bass pot gear.

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.

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

The preferred alternative for the action in Regulatory Amendment 21 would redefine MSST for assessed snapper grouper species with low natural mortality rates as 75%SSB_{MSY}. This action is not expected to significantly alter fishing practices, processing, disposal, or marketing costs in the short term. In the long term, it is more likely that current fishing, processing, disposal, and marketing costs would be maintained at their status quo levels, since this action may reduce the instances where species are determined to be overfished. When an overfished determination is made, the Magnuson-Stevens Act requires that a rebuilding plan be implemented within two years of the determination. Rebuilding plans are often associated with reduced harvest levels, and more stringent management measures that could affect fishing, processing, disposal, and marketing costs. The action in this amendment may help to avert such effects on those key elements of the snapper grouper fishery.

Changes in Fishing Practices and Behavior of Fishermen

The Action proposed in Regulatory Amendment 21 is not expected to change fishing practices or fishing behavior, and is likely to have little effect on the overall magnitude of discards. Redefining MSST for select species would be more likely than the no action alternative to maintain the status quo in terms of fishing practices and fishing behavior, because a redefined MSST of 75%SSB_{MSY} would make it less likely that implementation of a rebuilding plan, and subsequent harvest reductions, would be required.

1.8 Social effects of the action proposed in Regulatory Amendment 21 are addressed in Chapter 4 of the amendment.

Social effects of the action proposed in Regulatory Amendment 21 are addressed in Chapter 4 of the amendment.

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

The preferred alternative and sub-alternative for the action in Regulatory Amendment 21 is not likely to change the current level of bycatch of target or non-target species in the South Atlantic. Research and monitoring is ongoing to understand the effectiveness of implemented management measures from other snapper grouper amendments 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. In 1999, logbook reporting was initiated for vessels catching king and Spanish mackerel (Gulf of Mexico and South Atlantic Fishery Management Councils). Approximately 20% of commercial fishermen from snapper grouper, dolphin wahoo, and Coastal Migratory Pelagics (CMP) fisheries 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. Recreational discards are obtained from the MRIP and logbooks from the NMFS headboat program. The preferred alternative in Regulatory Amendment 21 would not change any ongoing or require any new research, administrative, or enforcement costs.

Additional data collection activities for the recreational sector of the snapper grouper, dolphin wahoo, and CMP fisheries are being considered by the South Atlantic Council that could allow for a better monitoring of bycatch in the future. The South Atlantic Council is also developing an amendment to improve commercial logbook reporting for these fisheries. Some observer information for the snapper grouper fishery has been provided by the SEFSC, Marine Fisheries Initiative, and Cooperative Research Programs (CRP), but more is desired for the snapper grouper, dolphin wahoo, and CMP fisheries. Currently, for the snapper grouper fishery, headboats are required to carry observers, if selected.

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. (Foundation) 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 Foundation, 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.

Stranding networks have been established in the Southeast Region. The NMFS SEFSC is the base for the Southeast United States Marine Mammal Stranding Program (http://sero.nmfs.noaa.gov/pr/strandings.htm). NMFS authorizes organizations and volunteers under the MMPA to respond to marine mammal strandings throughout the United States. These organizations form the stranding network whose participants are trained to respond to, and collect samples from live and dead marine mammals that strand along southeastern United State beaches. The SEFSC is responsible for: coordinating stranding events; monitoring stranding rates; monitoring human caused mortalities; maintaining a stranding database for the southeast region; and conducting investigations to determine the cause of unusual stranding events including mass strandings and mass mortalities (http://www.sefsc.noaa.gov/species/mammals/strandings.htm).

