Regulatory Amendment 16

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

Changes to the Seasonal Closure for the Black Sea Bass Pot Sector

Including an Environmental Impact Statement

Draft Version
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Abbreviations and Acronyms Used in the FMP

ABC	acceptable biological catch
ACL	annual catch limits
AM	accountability measures
ACT	annual catch target
B	a measure of stock biomass in either weight or other appropriate unit
B_{MSY}	the stock biomass expected to exist under equilibrium conditions when fishing at F_{MSY}
B_{OY}	the stock biomass expected to exist under equilibrium conditions when fishing at F_{OY}
B_{CURR}	The current stock biomass
CPUE	catch per unit effort
DEIS	draft environmental impact statement
EA	environmental assessment
EEZ	exclusive economic zone
EFH	essential fish habitat
F	a measure of the instantaneous rate of fishing mortality
$F_{30\%SPR}$	fishing mortality that will produce a static SPR = 30%
F_{CURR}	the current instantaneous rate of fishing mortality
F_{MSY}	the rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of B_{MSY}
F_{OY}	the rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of B_{OY}
FEIS	final environmental impact statement
FMP	fishery management plan
FMU	fishery management unit
M	natural mortality rate
MARMAP	Marine Resources Monitoring Assessment and Prediction Program
MFMT	maximum fishing mortality threshold
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistics Survey
MRIP	Marine Recreational Information Program
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSST	minimum stock size threshold
MSY	maximum sustainable yield
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OFL	overfishing limit
OY	optimum yield
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 16 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with an Environmental Impact Statement

Proposed action:	Reconsider the annual November 1 through April 30 prohibition on the use of black sea bass pot gear
Lead agency:	FMP Amendment – South Atlantic Fishery Management Council Environmental Impact Statement – National Marine Fisheries Service (NMFS), Southeast Regional Office
For Further Information Contact:	Robert K. Mahood South Atlantic Fishery Management Council 4055 Faber Place, Suite 201 North Charleston, SC 29405 843-571-4366 866-SAFMC-10 Robert.Mahood@safmc.net Phil Steele NMFS, Southeast Region 263 13th Avenue South St. Petersburg, FL 33701 727-824-5301 Phil.Steele@noaa.gov

Abstract

To Be Completed

Summary

To Be Completed

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Chapter 1.
Introduction

1.1 What Actions Are Being Proposed?

Fishery managers are reconsidering the annual prohibition on the use of commercial black sea bass pot gear from November 1 through April 30.

1.2 Who is Proposing the Actions?

The South Atlantic Fishery Management Council (Council) is proposing the action. The 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.

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 Director 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

1.3 Why is the Council Considering Action?/Purpose & Need

In 2013, a stock assessment concluded that the black sea bass stock in the South Atlantic is not undergoing overfishing, is not overfished, and is rebuilt. In response to the stock assessment, the Council's Scientific and Statistical Committee (SSC), at their April 2013 meeting, recommended an increase to the acceptable biological catch (ABC) for black sea bass. The increase in the ABC allowed the commercial and recreational annual catch limits (ACL) to increase. The Council and NMFS, through Regulatory Amendment 19 to the Fishery Management Plan (FMP) for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) (SAFMC 2013), modified the ABC, ACLs, recreational annual catch target (ACT), and optimum yield (OY) for the black sea bass stock.

The increase to the commercial ACL could have extended fishing activity with black sea bass pot gear past November 1, the onset of right whale calving season in the South Atlantic and migration of large Endangered Species Act (ESA)-listed whales. Because black sea bass pot gear could potentially be used past November 1, the Council and NMFS implemented a prohibition on the use of black sea bass pot gear from November 1 through April 30 each year, beginning in 2013 to protect large whales from risk of entanglement.

Without the prohibition on the use of black sea bass pots during the large whale migration and right whale calving season, a re-initiation of formal consultation for the snapper grouper fishery probably would have been triggered under the ESA. The consultation would have required development of a biological opinion to perform the additional analyses to evaluate the effects of black sea bass pot gear on ESA listed species. Those analyses would not have been completed in time to allow the ACL increases to be implemented for the 2013-2014 fishing season, which began on June 1. The black sea bass pot prohibition was a precautionary step taken by the Council and NMFS to allow the black sea bass ACL to increase in the 2013-2014 fishing year, while preventing entanglements with ESA-listed whales until a comprehensive biological impact analysis could be completed.

Purpose for Action

The purpose of Regulatory Amendment 16 is to reconsider the annual November 1 through April 30 prohibition on the use of black sea bass pot gear.

Need for Action

The need for the amendment is to increase socio-economic benefits to black sea bass pot endorsement holders while maintaining protection for ESA-listed whales in the South Atlantic region.

Through Regulatory Amendment 16, the Council and NMFS are reconsidering the annual November 1 through April 30 prohibition on the use of black sea bass pot gear. Fishery managers are considering adjustments to both the geographical and temporal boundaries of the closure in order to improve socio-economic benefits to black sea bass pot endorsement holders while maintaining protection for ESA-listed whales in the South Atlantic region. During the scoping process for Regulatory Amendment 16, fishermen reported that fishing for black sea bass during winter months is important to them and claim that the fish migrate southward and are generally found closer to shore making them easier to harvest. Fishermen have also reported this time period is important

due to the coloration of the fish. Fish tend to be a lot darker during winter months, which commands a higher price on the market.

1.4 Where is the Management Area?

Management of the federal snapper grouper fishery located off the southeastern United States (South Atlantic) in the 3-200 nautical miles U.S. Exclusive Economic Zone is conducted under the Snapper Grouper FMP (SAFMC 1983). The northern limit of the management of black sea bass by the Council is 35°15.9′ N. lat., the latitude of Cape Hatteras Light, North Carolina (**Figure 1.4.1**). Black sea bass is one of 59 fish managed by the Council under the Snapper Grouper FMP.

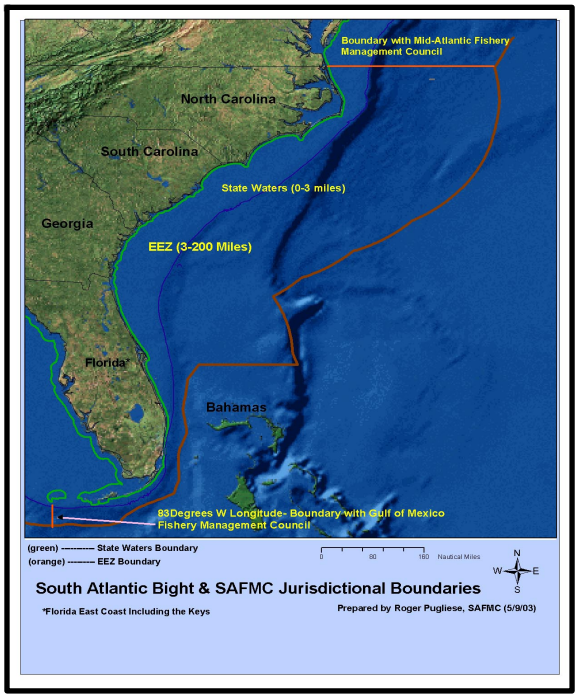

Figure 1.4.1. Jurisdictional boundaries of the South Atlantic Fishery Management Council. (UPDATE MAP TO SHOW BSB JURISDICTION)

1.5 What is the Stock Status of Black Sea Bass in the South Atlantic Region?

The black sea bass stock is not undergoing overfishing, is not overfished, and is rebuilt (**Table 1.5.1**) (SEDAR 25 Update 2013). **Section 3.2.2** includes a detailed description of the stock assessment and results. The stock assessment update was conducted in early 2013, with data through 2012, through the Southeast Data, Assessment, and Review (SEDAR) process. Most of the data sources in this assessment were updated with the two additional years of observations available since the benchmark assessment SEDAR 25 (2011). The Council's SSC met to review the stock assessment in April 2013 and determined it was adequate and suitable to inform management decisions. The actions and alternatives in Regulatory Amendment 19 (SAFMC 2013) to increase the ACL were based on the results of this recent stock assessment update for black sea bass and the SSC's recommendation

Table 1.5.1. Stock status of black sea bass based on the SEDAR 25 Update 2013 assessment.

Status	SEDAR 25 Update 2013 (2012 most recent data)
Overfishing (F_{CURR}/MFMT value)	No (0.659)
Overfished (SSB_{CURR}/MSST value)	No (1.66)
Rebuilt (SSB_{CURR}/SSB_{MSY} value)	Yes (1.03)
• If F_{CURR}>MFMT, then undergoing overfishing. The higher the number, the greater degree of overfishing. • If SSB_{CURR}<MSST, then overfished. The lower the number, the greater degree of overfished. • If $SSB_{CURR}>SSB_{MSY}$, then the stock is rebuilt.	

1.6 What Regulations Have the Council and NMFS Implemented Concerning Black Sea Bass in the South Atlantic Region?

Amendment 13C to the Snapper Grouper FMP (SAFMC 2006) phased-in quota/total allowable catch reductions over 3 years to end overfishing, changed the fishing year from the calendar year to June 1 through May 31, required use of at least 2 inch (") mesh for the entire back panel of pots, required that pots be removed from the water when the commercial quota is met, increased the recreational minimum size limit from 10" total length (TL) to 11" TL in year 1 and 12" TL in year 2 onwards, and reduced the recreational bag limit from 20 to 15 per person per day.

Amendment 15A to the Snapper Grouper FMP (SAFMC 2008a) updated black sea bass management reference points and modified the rebuilding strategy. Amendment 15A to the Snapper Grouper FMP (SAFMC 2008a) established formulas for defining the maximum sustainable yield (MSY) for black sea bass. MSY equals the yield produced by F_{MSY} when the stock is at equilibrium. MSY and F_{MSY} are defined by the most recent SEDAR assessment.

Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) established ACLs and AMs for black sea bass and other snapper grouper species that were undergoing overfishing at the time.

Regulatory Amendment 9 to the Snapper Grouper FMP (SAFMC 2011a) reduced the recreational bag limit from 15 to 5 per person per day.

The Comprehensive ACL Amendment (SAFMC 2011c) includes ACLs and AMs for federally managed species not undergoing overfishing in four FMPs (Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum*). The Comprehensive ACL Amendment also established an ABC control rule.

Amendment 18A to the Snapper Grouper FMP (SAFMC 2012a) changed the definition of OY from the average yield associated with fishing at 75% of F_{MSY} when the stock is at equilibrium to a formula setting ACL = ABC = OY. Magnuson-Stevens Act national standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock complex, or fishery. Under this formula, the ACL/OY would be based on the ABC for black sea bass from the most recent SEDAR assessment, which takes into consideration scientific uncertainty to ensure catches are maintained below the MSY/overfishing limit (OFL). Amendment 18A (SAFMC 2012a) also modified the rebuilding strategy, ABC, ACLs, and ACTs; limited participation in the black sea bass pot sector (32 endorsements/vessels); limited pots to 35 per vessel; required that pots be brought back to shore after each trip; modified AMs; established a 1,000 pounds gutted weight (lbs gw) commercial trip limit; increased the recreational minimum size limit from 12" to 13" TL; and increased the commercial minimum size limit from 10" to 11" TL.

Regulatory Amendment 19 (SAFMC 2013) made adjustments to the ACLs (including sector ACLs), recreational ACT, and optimum yield for black sea bass based on the ABC recommendation of the SSC and established an annual prohibition on the use of black sea bass pots from November 1 through April 30 to minimize the probability of interactions between pot gear and ESA-listed whales during large whale migrations and right whale calving season off the southeastern coast. A Southeast Data, Assessment, and Review (SEDAR) stock assessment update for black sea bass was completed in 2013, and suggested the ACL for this species could be increased based upon the new ABC levels recommended by the SSC. The

stock assessment update indicated black sea bass is no longer undergoing overfishing, is not overfished, and the stock is rebuilt. Based on the outcome of the stock assessment update for black sea bass, the SSC applied the approved ABC control rule to black sea bass, revised P* to be 40%, and recommended new ABC values for 2013-2015.

For a detailed history of management of the snapper grouper fishery, please refer to **Appendix B**.

1.6.1. Atlantic Large Whale Take Reduction Plan

In addition to the Council regulations, the commercial black sea bass trap/pot fishery must adhere to regulations implemented under the Atlantic Large Whale Take Reduction Plan (ALWTRP). The ALWTRP seeks to reduce serious injury to and/or mortality of large whales due to incidental entanglement in U.S. commercial fishing gear. Since its implementation in 1997, NMFS has modified the ALWTRP on several occasions to address the risk of entanglement in gear employed by gillnet and trap/pot fisheries. Although the plan focuses on right, humpback, and fin whales, its implementation also benefits minke whales. The ALWTRP consists of restrictions on where and how gear can be set; research into whale populations, whale behavior, and fishing gear; outreach to inform fishermen of the entanglement problem and to seek their help in understanding and solving the problem; and a program to disentangle whales that do get caught in gear.

ALWTRP trap/pot gear measures that apply to the southern commercial black sea bass trap/pot fishery are listed in **Table 1.6.1** and the times and areas where the restrictions apply in the South Atlantic are illustrated in **Figure 1.6.1**. These measures would remain in place regardless of any actions implemented through Regulatory Amendment 16.

Table 1.6.1. ALWTRP measures that are applicable to the commercial black sea bass trap/pot fishery.