The Southeast Regional Office and the SEFSC participate in a wide range of training and outreach activities to communicate bycatch related issues. The NMFS Southeast Regional Office issues public announcements, Southeast Fishery Bulletins, or News Releases on different topics, including use of turtle exclusion devices, bycatch reduction devices, use of methods and devices to minimize harm to turtles and sawfish, information intended to reduce harm and interactions with marine mammals, and other methods to reduce bycatch for the convenience of constituents in the southern United States. These are mailed out to various organizations, government entities, commercial interests, and recreational groups. This information is also included in newsletters and publications that are produced by NMFS and the various regional fishery management councils. Announcements and news releases are also available on the internet and broadcasted over NOAA weather radio.

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.

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

The preferred definition of MSST and the associated natural mortality threshold, and any changes in economic, social, or cultural values are discussed in Chapter 4 of Regulatory Amendment 21.

Changes in the Distribution of Benefits and Costs

The distribution of benefits and costs expected from actions in Regulatory Amendment 21 are discussed in Chapter 3. Economic and social effects of the action proposed in Regulatory Amendment 21 are addressed in Chapter 4 of this document.

1.11 Social Effects

The social effects of all the measures are described in Chapter 4 of Regulatory Amendment 21.

1.12 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 CFR section 600.350(d)(3)(i). In summary, the preferred alternative in Regulatory Amendment 21 is not likely to significantly contribute or detract from the current level of bycatch in the snapper grouper fishery. 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 F. Data Analysis to Support Actions and Alternatives

There was no detailed data analysis to be included in Appendix F. All analyses are included in the body of the document.

Appendix G. Regulatory Impact Review (economic analysis of preferred alternatives)

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) It provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; (2) it 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) it 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 12866 (E.O. 12866) and whether the approved regulations will have a significant economic impact on a substantial number of small business entities in compliance with the Regulatory Flexibility Act of 1980 (RFA).

1.1 Problems and Objectives

The purpose and need, issues, problems, and objectives of this action are presented in **Chapter 1** of Regulatory Amendment 21 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 21), and are incorporated herein by reference.

1.2 Methodology and Framework for Analysis

This RIR assesses management measures from the standpoint of determining the resulting changes in costs and benefits to society. To the extent practicable, the net effects of the proposed measures for an existing fishery should be stated in terms of producer and consumer surplus, changes in profits, and employment in the direct and support industries. Where figures are available, they are incorporated into the analysis of the economic impacts of the action and its alternatives.

1.3 Description of the Fishery

A description of the South Atlantic snapper grouper fishery is contained in **Chapter 3** of this amendment and is incorporated herein by reference.

1.4 Effects of the Management Measure

The preferred alternative for the action in Regulatory Amendment 21 would redefine the minimum stock size threshold (MSST) for red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. Modifying the definition of MSST for a stock does not alter the current harvest or use of the resource because it does not change the annual catch limits (ACLs) or accountability measures (AMs). Instead, MSST is a biomass threshold used to determine if a stock is overfished. If overfished, the Magnuson-Stevens Fishery Conservation and Management Act requires a rebuilding plan, which could result in negative short term economic effects due to harvest constraints. If biomass is above the MSST, the stock is not overfished. If a stock was overfished and

biomass is at or above SSB_{MSY}, the stock is considered rebuilt. This action would not implement either a rebuilding plan or regulatory change. Consequently, **Preferred Alternative 2, Preferred Sub-alternative 2c** would not affect current harvest or use of stocks and would have no direct economic impact beyond the status quo. However, the status quo may include unnecessary catch restrictions that reduce short-run net economic benefits and yield lower long-run net economic benefits.

Any indirect impacts would be dependent on future management actions resulting from a determination of whether a stock is overfished. For example, if a stock were determined to be overfished, harvest and/or effort controls would be mandated as part of a rebuilding plan. These harvest and/or effort controls would directly affect those who exploit the resource, as well as other individuals and businesses. Since there would be no direct effects on resource harvest or use because of this amendment, there would be no direct effects on fishery participants, associated industries, or communities. Direct effects only accrue to actions that alter harvest or other use of the resource. Redefining MSST, however, establishes the platform for future management, specifically from the perspective of bounding allowable harvest levels.