Area	Requirements
Offshore Trap/Pot Waters	**Year-round**: • No buoy line floating at the surface. • No wet storage of gear (gear must be hauled ≤ 30 days). • Gear marking (color = black; 4in in length) • Weak links* ≤ 1,500 lbs on floats and/or weights • All ground lines must be made of sinking line.
Southern Nearshore Trap/Pot Waters	**Year-round**: • No buoy line floating at the surface. • No wet storage of gear (gear must be hauled ≤ 30 days). • Gear marking (color = orange; 4in in length) • Weak links* ≤ 600 lbs on floats and/or weights • All ground lines must be made of sinking line.
* Weak links must be chosen from the list of NMFS approved gear. Source: 50 CFR part 229.32, available online at http://www.nero.noaa.gov/whaletrp/.	

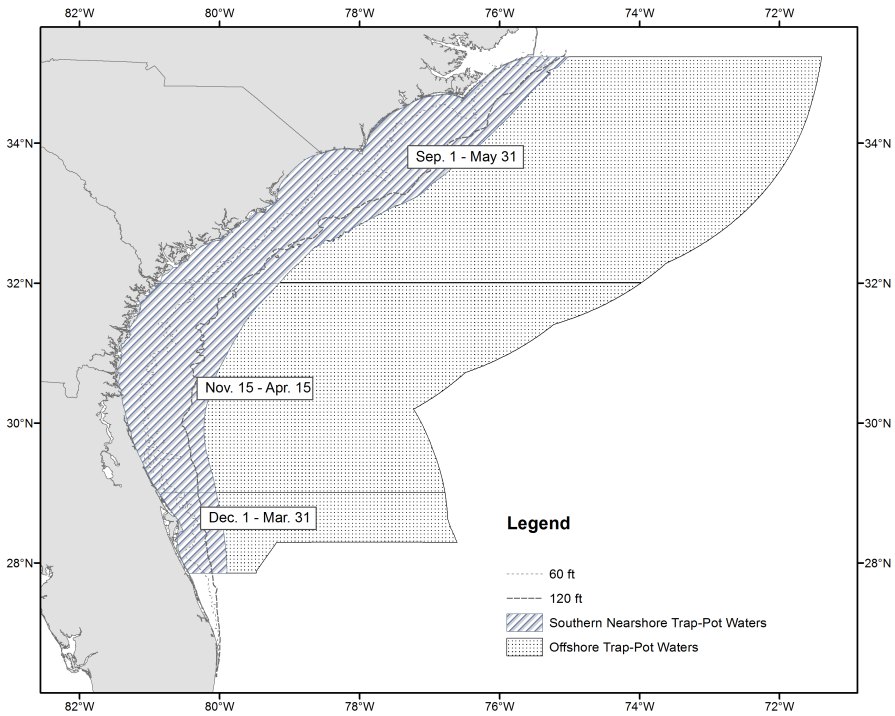

Figure 1.6.1. Times and areas where ALWTRP measures are in effect for the southern commercial black sea bass trap/pot fishery (only the SAFMC's BSB management area depicted).

Chapter 2. Proposed Action and Alternatives

Action 1. Modify the annual November 1 through April 30 prohibition on the use of black sea bass pot gear

2.1 Alternatives

Alternative 1 (No Action). Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

The following provisions currently exist that may reduce entanglements of whales listed under the Endangered Species Act. The South Atlantic Fishery Management Council does not intend to change these provisions through this amendment.

Amendment 18A to the Snapper Grouper Fishery Management Plan of the South Atlantic Region (SAFMC 2012a):

- Established an endorsement program that capped the number of vessels utilizing pot gear at 32;
- Limited the number of pots per vessel to 35;
- Required that pots be brought back to shore after each trip;
- Established a commercial trip limit of 1,000 lbs gw;

See **Table 1.6.1** for measures mandated through the Atlantic Large Whale Take Reduction Plan.

Alternative 2. Remove the annual November 1 through April 30 prohibition on the retention, possession, and fishing for black sea bass using black sea bass pot gear.

Alternative 3. The black sea bass pot closure applies to the area currently designated as North Atlantic right whale critical habitat **(Figure 2.1.1)**. North Atlantic right whale critical habitat encompasses waters between 31° 15'N, (approximately the mouth of the Altamaha River, Georgia) and 30° 15'N (approximately Jacksonville, Florida) from the shoreline out to 15 nautical miles offshore; and the waters between 30° 15'N and 28 °00'N, (approximately Sebastian Inlet, Florida) from the shoreline out to 5 nautical miles. The closure applies to the area annually from November 15 through April 15.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area represents North Atlantic right whale critical habitat in the South Atlantic region designated on June 3, 1994. The map below provides location of the critical habitat boundary. The critical habitat designation did not provide waypoints for the boundary. The boundary would not automatically change if the boundary for the right whale critical habitat were to change.

The following is language describing the North Atlantic right whale critical habitat area from 50 CFR 226:

> *Southeastern United States: The area designated as critical habitat in these waters encompasses waters between 31 deg.15'N (approximately located at the mouth of the Altamaha River, GA) and 30 deg.15'N (approximately Jacksonville, FL) from the shoreline out to 15 nautical miles offshore; and the waters between 30 deg.15'N and 28 deg.00'N (approximately Sebastian Inlet, FL) from the shoreline out to 5 nautical miles.*

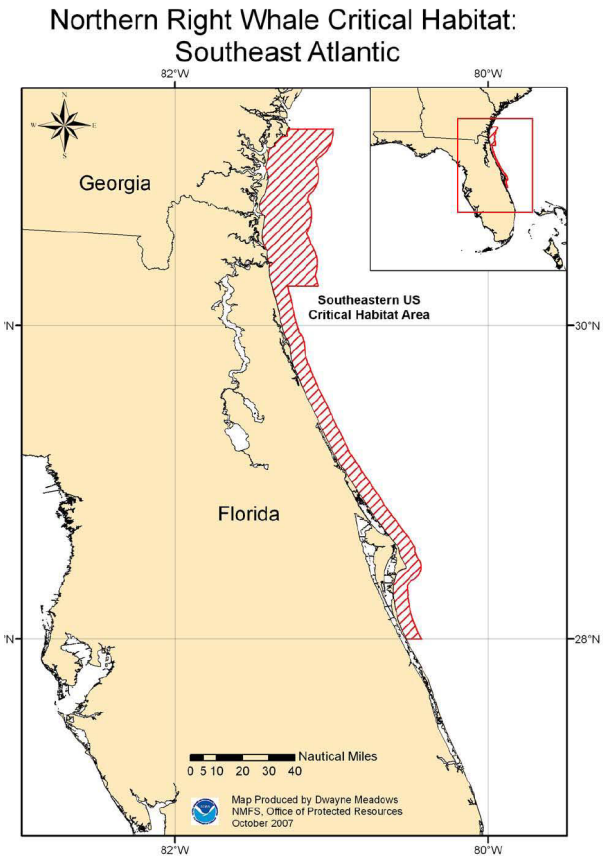

Figure 2.1.1. Area for the proposed black sea bass pot closure in Alternative 3.

Alternative 4. The black sea bass pot closure applies to waters inshore of points 1-15 listed below **(Table 2.1.1)**; approximately Ponce Inlet, Florida, to Cape Hatteras, North Carolina **(Figure 2.1.2)**. The closure applies to the area annually from November 1 through April 30.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area likely represents North Atlantic right whale calving habitat. The area identified from Cape Fear, North Carolina, southward to 29°N (approximately Ponce Inlet, Florida) is based on model outputs (i.e., Garrison 2007, Keller et al. 2012, Good 2008). The area from Cape Fear, North Carolina, to Cape Hatteras, North Carolina, is an extrapolation of those model outputs and based on sea surface temperatures and bathymetry.

Table 2.1.1. Eastern boundary coordinates for the proposed black sea bass pot closure in Alternative 4.

Point	N Latitude	W Longitude
1	35°15.19′ N	Shoreline
2	35°15.19'	75°12'
3	34°51'	75°45'
4	34°21'	76°18'
5	34°21' N	76°45'
6	34°12'	77°21'
7	33°37'	77°47
8	33°28'	78°33
9	32°59'	78°50'
10	32°17'	79°53'
11	31°31'	80°33'
12	30°43'	80°49'
13	30°30'	81°01'
14	29°45'	81°01'
15	29°00'	Shoreline

Note that federal regulations would only include the waters of the South Atlantic EEZ. The states will be asked to comply by implementing complementary regulations in state waters.

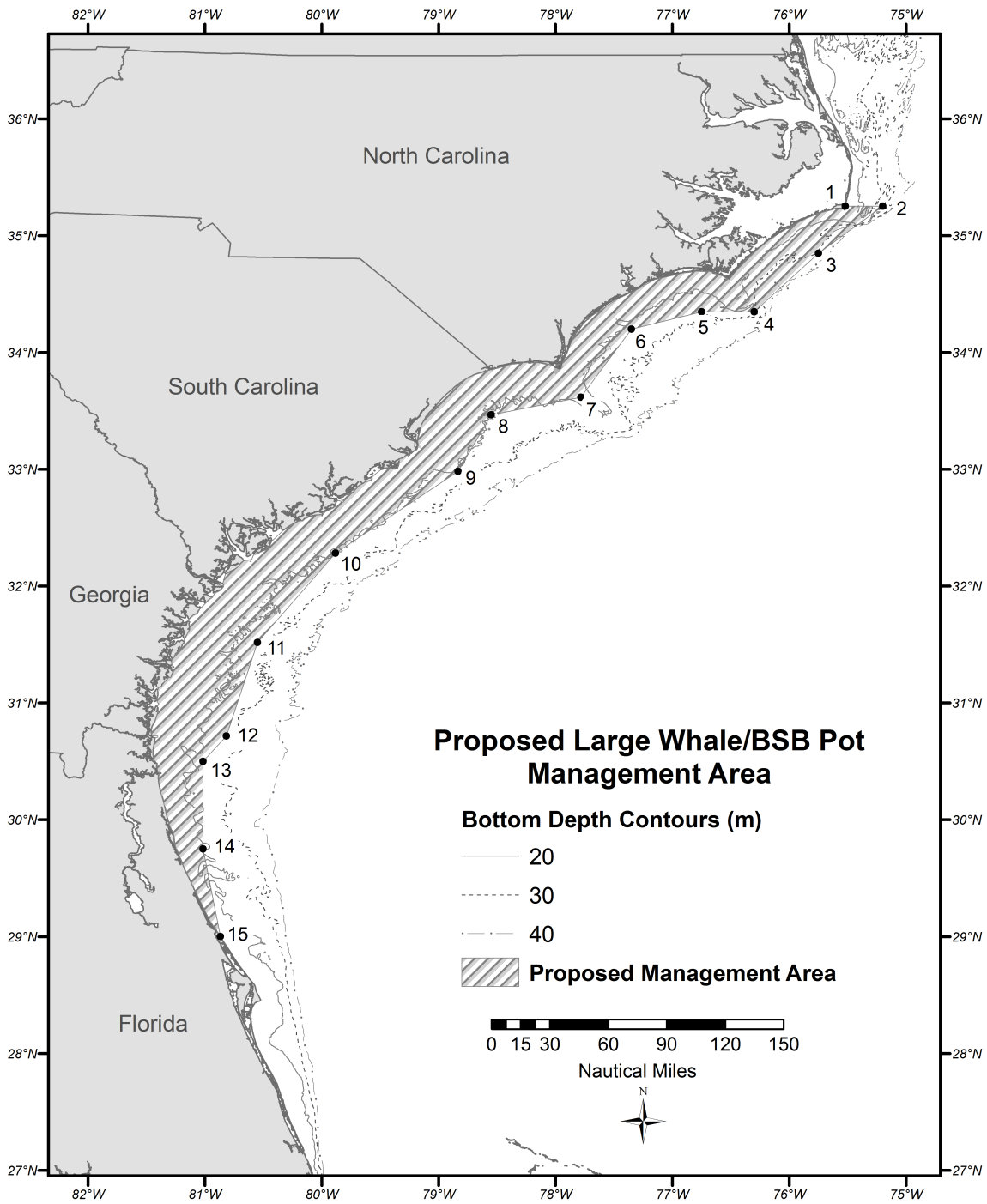

Figure 2.1.2. Area for the proposed black sea bass pot closure in Alternative 4.

Alternative 5. The black sea bass pot closure applies to waters inshore of points 1-28 listed below **(Table 2.1.2)**, approximately Cape Canaveral, Florida, to Cape Hatteras, North Carolina **(Figure 2.1.3)**. The closure applies to the area annually from November 1 through April 30.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area generally represents waters 25 m or shallower from 28° 21.5" N (approximately Cape Canaveral, Florida) to Savannah, Georgia; from the Georgia/South Carolina border to Cape Hatteras, North Carolina, the closure applies to waters under Council management that are 30 m or shallower. This bathymetric area is based on right whale sightings (all demographic segments) and sightings per unit of effort (proxy of density) by depth and captures 97% and 96% of right whale sightings off the North Carolina/South Carolina area, and Florida/Georgia area, respectively. The map below provides an approximate location of the proposed boundary.

Table 2.1.2. Eastern boundary coordinates for the proposed black sea bass pot closure in Alternative 5.

Point	N Latitude	W Longitude
1	35° 14'	Shoreline
2	35° 14'	75° 08'
3	34° 58'	75° 41'
4	34° 49'	75° 50'
5	34° 47'	76° 05'
6	34° 31'	76° 18'
7	34° 20'	76° 13'
8	34° 12'	77° 00'
9	33° 43'	77° 30'
10	33° 21'	77° 21'
11	33° 18'	77° 41'
12	33° 22'	77° 56'
13	33° 12'	78° 20'
14	33° 05'	78° 22'
15	33° 01'	78° 38'
16	32° 40'	79° 01'
17	32° 36'	79° 18'
18	32° 19'	79° 22'
19	32° 16'	79° 37'
20	32° 03'	79° 48'
21	31° 39'	80° 27'
22	30° 58'	80° 47'
23	30° 13'	81° 01'
24	29° 32'	80° 39'
25	29° 22'	80° 44'

26	28° 50’	80° 22’
27	28° 21’	80° 18’
28	28° 21’	Shoreline

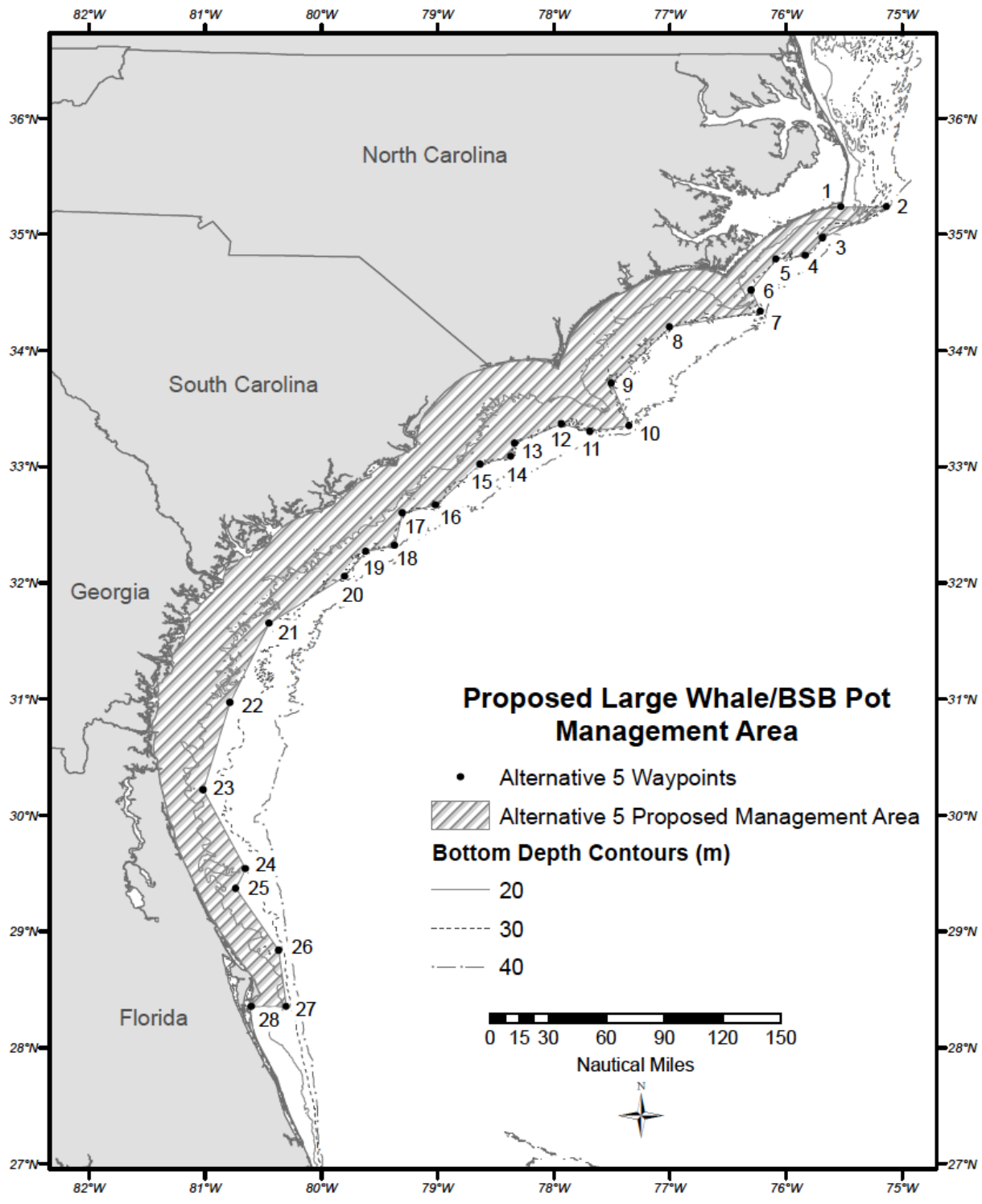

Figure 2.1.3. Area for the proposed black sea bass pot closure in Alternative 5.

Alternative 6. The black sea bass pot closure applies to waters inshore of points 1-28 listed below **(Table 2.1.3)**; approximately Cape Canaveral, Florida, to Cape Hatteras, North Carolina **(Figure 2.1.4)**. The closure applies to the area annually from November 1 through April 30.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area is based on joint comments received from non-government organizations (dated January 3, 2014) in response to NMFS' December 4, 2013, *Federal Register* Notice of Intent to Prepare this Draft Environmental Impact Statement (DEIS) (78 FR 72868). The non-government organizations proposed the area as a reasonable alternative for consideration. The area, also included in a Center for Biological Diversity et al. petition in 2009 for right whale critical habitat, is off the coasts of Georgia and Florida and based on calving right whale habitat modeling work of Garrison (2007) and Keller et al. (2012). This area represents the 75th percentile of sightings (91% of historical sightings included in their study) off Florida and Georgia (Garrison 2007 and Keller et al. 2012). Off the coasts of North Carolina and South Carolina, the closure extends from the coastline to 30 nautical miles offshore. The map below provides approximate location of proposed boundary.

Table 2.1.3. Eastern Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 6.

Point	N Latitude	W Longitude
1	29º 13'	Shoreline
2	29º 13'	80º 52'
3	29º 31'	80º 58'
4	29º 45'	81º 01'
5	30º 30'	81º 01'
6	30º 43'	80º 49'
7	31º 31'	80º 33'
8	31º 42'	80º 24'
9	32º 39'	78º 56'
10	32º 55'	78º 39'
11	33º 14'	78º 33'
12	33º 24'	78º 17'
13	33º 19'	78º 02'
14	33º 21'	77º 45'
15	33º 28'	77º 32'
16	33º 41'	77º 23'
17	33º 58'	77º 16'

18	34º 10'	76º 55'
19	34º 05'	76º 41'
20	34º 04'	76º 26'
21	34º 12'	76º 07'
22	34º 26'	75º 57'
23	34º 43'	75º 33'
24	34º 45'	75º 18'
25	34º 51'	75º 06'
26	35º 03'	74º 57'
27	35º 14'	74º 54'
28	35º 14'	Shoreline

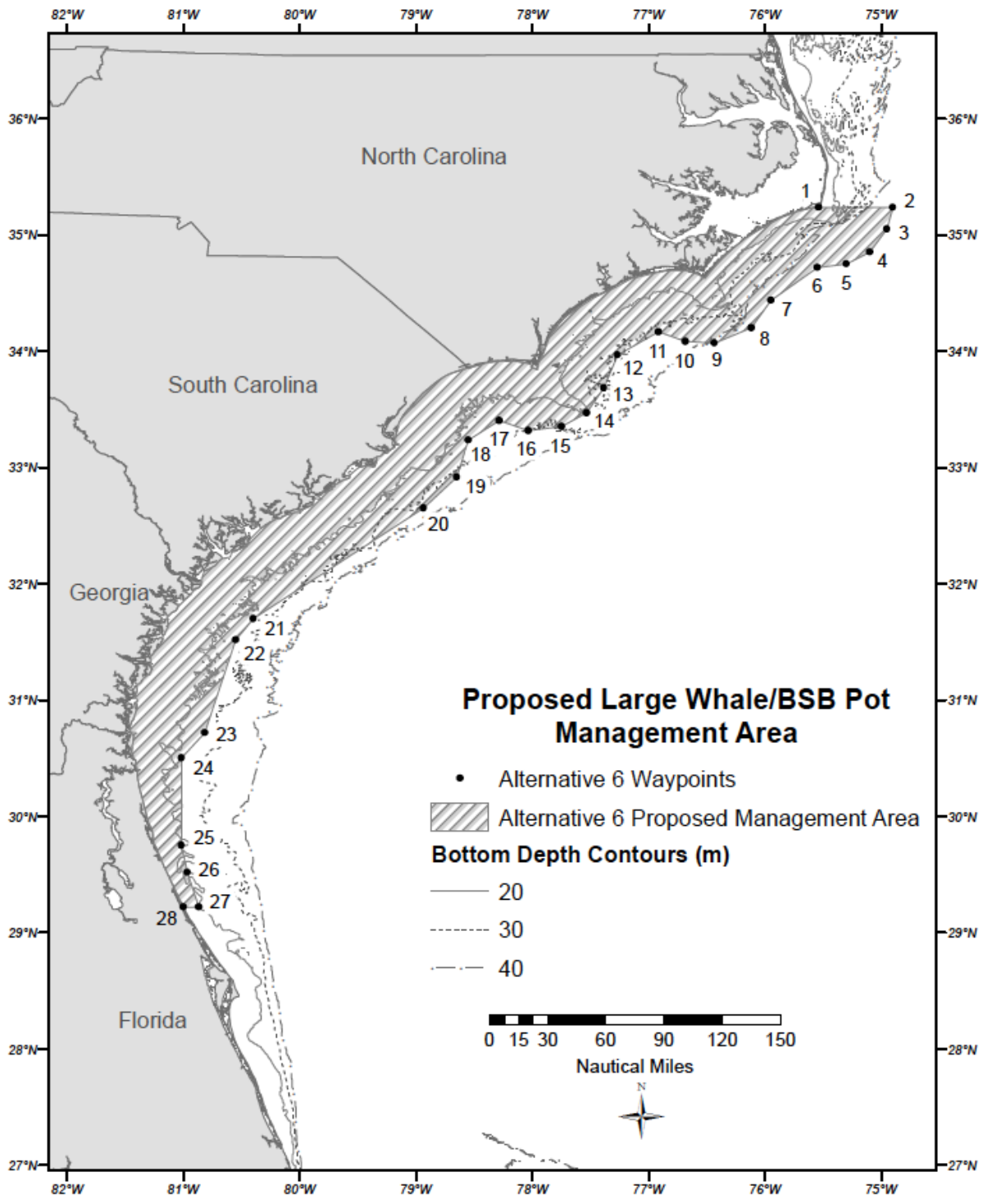

Figure 2.1.4. Area for the proposed black sea bass pot closure in Alternative 6.

Alternative 7. The black sea bass pot closure applies to waters inshore of points 1-20 listed below **(Table 2.1.4)**, approximately Sebastian, Florida, to Cape Hatteras, North Carolina. The closure applies to the area annually from November 1 through April 30.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area is also based on joint comments received from a number of environmental groups (dated January 3, 2014) in response to NMFS' December 4, 2013, *Federal Register* Notice of Intent to Prepare this DEIS (78 FR 72868). The environmental groups proposed the area as a reasonable alternative for consideration. This area represents an existing management area, the Southeast Seasonal Gillnet Restricted Area, under the Atlantic Large Whale Take Reduction Plan; and an additional area off North Carolina. The area off North Carolina includes waters shallower than 30 meters and is northward of the designated ALWTRP Southeast Restricted Area.

Table 2.1.4. Eastern boundary coordinates for the proposed black sea bass pot closure in Alternative 7.

Point	N Latitude	W Longitude
1	35º 14'	Shoreline
2	35º 14'	75º 08'
3	34º 58'	75º 41'
4	34º 49'	75º 50'
5	34º 47'	76º 05'
6	34º 31'	76º 18'
7	34º 20'	76º 13'
8	34º 12'	77º 00'
9	33º 43'	77º 30'
10	33º 21'	77º 21'
11	33º 18'	77º 41'
12	33º 24'	77º 57'
13	33º 19'	78º 06'
14	32º 58'	78º 39'
15	32º 39'	78º 59'
16	32º 37'	79º 14'
17	32º 22'	79º 22'
18	32º 00'	80º 00'
19	27º 51'	80º 00'
20	27º 51'	Shoreline