1.5 Public and Private 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 associated with this action include, but are not limited to, Council costs of document preparation, meeting, and other costs; and NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to $150,000.

1.6 Determination of Significant Regulatory Action

Pursuant to E.O. 12866, a regulation is considered a "significant regulatory action" if it is expected 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, this regulatory action would not meet the first criterion. Therefore, this regulatory action is determined to not be economically significant for the purposes of E.O. 12866.

Appendix H. Regulatory Flexibility Act Analysis (economic analysis of proposed regulations)

Introduction

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

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

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

The primary purpose and need, issues, problems, and objectives of the proposed action (Regulatory Amendment 21) are presented in Section 1.4 and are incorporated herein by reference.

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

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

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

This proposed rule directly applies to businesses in the finfish fishing industry (NAICS 114111) that harvest species in the snapper grouper fishery in federal waters of the South Atlantic. According to SBA Size Standards, a business in the finfish fishing industry is a small business if its annual receipts are less than $19 million.

Any species in the South Atlantic snapper-grouper fishery harvested by a commercial fishing vessel in federal waters must have a valid South Atlantic commercial snapper-grouper permit, which is a limited access permit for either an unlimited quantity of lb per trip or up to 225 lb per trip. As of March 28, 2014, there were 542 valid unlimited pounds permits and 112 valid 225-lb permits. It is from those figures that

up to 542 small businesses with unlimited permits and up to 112 small businesses with 225-lb permits could be affected by **Preferred Alternative 2c**.

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

The proposed action would not impose additional reporting, record-keeping requirements, or other regulatory requirements on small businesses.

Preferred Alternative 2c would redefine the overfished threshold for eight stocks. There would be no changes to current regulations that manage those stocks.

Significance of economic impacts on a substantial number of small entities

The natural mortality rate of the following eight species is low: red snapper, blueline tilefish, gag, black grouper, yellowtail snapper, vermilion snapper, red porgy, and greater amberjack. When the natural mortality of a stock is low, the current definition of the overfished threshold leaves little difference between that threshold and when the stock is rebuilt. Consequently, small fluctuations in biomass due to natural variations not resulting from fishing related mortality may cause the stock to be unnecessarily classified as overfished. Once identified as overfished, the stock must have a rebuilding plan and harvest and/or effort controls to reduce landings. **Alternative 1 (No Action)** could result in implementation of unnecessary rebuilding plans and harvest restrictions for these eight species that could have an adverse, possibly significant, economic impact on a substantial number of small businesses. **Preferred Alternative 2c** would reduce the likelihood of future adverse, possibly significant, economic impacts on a substantial number of small businesses caused by unnecessary regulatory actions that reduce commercial landings and dockside revenues.

In summary, the revised definition of the overfished threshold for the eight stocks could indirectly result in future, potentially significant, beneficial economic impacts on small businesses in the snapper grouper fishery.

Appendix I. Essential Fish Habitat and Move to Ecosystem Based Management

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

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

Moving to Ecosystem-Based Management

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

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

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

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

Ecosystem Approach to Deepwater Ecosystem Management

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

CE-BA 2 established annual catch limits (ACL) for octocorals in the South Atlantic as well as modifying the Fishery Management Unit (FMU) for octocorals to remove octocorals off the

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

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

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

SECOORA is one of 11 Regional Associations established nationwide through the US Integrated Ocean Observing System (IOOS) whose primary source of funding is via US IOOS through a 5-year cooperative agreement titled Coordinated Monitoring, Prediction, and Assessment to Support Decision-Makers Needs for Coastal and Ocean Data and Tools, but was recently awarded funding via a NOAA Regional Ocean Partnership grant through the Governors' South Atlantic Alliance. SECOORA is the regional solution to integrating coastal and ocean observing data in the Southeast United States to inform decision makers and the general public. The SECOORA region encompasses 4 states, over 42 million people, and spans the coastal ocean

from North Carolina to the west Coast of Florida and is creating customized products to address these thematic areas: Marine Operations; Coastal Hazards; Ecosystems, Water Quality, Living Marine Resources; and Climate Change. The Council is a voting member and Council staff was recently re-elected to serve on the Board of Directors for the Southeast Coastal Regional Ocean Observing Association (SECOORA) to guide and direct priority needs for observation and modeling to support fisheries oceanography and integration into stock assessments through SEDAR. Cooperation through SECOORA is envisioned to facilitate the following:

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

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

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

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

In addition, the Council serves on the National Habitat Board and, as a member of the Southeast Aquatic Resource Partnership (SARP), has highlighted this collaboration by including the Southeast Aquatic Habitat Plan (SAHP) and associated watershed conservation restoration targets into the FEP. Many of the habitat, water quality, and water quantity conservation needs identified in the threats and recommendations Volume of the FEP are directly addressed by on-the-ground projects supported by SARP. This cooperation results in funding fish habitat restoration and conservation intended to increase the viability of fish populations and fishing opportunity, which also meets the needs to conserve and manage

Essential Fish Habitat for Council managed species or habitat important to their prey. To date, SARP has funded 53 projects in the region through this program. This work supports conservation objectives identified in the SAHP to improve, establish, or maintain riparian zones, water quality, watershed connectivity, sediment flows, bottoms and shorelines, and fish passage, and addresses other key factors associated with the loss and degradation of fish habitats. SARP also developed the Southern Instream Flow Network (SIFN) to address the impacts of flow alterations in the Southeastern US aquatic ecosystems which leverages policy, technical experience, and scientific resources among partners based in 15 states. Maintaining appropriate flow into South Atlantic estuarine systems to support healthy inshore habitats essential to Council managed species is a major regional concern and efforts of SARP through SIFN are envisioned to enhance state and local partners ability to maintain appropriate flow rates.

Governor's South Atlantic Alliance (GSAA)

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

collaboration and decision-making. In addition to regional-level stakeholders, state and local coastal managers and decision makers will also be served by this project, which will enable ready access to new and existing data and information. The collection and synthesis of spatial data into a suite of visualization tools is a critical step for long-term collaborative planning in the South Atlantic region for a wide range of coastal uses. The Council's Atlas presents the spatial representations of Essential Fish Habitat, managed areas, regional fish and fish habitat distribution, and fishery operation information and it can be linked to or drawn on as a critical part of the collaboration with the RIMS.

South Atlantic Landscape Conservation Cooperative

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

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

Building Tools to support EBM in the South Atlantic Region

The Council has developed a Habitat and Ecosystem Section of the website http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx and, in cooperation with the Florida Wildlife Research Institute (FWRI), developed a Habitat and Ecosystem Internet Map Server (IMS). The IMS was developed to support Council and regional partners' efforts in the transition to EBM. Other regional partners include NMFS Habitat Conservation, South Atlantic States, local management authorities, other Federal partners, universities, conservation organizations, and recreational and commercial fishermen. As technology and spatial information needs evolved, the distribution and use of GIS demands greater capabilities. The Council has continued its collaboration with FWRI in the now evolution to Web Services provided through the regional SAFMC Habitat and Ecosystem Atlas (http://ocean.floridamarine.org/safmc_atlas/) and the SAFMC Digital Dashboard (http://ocean.floridamarine.org/safmc_dashboard/). The Atlas integrates services for the following:

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

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

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

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

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

Multibeam Bathymetry - displays a variety of multibeam data sources and scanned bathymetry charts.
Nautical Charts – displays coastal, general, and overview nautical charts for the SAFMC's jurisdictional area.