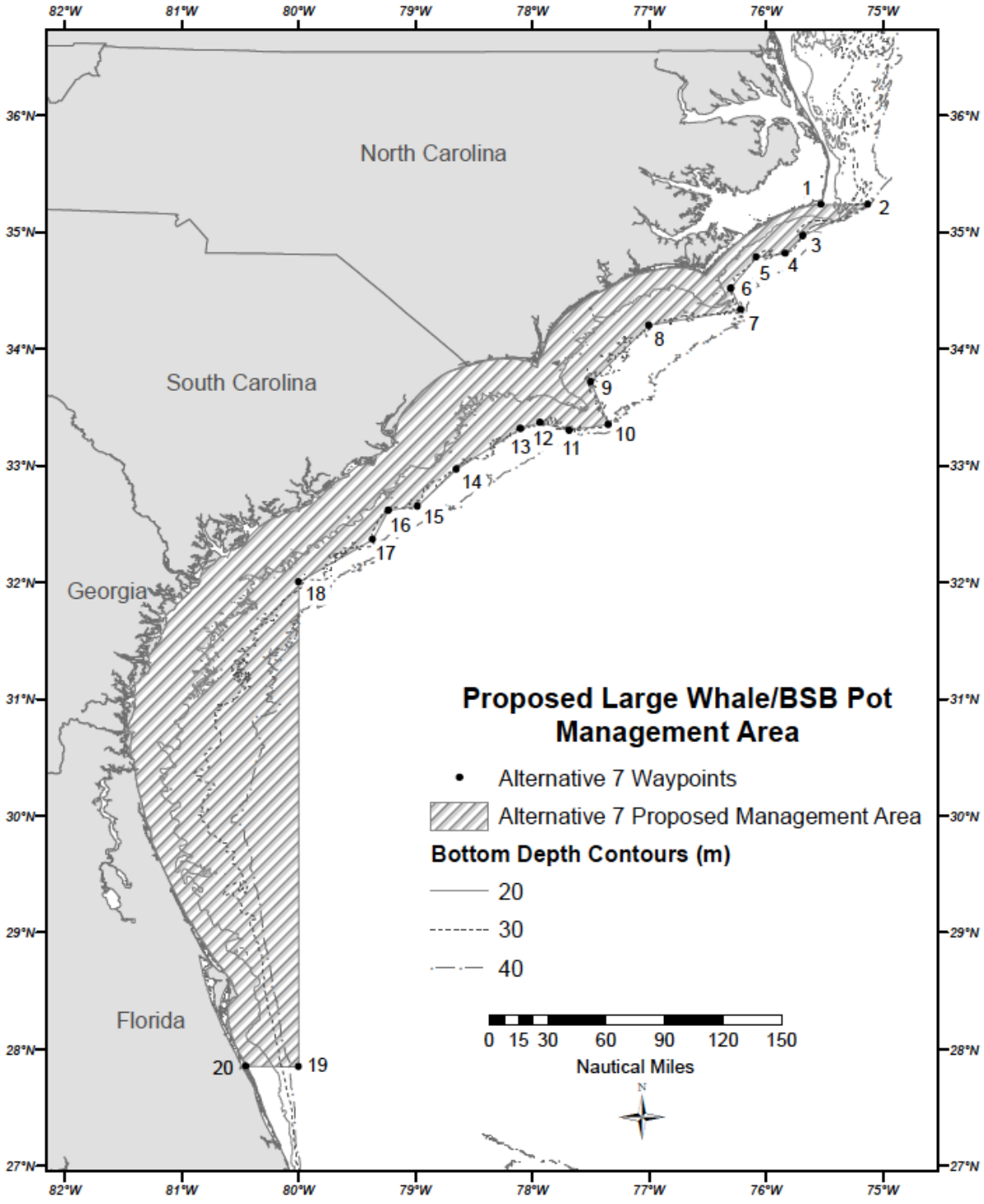

Figure 2.1.5. Area for the proposed black sea bass pot closure in Alternative 7.

Alternative 8. The black sea bass pot closure applies to waters off the states of North Carolina and South Carolina, annually, from November 1 through December 15 and March 15 through April 30.

> **Sub-alternative 8a.** The black sea bass pot closure applies in the entire exclusive economic zone off the states of North Carolina and South Carolina (**Table 2.1.5**).

Table 2.1.5. Eastern Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in **Sub-alternative 8a.**

Point	N Latitude	W Longitude

> **Sub-alternative 8b.** The black sea bass pot closure applies in the exclusive economic zone off the states of North Carolina and South Carolina in waters shallower than 25 meters (**Table 2.1.6**).

Table 2.1.6. Eastern Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in **Sub-alternative 8b.**

Point	N Latitude	W Longitude

At the June 2013 Council meeting, staff was directed to develop an alternative that combined what was then Alternative 8 and Alternative 3. The following are the IPT recommended revisions:

Alternative 8. The black sea bass pot closure applies to the area currently designated as North Atlantic right whale critical habitat, in addition to waters inshore of points 1-29 listed below **(Table 2.1.5)**, approximately North of the Altamaha River, Georgia, to Cape Hatteras, North Carolina **(Figure 2.1.6)**.

> **Sub-alternative 8a.** The black sea bass pot closure applies to the area annually from November 1 through December 15 and March 15 through April 30.

> **Sub-alternative 8b.** For the area off North Carolina and South Carolina, the black sea bass pot closure applies annually from November 1 through December 15 and March 15 through April 30. For the area off Georgia and Florida, the black sea bass pot closure applies annually from November 15 through April 15.

Note: Federal regulations would only apply to that portion of the area within the South Atlantic EEZ. The states will be asked to implement compatible regulations within state waters.

Note: This area represents North Atlantic right whale critical habitat in the South Atlantic region designated on June 3, 1994. Off North Carolina and South Carolina, the black sea bass pot closure applies in the exclusive economic zone in waters shallower than 25 meters. The eastern boundary of the closure between these two areas was formed by drawing a straight line from the southeastern corner waypoint of the northern portion (NC/SC) to the northeastern corner waypoint of the southern section (FL/GA).

The following is language describing the North Atlantic right whale critical habitat area from 50 CFR 226:

> *Southeastern United States: The area designated as critical habitat in these waters encompasses waters between 31 deg.15'N (approximately located at the mouth of the Altamaha River, GA) and 30 deg.15'N (approximately Jacksonville, FL) from the shoreline out to 15 nautical miles offshore; and the waters between 30 deg.15'N and 28 deg.00'N (approximately Sebastian Inlet, FL) from the shoreline out to 5 nautical miles.*

Table 2.1.5. Eastern boundary coordinates for the proposed black sea bass pot closure in Alternative 8.

Point	N Latitude	W Longitude
1	35° 14.1'	75° 31.56'
2	35° 14.1'	75° 09'
3	35° 06'	75° 22'
4	35° 06'	75° 39'
5	35° 01'	75° 47'
6	34° 54'	75° 46'
7	34° 52'	76° 04'
8	34° 33'	76° 22'
9	34° 23'	76° 18'
10	34° 21'	76° 27'
11	34° 25'	76° 51'
12	34° 09'	77° 19'
13	33° 44'	77° 38'
14	33° 25'	77° 27'
15	33° 22'	77° 40'
16	33° 28'	77° 41'
17	33° 32'	77° 53'
18	33° 22'	78° 26'

19	33° 06'	78° 31'
20	33° 05'	78° 40'
21	33° 01'	78° 43'
22	32° 56'	78° 57'
23	32° 44'	79° 04'
24	32° 42'	79° 13'
25	32° 34'	79° 23'
26	32° 25'	79° 25'
27	32° 23'	79° 37'
28	31° 53'	80° 09'
29	31° 15'	80° 59'
30	30° 56'	81° 05'
31	30° 42'	81° 07'
32	30° 15'	81° 05'
33	30° 15'	81° 17'
34	29° 40'	81° 07'
35	29° 08'	80° 51'
36	28° 36'	80° 28'
37	28° 26'	80° 25'
38	28° 20'	80° 31'
39	28° 11'	80° 30'
40	28° 00'	80° 25.5'
41	28° 00'	80° 31.45'

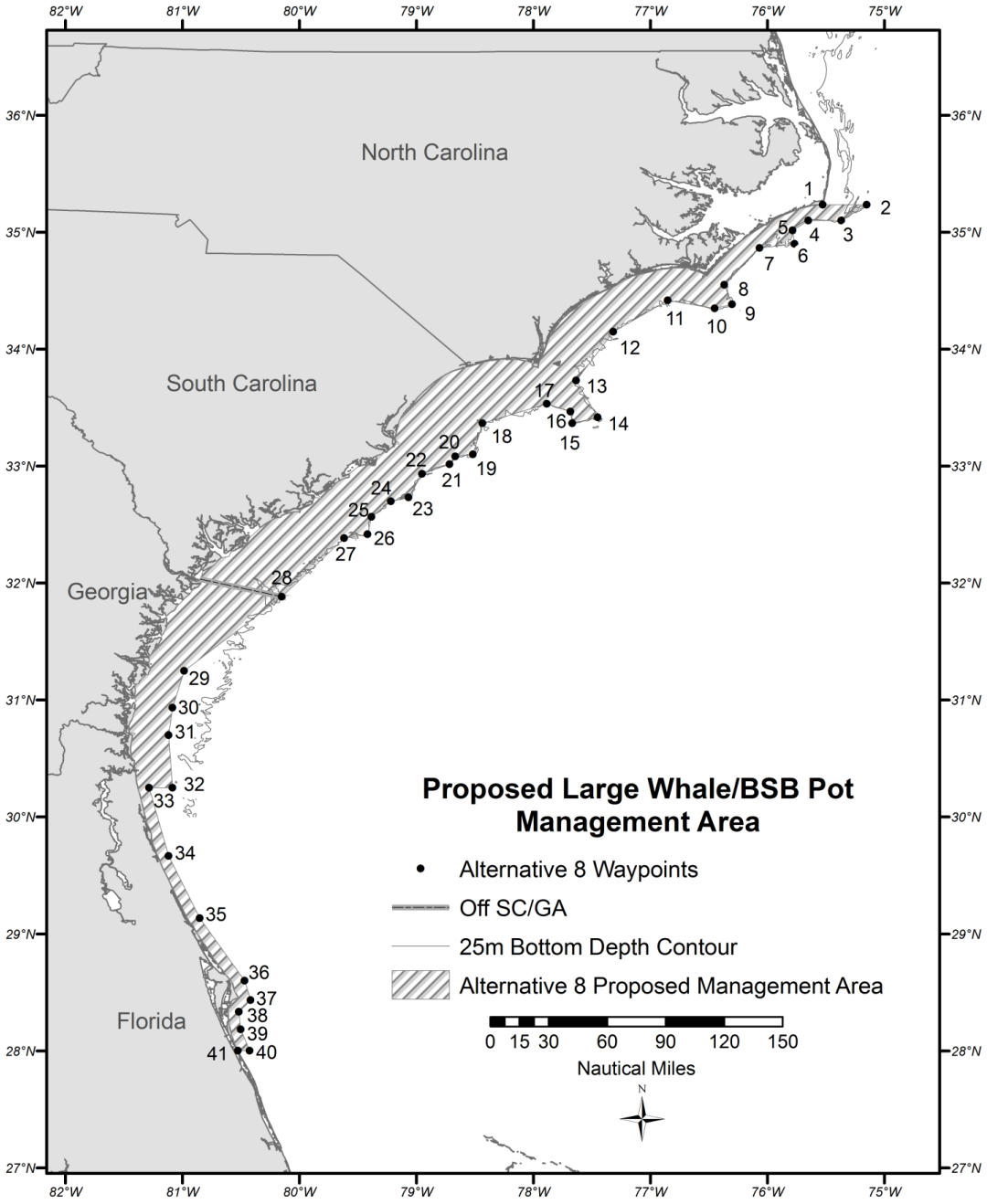

Figure 2.1.6. Area for the proposed black sea bass pot closure in Alternative 8.

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 end ecological environment (Section 3.2)**

  Examples include populations of red snapper, corals, turtles

- **Human 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/Home/EcosystemHome/tabid/435/Default.aspx.

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.

The distribution of coral and live hard bottom habitat as presented in the Southeast Area Monitoring, 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 Council's 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/EcosystemManagement/EcosystemBoundaries/MappingandGISData/tabid/632/Default.aspx .

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; and South Atlantic Council-designated Artificial Reef Special Management Zones (SMZs).

Areas that meet the criteria for EFH-HAPCs include habitats required during each life stage (including egg, larval, 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.

3.2 Biological and Ecological Environment

3.2.1 Fish Stocks

3.2.1.1 Black Sea Bass, *Centropristis striata*

Life History

Black sea bass, *Centropristis striata*, occur in the Western Atlantic, from Maine to northeastern Florida, and in the eastern Gulf of Mexico. The species can be found in extreme south Florida during cold winters (Robins and Ray 1986). Separate populations were reported to exist to the north and south of Cape Hatteras, North Carolina (Wenner et al. 1986). However, genetic similarities suggest that this is one stock (McGovern et al. 2002). This species is common around rock jetties and on rocky bottoms in shallow water (Robins and Ray 1986) at depths from 2-120 m (7-394 ft). Most adults occur at depths from 20-60 m (66-197 ft) (Vaughan et al. 1995).

Maximum reported size is 66.0 cm (26.1 in) TL and 3.6 kg (7.9 lbs) (McGovern et al. 2002). The minimum size and age of maturity for females studied off the southeastern U.S. coast is 10 cm (3.6 in) SL and age 0. All females are mature by 18 cm (7.1 in) SL and age 3 (McGovern et al. 2002). Wenner et al. (1986) reported that spawning occurs from March through May in the South Atlantic Bight. McGovern et al. (2002) indicated that black sea bass females are in spawning condition during March-July, with a peak during March through May (McGovern et al. 2002). Some spawning also occurs during September and November. Spawning takes place in the evening (McGovern et al. 2002). Black sea bass change sex from female to male (protogyny). McGovern et al. (2002) noted that the size at maturity and the size at transition of black sea bass was smaller in the 1990s than during the early 1980s. Black sea bass appear to compensate for the loss of larger males by changing sex at smaller sizes and younger ages.

In the eastern Gulf of Mexico and off North Carolina, females dominate the first 5-year classes. Individuals over the age of 5 are more commonly males. Black sea bass live for at least 10 years. The diet of this species is generally composed of shrimp, crab, and fish (Sedberry 1988). Sedberry (1988) indicated that black sea bass consume primarily amphipods, decapods, and fishes off the Southeastern United States. Smaller black sea bass ate more small crustaceans and larger individuals fed more on decapods and fishes.

Descriptions of other South Atlantic Council-managed species may be found in Volume II of the Fishery Ecosystem Plan (SAFMC 2009b) or at the following web address: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx.

Biomass and Landings

The following description of the biomass of black sea bass is from the SEDAR 25 Update report: In general, estimated abundance at age showed truncation of the older ages through the mid-1990s, and more stable or increasing values since. Total estimated abundance at the end of the assessment period showed some general increase from a low in 1999. In the most recent decade, a notably strong year class (age-0 fish) was predicted to have occurred in 2001 and 2010, and better than expected recruitment (i.e., positive residuals) from 2006 to 2011. Estimated biomass at age followed a similar pattern as abundance at age. Total biomass and spawning biomass showed similar trends - general decline from early 1980s until the mid-1990s, a relatively stable period from 1993-2006, and a steadily increasing since 2007 (**Figure 3.2.1**).

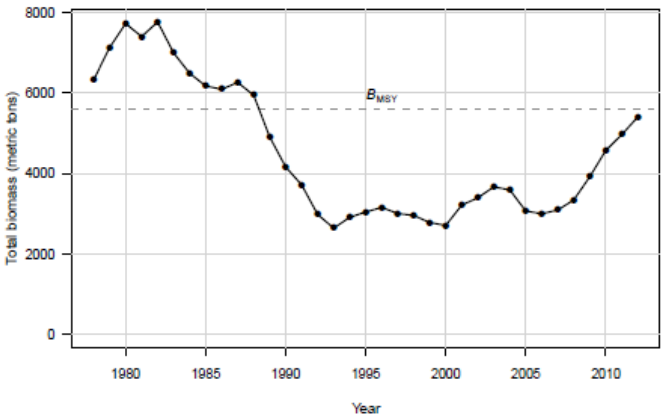

Figure 3.2.1. Estimated total biomass (metric tons) at start of year (SEDAR 25 Update 2013).

Stock Status

An update to the black sea bass assessment was conducted in 2013 with data through 2012. Most of the data sources were simply updated with the 2 additional years of observations available since SEDAR 25 (2011) benchmark assessment that contained data through 2010. Additional changes made in some sources, such as recreational catch records, indices, and discards are detailed below. In addition, some datasets were unable to be updated due to management actions, regulations, and data availability issues.

Substantial changes are underway in recreational harvest surveys with implementation of the Marine Recreational Information Program (MRIP) in place of the prior Marine Recreational Fisheries Statistics Survey (MRFSS). Although the MRIP program promises improved data for the future, assessments must also consider the past and will continue to include the earlier data from the MRFSS program. However, these historical landings were calibrated to MRIP landings based on the years where overlapping data exists. At the time this update was prepared, recreational landings based upon MRIP methods were only available for 2004-2011.

General recreational landings, general recreational discards, headboat landings, and headboat discards from 2012 were not available by the data deadline for the 2013 update. In order to continue with the assessment, these data gaps were filled by taking the geometric mean of the landings and discards data for the previous 3 years (2009-2011). In addition, changes in the recreational and commercial fishing regulations, coupled with the early closure of both sectors of

the fishery in 2011 and 2012, made the use of the fishery dependent indices of abundance questionable. These regulations include a decrease in the recreational bag limit from 15 fish to 5 fish, and a new commercial trip limit of 1,000 lb gutted weight. Due to the new regulations and closures, catch per unit effort (CPUE) from either fishery may not coincide with abundance, but instead may be driven by the regulatory changes and closures. For example, a higher percentage of anglers reached the lower bag limit, at which point they were expected to stop keeping black sea bass even though more fish were available to them. Since the regulation forces anglers to stop retaining fish even if fish are available, the CPUE from this segment of the fishery will be lower than it otherwise would. When this happens, CPUE becomes unreliable as a measure of population abundance and could lead to biased estimate of abundance in the assessment results. Therefore, it was decided not to update the headboat index of abundance and the commercial handline index of abundance with the most recent years of data. The headboat at-sea observer program discard index was updated through 2011, however 2012 data were not available for this assessment.

The MARMAP/SEFIS chevron trap index of abundance used in the model is standardized, meaning that the catch per unit effort (CPUE) is adjusted through a statistical model to account for factors, other than changes in the population, which may affect the observed CPUE. Examples of such factors that are commonly addressed include yearly variation, environmental factors, depth, and sampling characteristics. While this approach improves the information obtained from the index, estimates of the parameters included in the standardization model change each time additional years of data are added, therefore changing the CPUE index for the entire time series. This index was also standardized in the SEDAR 25 (2011) benchmark assessment.

Uncertainty in the model was characterized using a technique called a "mixed Monte Carlo Bootstrap" (MCB) which enables estimates of model uncertainty to better reflect the true underlying uncertainty in model estimates. For the SEDAR 25 Update 2013, the MCB runs were modified to account for using the geometric mean in estimating landings and discards in the recreational sector. The recreational landings and discards were varied for 2012 by choosing new values for each data point from a truncated normal distribution with a mean equal to the geometric mean of the previous 3 years and a standard deviation that was obtained by examining each time series to investigate how well the geometric mean of the previous 3 years estimates the current year's value. This resulted in widening the confidence intervals around the estimate of spawning stock biomass (SSB) in the terminal year.

The SEDAR 25 Update 2013 concluded that black sea bass are not overfished and overfishing is not occurring. The stock is very close to B_{MSY} (B_{2012}/B_{MSY}=0.96) and the SSB in 2012 is just above SSB_{MSY} (SSB_{2012}/SSB_{MSY}=1.032, **Table 3.2.2.1**). SSB in 2012 was estimated to be above $SSB_{MSY,}$ indicating that the stock is rebuilt. Spawning stock biomass decreased significantly from the beginning of the assessment period, dropping below SSB_{MSY} in 1989, until finally stabilizing and remaining at a low level from 1994-2007 (**Figure 3.2.2.1** in red). The SSB has been increasing consistently since 2008, crossing SSB_{MSY} in the terminal year of the assessment. Current fishing mortality (F) is well below F_{MSY} ($F_{Current}/F_{MSY}$=0.659, **Table**

3.2.2.1). The trend in F shows a rapid increase from the late-1970s until 1988, when it surpassed F_{MSY} by a significant amount (**Figure 3.2.2.1** in blue). F remained above F_{MSY}, with large inter-annual variability, until it dropped below F_{MSY} in 2011.

There were several concerns addressed by the assessment scientists, all related to the final estimate of SSB. The MCB runs indicate a high level of uncertainty around the terminal estimate of SSB. Approximately 32% of the MCB runs indicate that the stock is still below SSB_{MSY}. Some of the increased uncertainty in these terminal year estimates concerns the use of a geometric mean of past landings and discards in the recreational sector to estimate the 2012 landings and discards. The other concern involves the estimates of recruitment (R) in the model. The increasing trend in biomass is dependent on the estimate of a strong year class in 2010. The conclusion that the stock is rebuilt is also critically dependent on the estimate of this 2010 year class. However, there is a high level of uncertainty surrounding this estimate of R in 2010. The issue is that the fish do not appear in the age samples until age 2 and the estimates of the composition of age 2 fish from this year class do not agree well with respect to the strength of this year class. In addition, R has declined in the last 2 years of the assessment and shows a cyclical pattern throughout the time series (**Figure 3.2.2.2**). The pattern shows a good year class followed by several smaller year classes. If we did have a strong year class in 2010, there may not be another one for several years or more.

Table 3.2.2.1. Benchmarks and status parameters estimated in the 2013 update to SEDAR 25 for black sea bass.
M is the average Lorenzen natural mortality, $F_{Current}$ is the geometric mean of F_{2011} and F_{2012}, F_{MSY} is the fishing mortality that produces MSY, SSB_{2012} is the estimated spawning stock biomass in 2012, SSB_{MSY} is the SSB when the stock is at MSY equilibrium, MSST is the minimum stock size threshold, B_{MSY} is the stock biomass when the stock is at MSY equilibrium, R_{MSY} is the expected number of age-0 fish when the stock is at MSY equilibrium, D_{MSY} is the expected dead discards when the stock is at MSY equilibrium, and MSY is the maximum sustainable yield. Data are from the 2013 assessment update report for black sea bass.

Quantity	Units	Estimate
M	per year	0.38
$F_{current}$	per year	0.402
F_{MSY}	per year	0.61
SSB_{2012}	1E10 eggs	265
SSB_{MSY}	1E10 eggs	256
MSST	1E10 eggs	159
B_{MSY}	1,000 lb	12,383
R_{MSY}	1,000 age-0 fish	35,843
D_{MSY}	1,000 fish	288
MSY	1,000 lb	1,780
SSB_{2012}/SSB_{MSY}	-	1.032
SSB_{2012}/MSST	-	1.66
$F_{current}/F_{MSY}$	-	0.659

3.2.3 Protected Species

There are 40 listed 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 (sperm, sei, fin, blue, humpback, and North Atlantic right whales) are also listed as endangered under the Endangered Species Act (ESA). 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 (DPSs) of Atlantic sturgeon; and two *Acropora* coral species (elkhorn [*Acropora palmata*] and staghorn [*A. cervicornis*]) are also protected under the ESA. Portions of designated critical habitat for North Atlantic right whales and *Acropora* corals occur within the South Atlantic Council's jurisdiction. Additionally, NMFS has proposed rules to uplist *Acropora* Corals, list 6 additional species of corals, and designate critical habitat for loggerhead sea turtles. The species most likely to interact with black sea bass pot sector of the South Atlantic Snapper-Grouper Fishery are discussed below. Because of this Amendment's emphasis on large whale interactions with black sea bass pot gear, we have provided additional information on ESA and MMPA listings histories and threats on North Atlantic right and humpback whales in **Appendix M**.

Large Whales

North Atlantic Right Whales

North Atlantic right whales generally have a stocky body, black coloration (although some have white patches on their bellies), no dorsal fin, a large head (about 1/4 of the body length), strongly bowed lower lip, and callosities (raised patches of roughened skin) on their head. Two rows of long (up to 8 ft) dark baleen plates hang from their upper jaw, with about 225 plates on each side. Their tail is broad, deeply notched, and all black with a smooth trailing edge. Right whale life expectancy is unclear, but one individual is known to have reached 65+ years of age (Hamilton et al. 1998, Kenney 2002). Adult North Atlantic right whales are generally between 13 and 16 m long and can weigh up to 71 metric tons. Females are larger than males.

Range

There are six known major habitats or aggregation areas for the North Atlantic right whales: the coastal waters of the southeastern United States; the Great South Channel; Georges Bank/Gulf of Maine; Cape Cod and Massachusetts Bays; the Bay of Fundy; and the Scotian Shelf. North Atlantic right whales follow a general annual pattern of migration between low latitude winter calving grounds and high latitude summer foraging grounds (Perry *et al*. 1999, Kenney 2002). However, movements within and between habitats are extensive. In 2000, one whale was photographed in Florida waters on January 12, then again eleven days later (January 23) in Cape Cod Bay, less than a month later off Georgia (February 16), and back in Cape Cod Bay on March 23; effectively making the round-trip migration to the Southeast and back at least

twice during the winter season (Brown and Marx 2000). Results from satellite tags clearly indicate that sightings separated by perhaps two weeks should not necessarily be assumed to indicate a stationary or resident animal. Instead, telemetry data have shown rather lengthy and somewhat distant excursions, including into deep water off the continental shelf (Mate *et al*. 1997, Baumgartner and Mate 2005).

The coastal waters of the southeastern United States are the only known calving area for right whales. Sighting records of right whales spotted in the core calving area off Georgia and Florida consist of mostly mother-calf pairs and juveniles but also some adult males and females without calves (Jackson *et al*. 2012a). As many as 243 right whales have been documented in the southeastern United States during one calving season (P. Hamilton, personal communication, April 11, 2014). Studies indicate that right whale concentrations are highest in the core calving area from November 15 through April 15 (NMFS 2008); on rare occasions, right whales have been spotted as early as September and as late as July (Taylor et al. 2010). Most calves are likely born early in the calving season. Right whale distribution off Georgia and Florida is restricted by the warm waters of the Gulf Stream, which serves as a thermal barrier (Keller et al. 2006). Water temperature, bathymetry, and surface chop are factors in the distribution of calving right whales in the southeastern United States (Keller et al. 2012, Good 2008). Additional factors that are considered significant predictors of right whale abundance in the Southeast United States include year, distance to shore, and distance to the 22˚C sea surface temperature isotherm Gowan and Ortega-Ortiz (2014). Gowan and Ortega-Ortiz (2014) also identified right whale behavior, unrelated to any specific physical or environmental feature, as factor for predicting abundance. Systematic surveys conducted off the coast of North Carolina during the winters of 2001 and 2002 sighted eight calves, suggesting the calving grounds may extend as far north as Cape Fear. Four of the calves were not sighted by surveys conducted further south. One of the females photographed was new to researchers, having effectively eluded identification over the period of its maturation (McLellan et al. 2004). Right whales generally occur off South and North Carolina from November 1 through April 30 (NMFS 2008) and have been sighted as far as about 30 nautical miles offshore (Knowlton et al. 2002, Pabst et al. 2009).

Abundance and Population Dynamics

Analysis of data on the minimum number of whales alive during 1990–2009 (based on 2011 analysis) indicate an increase in the number of catalogued whales during the period, a mean growth rate of 2.6%, but with high inter-annual variation in numbers (Waring et al., 2012). These population trends are low compared to those for populations of other large whales that are recovering, such as south Atlantic right whales and taxonomically similar western Arctic bowhead whales, which have had growth rates of 4% to 7% or more per year for decades. An analysis of the age structure of this population suggests that it contains a smaller proportion of juvenile whales than expected (Hamilton et al. 1998; Best et al. 2001), which may reflect lowered recruitment and/or high juvenile mortality.

Because of the species' low reproductive output and small population size, even low levels of human-caused mortality can pose a significant obstacle for North Atlantic right whale recovery.

Population modeling studies in the late 1990s (Caswell et al. 1999; Fujiwara and Caswell, 2001) indicated that preventing the death of two adult females per year could be sufficient to reverse the slow decline detected in right whale population trends in the 1990s.