Ecosystem Based Action, Future Challenges and Needs

The Council has implemented ecosystem-based principles through several existing fishery management actions including establishment of deepwater Marine Protected Areas for the Snapper Grouper fishery, proactive harvest control rules on species (e.g., dolphin and wahoo) which are not overfished, implementing extensive gear area closures which in most cases eliminate the impact of fishing gear on Essential Fish Habitat, and use of other spatial management tools including Special Management Zones. Pursuant to development of the Comprehensive Ecosystem-Based Amendment, the Council has taken an ecosystem approach to protect deepwater ecosystems while providing for traditional fisheries for the Golden Crab and Royal Red shrimp in areas where they do not impact deepwater coral habitat. The stakeholder based process taps in on an extensive regional Habitat and Ecosystem network. Support tools facilitate Council deliberations and with the help of regional partners, are being refined to address long-term ecosystem management needs.

One of the greatest challenges to the long-term move to EBM in the region is funding high priority research, including but not limited to, comprehensive benthic mapping and ecosystem model and management tool development. In addition, collecting detailed information on fishing fleet dynamics including defining fishing operation areas by species, species complex, and season, as well as catch relative to habitat is critical for assessment of fishery, community, and habitat impacts and for Council use in place based management measures. Additional resources need to be dedicated to expand regional coordination of modeling, mapping, characterization of species use of habitats, and full funding of regional fishery independent surveys (e.g., MARMAP, SEAMAP, and SEFIS) which are linking directly to addressing high priority management needs. Development of ecosystem information systems to support Council management should build on existing tools (e.g., Regional Habitat and Ecosystem GIS and Arc Services) and provide resources to regional cooperating partners for expansion to address long-term Council needs.

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

which has served as the source document for CE-BAs, could also meet some of the NMFS SAFE requirements if information is provided to the Council to update necessary sections.

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

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

1. Energy exploration, development, transportation, and hydropower re-licensing;
2. Beach dredging and filling and large-scale coastal engineering;
3. Protection and enhancement of submerged aquatic vegetation;
4. Alterations to riverine, estuarine, and nearshore flows;
5. Marine aquaculture;
6. Marine Ecosystems and Non-Native and Invasive Species: and
7. Estuarine Ecosystems and Non-Native and Invasive Species.

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

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

South Atlantic Bight Ecopath Model

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

underway in the South Atlantic, only with significant investment of new resources through other programs will a comprehensive regional model be further developed.

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

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

Snapper Grouper FMP
Essential fish habitat for snapper grouper species includes coral reefs, live/hard bottom, submerged aquatic vegetation, artificial reefs, and medium to high profile outcroppings on and around the shelf break zone from shore to at least 600 feet (but to at least 2,000 feet for wreckfish) where the annual water temperature range is sufficiently warm to maintain adult populations of members of this largely tropical complex. EFH includes the spawning area in the water column above the adult habitat and the additional pelagic environment, including *Sargassum*, required for larval survival and growth up to and including settlement. In addition the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse snapper grouper larvae.

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

Areas which meet the criteria for EFH-HAPCs for species in the snapper-grouper management unit include medium to high profile offshore hard bottoms where spawning normally occurs; localities of known or likely periodic spawning aggregations; nearshore hard bottom areas; The Point, The Ten Fathom Ledge, and Big Rock (North Carolina); The Charleston Bump (South Carolina); mangrove habitat; seagrass habitat; oyster/shell habitat; all coastal inlets; all state-designated nursery habitats of particular importance to snapper grouper (e.g., Primary and Secondary Nursery Areas designated in North Carolina); pelagic and benthic *Sargassum*; Hoyt Hills for wreckfish; the *Oculina* Bank Habitat Area of Particular Concern; all hermatypic coral habitats and reefs; manganese outcroppings on the Blake Plateau; and Council-designated Artificial Reef Special Management Zones (SMZs). In addition, the Council through CEBA 2

(SAFMC 2011) designated the deepwater snapper grouper MPAs and golden tilefish and blueline tilefish habitat as EFH-HAPCs under the Snapper Grouper FMP as follows:

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

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

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

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

Shrimp FMP

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

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

Essential fish habitat for royal red shrimp include the upper regions of the continental slope from 180 meters (590 feet) to about 730 meters (2,395 feet), with concentrations found at depths of between 250 meters (820 feet) and 475 meters (1,558 feet) over blue/black mud, sand, muddy

sand, or white calcareous mud. In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse royal red shrimp larvae.

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

Coastal Migratory Pelagics FMP

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

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

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

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

Golden Crab FMP

Essential fish habitat for golden crab includes the U.S. Continental Shelf from Chesapeake Bay south through the Florida Straits (and into the Gulf of Mexico). In addition, the Gulf Stream is an essential fish habitat because it provides a mechanism to disperse golden crab larvae. The detailed description of seven essential fish habitat types (a flat foraminferan ooze habitat; distinct mounds, primarily of dead coral; ripple habitat; dunes; black pebble habitat; low outcrop; and soft-bioturbated habitat) for golden crab is provided in Wenner et al. (1987). There is insufficient

knowledge of the biology of golden crabs to identify spawning and nursery areas and to identify HAPCs at this time. As information becomes available, the Council will evaluate such data and identify HAPCs as appropriate through the framework.

Spiny Lobster FMP

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

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

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

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

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

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

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

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

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

Rocks; Biscayne Bay, Florida; Biscayne National Park, Florida; and the Florida Keys National Marine Sanctuary. In addition, the Council through CEBA 2 (SAFMC 2011) designated the Deepwater Coral HAPCs as EFH-HAPCs under the Coral FMP as follows:

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

Dolphin and Wahoo FMP

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

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

Pelagic *Sargassum* Habitat FMP

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

Actions Implemented That Protect EFH and EFH-HAPCs

Snapper Grouper FMP

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

Established deepwater Marine Protected Areas (MPAs) as designated in Snapper Grouper Amendment 14: Snowy Grouper Wreck MPA, Northern South Carolina MPA, Edisto MPA, Charleston Deep Artificial Reef MPA, Georgia MPA, North Florida MPA, St. Lucie Hump MPA, and East Hump MPA.

Shrimp FMP

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

Pelagic *Sargassum* Habitat FMP

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

Coastal Migratory Pelagics FMP

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

Golden Crab FMP

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

Northern zone - north of the 28°N. latitude to the North Carolina/Virginia border;
Middle zone - 28°N. latitude to 25° N. latitude; and
Southern zone - south of 25°N. latitude to the border between the South Atlantic and Gulf of Mexico Fishery Management Councils.

Coral, Coral Reefs and Live/Hard Bottom FMP

- Established an optimum yield of zero and prohibiting all harvest or possession of these resources which serve as essential fish habitat to many managed species.
- Designated the *Oculina* Bank Habitat Area of Particular Concern.
- Expanded the *Oculina* Bank Habitat Area of Particular Concern (HAPC) to an area bounded to the west by 80°W. longitude, to the north by 28°30' N. latitude, to the south by 27°30' N. latitude, and to the east by the 100 fathom (600 feet) depth contour.
- Established the following two Satellite *Oculina* HAPCs: (1) Satellite *Oculina* HAPC #1 is bounded on the north by 28°30’N. latitude, on the south by 28°29’N. latitude, on the east by 80°W. longitude, and on the west by 80°3’W. longitude; and (2) Satellite *Oculina* HAPC #2 is bounded on the north by 28°17’N. latitude, on the south by 28°16’N. latitude, on the east by 80°W. longitude, and on the west by 80°3’W. longitude.

- Prohibited the use of all bottom tending fishing gear and fishing vessels from anchoring or using grapples in the *Oculina* Bank HAPC.
- Established a framework procedure to modify or establish Coral HAPCs.
- Established the following five deepwater CHAPCs:

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

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

South Atlantic Council Policies for Protection and Restoration of Essential Fish Habitat
SAFMC Habitat and Environmental Protection Policy

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

SAFMC EFH Policy Statements

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

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