Potential Biological Removal (PBR) Level is defined by the MMPA as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its maximum productivity (16 U.S.C. 1362(3)(9)]. The PBR is calculated using the following factors--

- the minimum population estimate of the stock;
- one-half the maximum theoretical or estimated net productivity rate of the stock at a small population size; and
- a recovery factor for endangered, depleted, threatened stocks of between 0.1 and 1.0 (MMPA Sec. 3. 16 U.S.C. 1362) (Wade and Angliss, 1997).

The recovery factor for right whales is 0.10 because this species is listed as endangered under the ESA. The minimum population size is 544 and the maximum net productivity is 0.04; thus, PBR for the North Atlantic right whale is 0.9 (Waring et al., 2013).

Threats

North Atlantic right whales were severely depleted by commercial whaling. By the early 1900s, the remaining population off North America was reduced to no more than a few hundred whales. Despite protection from commercial whaling since 1935, the remaining population has failed to fully recover. Given the small population size and low annual reproductive rate of North Atlantic right whales, human sources of mortality (particularly vessel collision and fishing gear entanglements (Clapham *et al.,* 1999; Knowlton and Kraus, 2001; Moore *et al.,* 2005; NMFS 2005) may have a greater effect to relative population growth rate than for other large whale species (Waring *et al.* 2013). NMFS has identified a number of additional threats to the species that are indirectly related to this action. Other threats to right whales may include decreased reproductive rate, reduced genetic diversity, environmental contamination, biotoxins, nutritional stress, interspecific competition, and climate change. **Appendix M** provides a discussion of these potential threats.

The primary causes of the right whale's failure to recover are deaths resulting from collisions with ships and entanglement in commercial fishing gear (Clapham et al. 1999; Knowlton and Kraus, 2001; Moore et al. 2005; NMFS 2005). Right whales may not die immediately as the result of a vessel strike or entanglement but may gradually weaken or otherwise be affected so that further injury or death is likely (Waring et al. 2013). Collisions or entanglements may result in systemic infection or debilitation from tissue damage. Additionally, any injury or entanglement that restricts a right whale from rotating its jaw while feeding, prevents it from forming a hydrostatic oral seal, compromises the integrity of its baleen, or prevents it from swimming at speeds necessary to capture prey will reduce its foraging capabilities and may lead to starvation (Cassof et al. 2011, van der Hoop et al. 2012).

An average of approximately 2 *known* vessel collision-related right whale deaths have occurred annually over the last decade (Henry et al. 2012, Waring et al. 2012) and an average of 1.2 known vessel-strike related fatalities occurred in the period 2006–2010 (Waring et al. 2012). NMFS believes the actual number of deaths is likely higher than those documented, as some deaths likely go undetected or unreported, and in many cases when deaths are observed it is not possible to determine the cause of death from recovered carcasses due, for example, to advanced decomposition.

Similarly, entanglement in fixed fishing gear is another leading cause of right whale mortality (NMFS 2005, Knowlton et al. 2012). Entanglement mortality and its effects on the right whale population are likely underestimated because fishermen may not report entanglements and it is likely that carcasses from offshore are not detected or recovered (Cole *et al.* 2006). From 2006 through 2010, 9 of 15 records of mortality or serious injury involved entanglement or fishery interactions (Waring et al. 2012). Entanglement records from 1990 through 2010 (NMFS, unpublished data) included 74 confirmed right whale entanglements, including right whales in weirs, gillnets, and trailing line and buoys. Knowlton et al. 2005 conducted a study examining 447 individual animals for evidence of scars left by fishing gear. Of the 447 whales examined, 338 of the whales (75.6%) had been entangled at least once and 608 separate entanglement interactions were documented between 1980 and 2002 (Knowlton *et al.* 2005). Further research using the North Atlantic Right Whale Catalogue has indicated that, annually, between 14% and 51% of right whales are involved in entanglements (Knowlton et al. 2005). Over time, there has been an increasing trend in entanglement rates, including an increase in the proportion of serious entanglements (Knowlton et al. 2005).

Information from an entanglement event often does not include the detail necessary to assign the entanglements to a particular fishery or location. Johnson *et al.* (2005) analyzed entanglements of 31 right whales and found that all types of fixed fishing gear and any part of the gear was involved in entanglements. When gear type was identified, pot gear and gillnet gear represented 71% and 14% of entanglements, respectively. The authors pointed out that buoy lines were involved in 51% of entanglements and suggested that entanglement risk is elevated by any line that rises in the water column. Mouth entanglements for right whales were the most common point of entanglement (77.4%) and were particularly deadly; 55.6% of right whales seen with mouth entanglements died (Johnson *et al.* 2005). Mouth entanglements likely occur when a whale's mouth is open giving rise to speculation that entanglements occur when whales are feeding (Johnson *et al.* 2005). Occasionally, right whales with open mouths are observed in the southeastern U.S. calving area (Jackson *et al.* 2012b, Jackson *et al.* 2011).

Calves and juveniles become entangled more frequently than adults and are more likely to suffer deep wounds (> 8cm) from entanglement. Knowlton et al. (2011) studied ropes that were removed from entangled right whales (dead and alive) and suggested that a whale's ability to break free of entangling gear is related to its age. Breaking strength of rope also influences a whale's ability to break free of entangling gear. Adults appear to be able to break free of ropes with a breaking strength of less than 3,300 lbs, but calves and juveniles cannot and are more prone to drowning (Knowlton et al. 2011, Cassof et al. 2011).

Gear trailing behind a right whale creates substantial drag and may inhibit foraging (van der Hoop *et al.* 2013). Entanglements may also reduce a whale's ability to maneuver, making it more susceptible to ship strikes (NMFS 2006).

Humpback Whales

Humpback whales are known for their long pectoral fins, which can be up to 15 feet long. These long fins give them increased maneuverability; they can be used to slow down or even go backwards. Similar to all baleen whales, adult females are larger than adult males, reaching lengths of up to 60 feet. Their body coloration is primarily dark grey, but individuals have a variable amount of white on their pectoral fins and belly. This variation is so distinctive that the pigmentation pattern on the undersides of their "flukes" is used to identify individual whales, similar to a human fingerprint.

Range

Like right whales, humpback whales follow a general annual pattern of migration between low latitude winter calving grounds (in the West Indies) and high latitude summer foraging grounds. Humpback whales feed during spring, summer, and fall in the Gulf of Maine, the Gulf of St. Lawrence, Newfoundland/ Labrador, and western Greenland. In the Gulf of Maine, sightings are most frequent from mid-March through November between 41°N and 43°N, from the Great South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffreys Ledge, and peak in May and August (CETAP, 1982). Small numbers of individuals may be present in New England waters year-round, including the waters of Stellwagen Bank (Clapham et al, 1993). In winter, humpback whales calve primarily in the West Indies, specifically in the Antilles, primarily on Silver and Navidad Banks, north of the Dominican Republic (Clapham et al. 1993; Katona and Beard, 1990; Palsboll et al. 1997; Stevick et al. 1998). The primary winter range also includes the Virgin Islands and Puerto Rico.

Humpback whales are assumed to use the Mid-Atlantic as a migratory pathway to and from the calving/mating grounds. The Mid-Atlantic may also be an important winter feeding area for juveniles. Since 1989, observations of juvenile humpbacks in the Mid-Atlantic have been increasing during the winter months, peaking from January through March (Swingle et al. 1993). Biologists theorize that non-reproductive animals may be establishing a winter feeding range in the Mid-Atlantic since they are not participating in reproductive behavior in the Caribbean (Barco et al. 2002). Swingle et al. (1993) identified a shift in distribution of juvenile humpback whales in the nearshore waters of Virginia, primarily in winter months. Identified whales using the Mid-Atlantic area were found to be residents of the Gulf of Maine and Atlantic Canada (Gulf of St. Lawrence and Newfoundland) feeding groups, suggesting a mixing of different feeding populations in the Mid-Atlantic region (Barco et al. 2002). Strandings of humpback whales have increased between New Jersey and Florida since 1985, consistent with the increase in Mid-Atlantic whale sightings. Strandings were most frequent from September through April in North

Carolina and Virginia waters, and involved primarily juvenile humpback whales of no more than 35 feet long (Wiley et al. 1995).

Life History and Reproductive Success

It is generally believed that copulation and calving take place on the winter range in the Greater and Lesser Antilles. The gestation period in humpback whales is 12 months and females give birth every 2 to 3 years, usually between December and May (Clapham and Mayo, 1987).

Abundance and Population Dynamics

Modeling using data obtained from photographic mark-recapture studies estimates the growth rate of the Gulf of Maine feeding population at 6.5% (Barlow and Clapham, 1997). More recent studies have found lower growth rates of 0.0 percent to 4.0 percent, although these results may be a product of shifts in humpback distribution (Clapham et al. 2003). Current data suggest that the Gulf of Maine humpback whale stock is steadily increasing in size (Waring et al. 2012). With respect to the North Atlantic population overall, there are indications of increasing abundance. One study estimated a growth rate of 3.1 percent for the period from 1979 to 1993 (Stevick et al. 2001).

Potential Biological Removal for the Gulf of Maine humpback whale stock is 2.7 whales per year. As noted, PBR is the product of minimum population size, one-half the maximum productivity rate, and a "recovery" factor (MMPA Sec. 3. 16 U.S.C. 1362) (Wade and Angliss, 1997). The minimum population size for the Gulf of Maine stock is 823 whales. The maximum productivity rate is 0.065. The "recovery" factor is assumed to be 0.10 because the humpback whale is listed as endangered under the ESA.

Threats

As with right whales, the major known sources of human-caused mortality and injury of humpback whales are commercial fishing gear entanglements and ship strikes. Sixty percent of closely investigated Mid-Atlantic humpback whale mortalities showed signs of entanglement or vessel collision (Wiley et al. 1995). From 2006 through 2010, there were at least 10 reports of mortalities as a result of collision with a vessel and 29 serious injuries and mortalities attributed to entanglement. Many carcasses also washed ashore or were spotted floating at sea for which the cause of death could not be determined. Robbins (2009) found that 64.9% of the North Atlantic population had entanglement scarring, which corresponds to approximately 66 entanglement cases per year. These estimates are based on sightings of free-swimming animals that initially survive the encounter. Some whales may drown immediately, others may be too decomposed for analysis, and some may never be examined. For these reasons, it is likely the actual number of interactions with fishing gear is higher than recorded (Waring et al. 2006).

Johnson et al. (2005) noted that any part of the gear (buoy line, groundline, floatline, and surface system line) creates a risk for entanglement. Johnson et al. (2005) also reported that of

the 30 humpback whale entanglements examined in the study, 16 (53%) involved entanglements in the tail region and 13 (43%) involved entanglements in the mouth (note that in both cases, some entanglements included other points of gear attachment on the body). Although the sample size was small for cases in which the point of gear attachment and the associated gear part could be examined, 2 out of 2 floating groundline entanglements and 4 out of 7 buoy line entanglements involved the mouth.[1] In addition, 5 out of 7 buoy line entanglements and 3 out of 4 gillnet floatline entanglements involved the tail (Johnson et al. 2005).[2]

Based on studies of humpback whale caudal peduncle scars, Robbins and Mattila (2000) reported that calves (approximately 0-1 year) had a lower entanglement risk than yearlings (1 year old), juveniles, and mature whales; the latter 3 maturational classes exhibited comparable levels of high probability scarring. Based on these data as well as evidence that animals acquire new injuries when mature, the authors concluded that actively feeding whales may be at greater risk of entanglement. In any case, juveniles seemed to be at the most risk, possibly due to their relative inexperience.

Humpback whales employ a variety of foraging techniques, which may create entanglement risk (Hain et al. 1982 and Weinrich et al. 1992). They feed on a number of species of small schooling fishes and krill (Wynne and Schwartz, 1999), by targeting fish schools and filtering large amounts of water for their associated prey. One such technique is lunge feeding, in which the whale swims toward a patch of krill or small fish, then lunges into the patch with its mouth agape. The flippers may aid in concentrating the prey or in maneuvering. Another feeding method, called "flick-feeding," involves flexing the tail forward when the whale is just below the surface, which propels water over the whale's head, temporarily disorienting its prey. The whale then swims with its mouth open, through the wave it created. A third foraging strategy is bubble feeding, in which whales swim upwards, while blowing nets or clouds of bubbles, in a spiral under a concentration of prey. This creates a barrier through which the disoriented fish cannot escape. The whales then swim up through the bubble formation, engulfing their prey. These techniques demonstrate that humpback whales commonly use their mouths, flippers, and tails to aid in feeding. Thus, while foraging, all body parts are at risk of entanglement.

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.) 2003).

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

[1] Note that one humpback whale was entangled in both buoy line and groundline and was placed in both categories.
[2] Note that the entanglements in buoy line exceed the total of 7 because some animals were entangled in multiple locations on their body (e.g., both the mouth and the tail).

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 50m) 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 a 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 1000 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 are known to eat a wide range of things 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 (692-764 ft.) (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, Lanyon et al. 1989) and they may spend anywhere from 80 to 94% of their time submerged (Limpus and Nichols 1994, Lanyon et al. 1989).

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 resources (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).

North Atlantic Right Whale Critical Habitat

In 1994, NMFS published a final rule designating critical habitat for right whales (59 FR 28793, June 3, 1994). The designated critical habitat included portions of Cape Cod Bay and Stellwagen Bank, the Great South Channel (each off the coast of Massachusetts), and the waters adjacent to the coast of Georgia and the east coast of Florida. These areas were determined to be essential to the conservation of right whales because of their importance as foraging, calving, and nursing habitats. For example, Cape Cod Bay and the Great South Channel represent two of the four known principal feeding grounds for adult right whales in the Western North Atlantic and the only two within U.S. waters. In addition, the waters off Georgia and Northern Florida have been identified as the only known calving ground for right whales. However, the designations were based primarily on right whale sightings data as opposed to an analysis of the physical and biological habitat features essential to the conservation of the species.

In July 2002, NMFS received a petition requesting revision of the current critical habitat designation for right whales, by combining and expanding the current Cape Cod Bay and Great South Channel critical habitats in the Northeast and by expanding the current critical habitat in the Southeast. In August 2003, NMFS determined that the requested revision, as specified by the petitioner, was not warranted at that time. On October 1, 2009, NMFS received another petition, this time from the Center for Biological Diversity (CBD), Defenders of Wildlife, Humane Society of the United States, Ocean Conservancy, and the Whale and Dolphin Conservation Society (the Petitioners) to revise the designated North Atlantic right whale critical habitat. The petition wanted to expand the existing North Atlantic right whale critical habitat by including more areas designated as critical feeding and calving habitat, and including a migratory corridor. On October 6, 2010, NMFS announced the 90-day finding: that the petition, in conjunction with the information readily available in the files, presents substantial scientific information indicating that the requested revision may be warranted. The October 6, 2010, Federal Register notice also included a 12-month determination on how to proceed with the petition: that NMFS would continue the ongoing rulemaking process which would result in the publication of a proposed rule in the Federal Register regarding North Atlantic right whale critical habitat.

3.3 Human Environment

3.3.1 Economic Description of the Commercial Sector

Snapper Grouper Fishery

The South Atlantic Fishery Management Council manages 6 key species groups, in addition to sargassum and coral/coral reefs. The distributions of commercial landings and dockside revenues for these 6 species groups over a 5-year period from 2009 through 2013 are presented in **Figure 3.3.1.1** and **Figure 3.3.1.2**. The 2013 landings for most species groups are preliminary. The snapper grouper complex accounted for the highest percentage of commercial landings (gw) at 39% followed by coastal migratory pelagics at 37% and spiny lobster at 14%. The rest of the species groups represented 10% of commercial landings, with golden crap accounting for 4% of total landings. In terms of dockside revenues (2013 $), the snapper grouper complex represented the highest share at 38%, followed by spiny lobster at 33%, with coastal migratory pelagics ranking third at 19%. Golden crab accounted for 3% of total dockside revenues.

Within the snapper grouper fishery, snappers ranks first by both weight and revenue (**Figure 3.3.1.3** and **Figure 3.3.1.4)**. Sea basses and groupers ranks second by both weight and revenue. Jacks ranks third by weight but falls to fourth place behind tilefishes in terms of revenues. Tilefishes ranks fourth by weight and third by revenues.

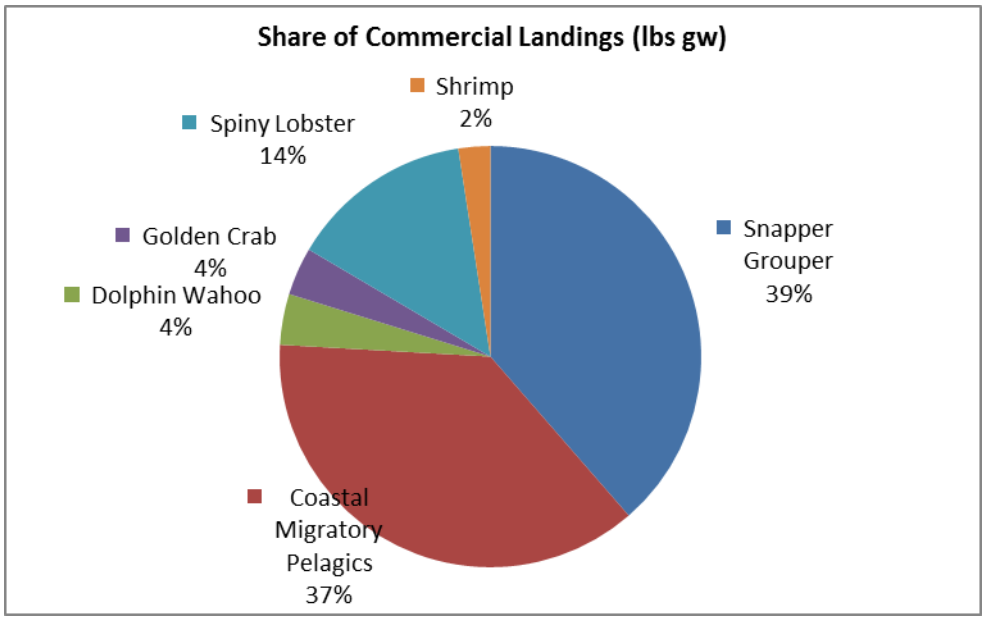

Figure 3.3.1.1. Share of commercial landings (lb gw) by categories of species managed by the South Atlantic Fishery Management Council, 5-year period from 2009 – 2013.
Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014).

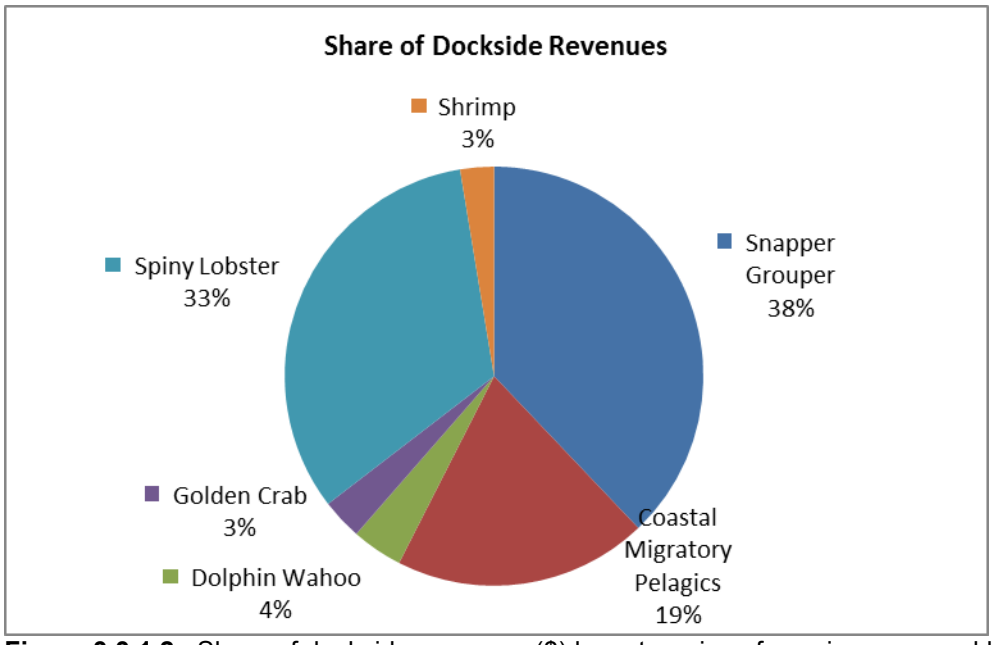

Figure 3.3.1.2. Share of dockside revenues ($) by categories of species managed by the South Atlantic Fishery Management Council, 5-year period from 2009–2013.

Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014).

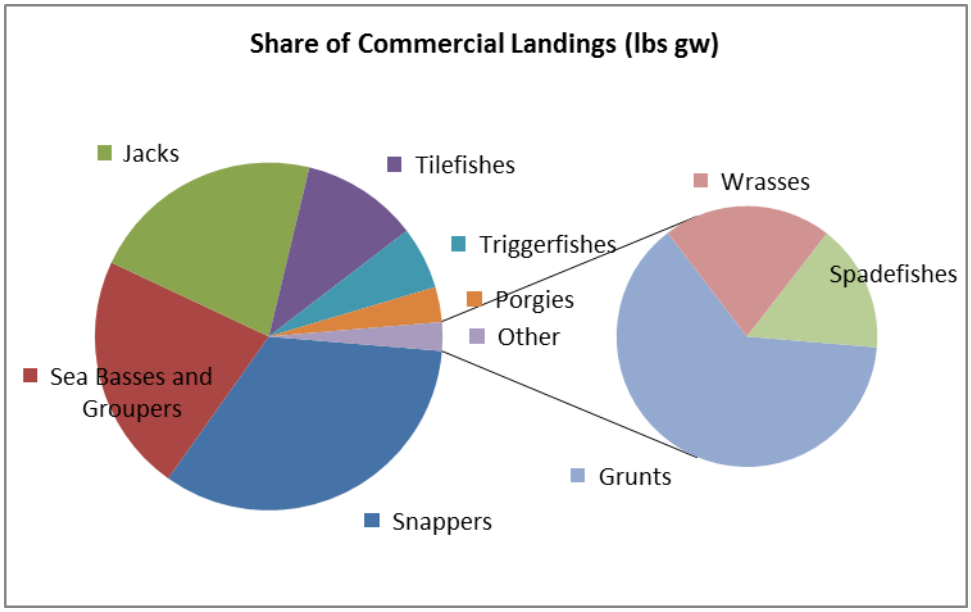

Figure 3.3.1.3. Share of commercial landings (lb gw) by group of snapper grouper species managed by the South Atlantic Fishery Management Council, 5-year period from 2009–2013.

Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014).

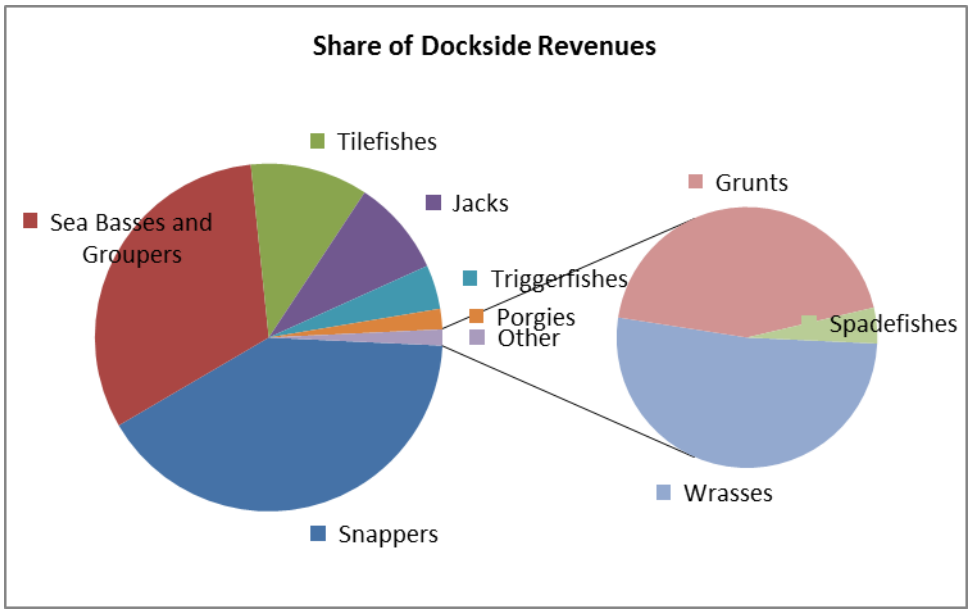

Figure 3.3.1.4. Share of dockside revenues ($) by group of snapper grouper species managed by the South Atlantic Council, 5-year period from 2009–2013.
Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014).

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 2009 (**Table 3.3.1.2**). For harvesting black sea bass using traps, a black sea bass pot endorsement is required. There are 32 endorsements established through Amendment 18A.

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

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

Source: NMFS SERO PIMS, 2014.

Table 3.3.1.2. Number of South Atlantic commercial snapper grouper permits.

	Unlimited	Limited 225 lb
2009	640	144
2010	624	139
2011	569	126
2012	558	123
2013	593	130
Average	597	132

Source: NMFS SERO PIMS, 2014.

The following focuses on commercial landings and revenues for black sea bass. The major sources of data summarized in this description are the SEFSC Commercial ACL Dataset, as summarized by SERO-LAPP, and Federal Logbook System (FLS), supplemented by average prices calculated from the Accumulated Landings System (ALS) and price indices taken from the Bureau of Labor Statistics. Landings from the FLS do not include all landings shown from the ACL dataset 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. The 2013 data are incomplete, including the unavailability of the South Carolina landings and revenues. Additional information on the commercial snapper grouper sector is contained in previous amendments and is incorporated herein by reference [see Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Regulatory Amendment 9 (SAFMC 2011a), Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011c), Amendment 18A (SAFMC 2012, and Regulatory Amendment 19 (SAFMC 2013)] .

Total Annual Landings and Revenues for Black Sea Bass

The commercial black sea bass fishing fleet in the South Atlantic is composed of vessels using primarily black sea bass pots and hook and line gear. Other gear types have also been used for harvesting black sea bass. The commercial fishing season for black sea bass has been from June 1 through May 31, although a one-month delay for the 2012/2013 season was enacted to allow for some regulations to take effect before the start of the season. For each fishing year from 2009/10 through 2012/13 and on average, traps were the dominant gear type for harvesting black sea bass by weight and by revenue (**Table 3.3.1.3**). Notable, nonetheless, are the relatively large increases in hook-and-line landings and revenues in the 2012/2013 season.

Table 3.3.1.3. Black sea bass commercial landings (lb ww) and dockside revenues (2013 $) by gear type, fishing year 2009/10--2012/13.

	Hook & Line	Traps	Others	Total
Landings (lb ww)				
2009/10	61,765	278,742	56,840	397,347
2010/11	61,229	341,763	111,913	514,905
2011/12	47,011	280,877	127,049	454,937
2012/13	97,533	210,905	73,144	381,582
Average	66,885	278,072	92,237	437,193
Revenues (2013 $)				
2009/10	$141,320	$570,237	$149,274	$860,831
2010/11	$135,978	$742,554	$290,159	$1,168,691
2011/12	$101,807	$479,889	$282,598	$864,294
2012/13	$250,888	$489,671	$188,902	$929,461
Average	$157,498	$570,588	$227,733	$955,819

Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014);SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and South Carolina landings for 2013 are not yet available.

Among the various states, North Carolina accounted for the largest amount of landings for black sea bass by weight (**Figure 3.3.1.5**) and by revenue (**Figure 3.3.1.6**). South Carolina generally came in second, and Florida/Georgia third. The share of Florida/Georgia increased quite substantially in 2011/12. Note that black sea bass commercial landings in states north of the South Atlantic, as shown in **Figure 3.3.1.5** were likely caught in the South Atlantic but reported by dealers in the Northeast. It is also noted that the 2013 landings are incomplete and that South Carolina commercial landings for 2013 are not yet available.

A relatively strong seasonality characterized the commercial landings and revenues for black sea bass (**Figure 3.3.1.7**). This is partly conditioned by the black sea bass fishing season of June1 through May 31 and fishery closures once the ACL was met. On average from 2009/10-2012/13, landings and revenues declined almost monotonically from June to May, with a perceptible spike in December.

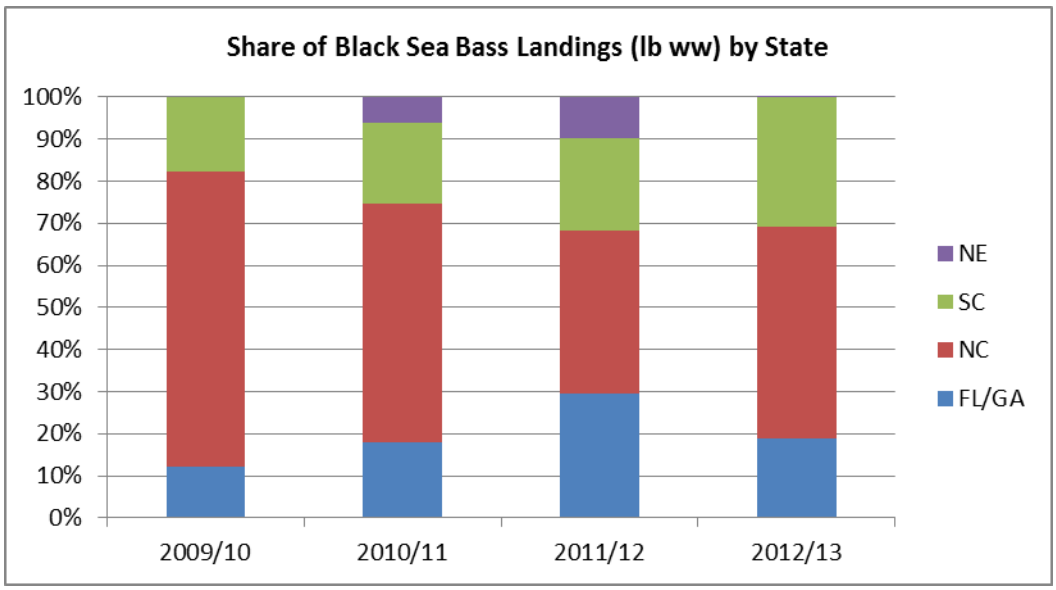

Figure 3.3.1.5.. Black sea bass landings (lb ww) by state, fishing year 2009/10–2012/13.
Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014); SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and South Carolina landings for 2013 are not yet available.

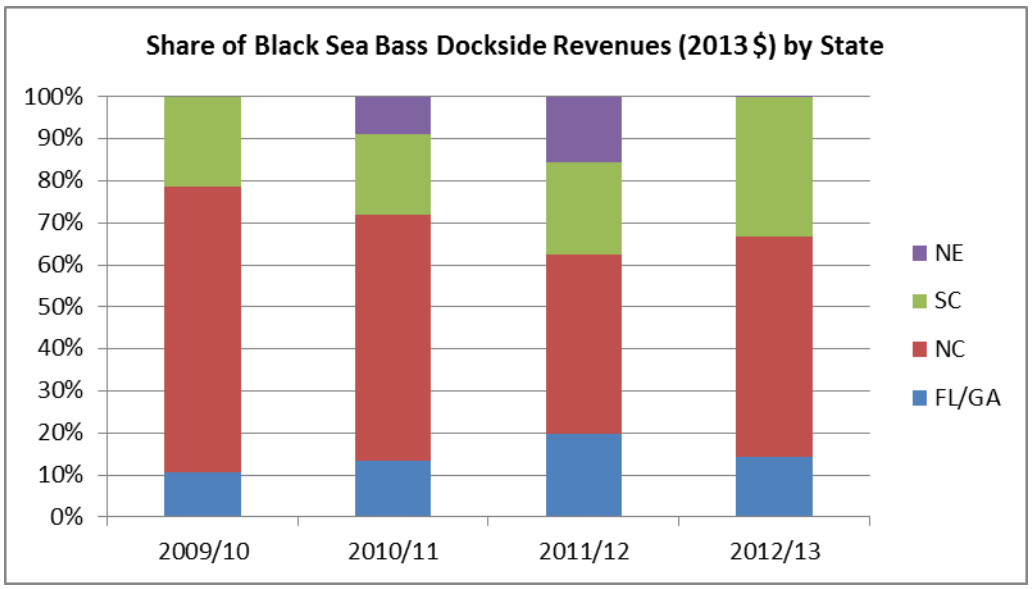

Figure 3.3.1.6. Black sea bass dockside revenues (2013 $) by state, fishing year 2009/10–2012/13.
Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014); SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and South Carolina landings for 2013 are not yet available

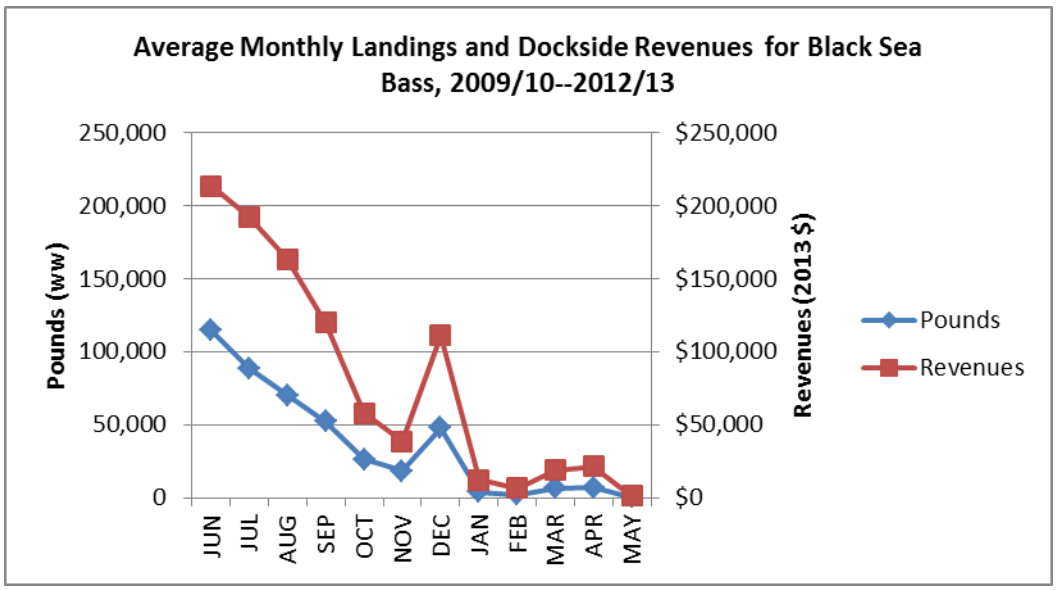

Figure 3.3.1.7. Average monthly black sea bass landings (lb ww) and revenues (2013 $), fishing year 2009/10-2012/13.
Source: SEFSC Commercial ACL Dataset, excluding confidential data (April 2014); SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and South Carolina landings for 2013 are not yet available

Pounds Landed and Dockside Revenues for Vessels Landing Black Sea Bass

From 2009/10 through 2011/13, an annual average of 212 vessels took 1,230 commercial trips that combined landed an average of 331,051 lb gw of black sea bass annually with a dockside value (2013 dollars) of $850,636 (**Table 3.3.1.4**). Average annual dockside revenue from black sea bass landings represented approximately 27% of total dockside revenue from trips that landed black sea bass from 2009/10 through 2012/13.

Table 3.3.1.4. Vessels and trips with black sea bass landings by weight (lb gw) and dockside revenue (2013 $), fishing year 2009/10–2012/13.

Year	Number vessels that landed black sea bass	Number trips that landed black sea bass	Black sea bass landings (lb gw)	Dockside revenue from black sea bass (2013 $)	'Other species' landed and jointly caught with black sea bass (lb gw)	Dockside revenue from 'other species' from trips with black sea bass landings (2013 $)	Total dockside revenue (2013 $) from trips with black sea bass landings
2009/10	248	1,637	326,906	$848,990	1,147,186	$3,286,486	$4,135,476
2010/11	210	1,336	391,631	$1,022,432	903,470	$2,589,406	$3,611,838
2011/12	177	665	300,384	$643,622	323,449	$960,313	$1,603,936
2012/13	211	1,280	305,283	$887,499	759,074	$2,332,576	$3,220,075
Average	212	1,230	331,051	$850,636	783,295	$2,292,195	$3,142,831

Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.
Note: Landings and revenues for 2013 are incomplete.

On average, the vessels that harvested black sea bass also took 3,984 trips per year without black sea bass landings. Combining all sources of revenues, the average annual dockside revenues of vessels that landed black sea bass was about $52,691 (2013 $) (**Table 3.3.1.5**). Annual dockside revenue from black sea bass landings represented, on average, approximately 8% of the total dockside revenue from all commercial landings from 2009/10 through 2012/13. Average annual dockside revenue per vessel from all landings was $52,691 as compared to $4,022 per vessel from black sea bass only.

Table 3.3.1.5. Dockside revenues (2013 $) from all sources for vessels that landed black sea bass, fishing year 2009/10–2012/13.

Year	Number vessels that landed black sea bass	Dockside revenue from black sea bass (2013 $)	Dockside revenue from 'other species' jointly landed with black sea bass (2013 $)	Dockside revenue from 'other species' landed on trips without black sea bass (2013 $)	Total dockside revenue (2013 $)	Average total dockside revenue per vessel (2013 $)
2009/10	248	$848,990	$3,286,486	$8,661,974	$12,797,450	$51,603
2010/11	210	$1,022,432	$2,589,406	$7,596,881	$11,208,720	$53,375
2011/12	177	$643,622	$960,313	$8,579,396	$10,183,332	$57,533
2012/13	211	$887,499	$2,332,576	$6,961,156	$10,181,230	$48,252
Average	212	$850,636	$2,292,195	$7,949,852	$11,092,683	$52,691

Source: SEFSC Coastal Fisheries Logbook for weight and NMFS ALS for revenues.
Note: Landings and revenues for 2013 are incomplete.

3.3.2 Economic Description of the Recreational Sector

The following focuses on recreational landings and effort (angler trips) for black sea bass. The major sources of data summarized in this description are the Recreational ACL Dataset (SEFSC MRIPACLspec_rec81_13wv6_21Feb14), as summarized by SERO-LAPP, for landings and the NOAA fisheries website for accessing recreational data (**http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index)** for effort. The 2013 data are preliminary or incomplete, including the unavailability of the 2013 headboat landings. Additional information on the recreational sector of the snapper grouper fishery contained in previous or concurrent amendments 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)].

The recreational fishery is comprised of the private sector and 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.

Harvest

The private/rental mode was the dominant sector in the harvest for black sea bass, followed by headboats, charter boats, and shore mode (**Table 3.3.2.1**). This is true for recreational landings in the South Atlantic and in other states. The annual trend of recreational black sea bass landings was not uniform across fishing modes during 2009/10-2012/13. Landings were highest in 2009/10 for all fishing modes, except headboats whose highest landings occurred in 2010/11. In the mid- and North Atlantic, landings peaked in 2012/13 for the headboats and charter boats. The other modes recorded their highest landings in 2011/11 for the private mode and in 2009/10 for the shore mode. Quite apparent in **Table 3.3.2.1** is that for each fishing mode the mid- and North Atlantic dominated their counterparts in the South Atlantic.

Among the states in the South Atlantic, Florida dominated all other states in the harvest for black sea bass in 2010/11 and 2011/12; South Carolina was the dominant state in 2009/10 and 2012/13; and, North Carolina had higher landings than Florida in 2012/13 (**Table 3.3.2.2**). Again some caution has to be recalled here regarding the incompleteness of the 2013 landings. Every year from 2009/10 through 2012/13, the Northern states recorded more landings than the combined landings of the four South Atlantic states.

Seasonality is quite apparent in black sea bass recreational landings (**Figure 3.3.2.1**). Landings peaked at the start of the fishing season, declined in the next two waves, and picked up again in March/April. The main reason July/August recorded higher landings than June is the two-month composition of this wave. Seasonality could be partly due to the opening and closing dates of the fishing season.

Table 3.3.2.1. Black sea bass recreational landings (lb ww) by mode, fishing year 2009/10–2012/13.

	Charter	Headboat	Private	Shore	Total
South Atlantic					
2009/10	123,016	209,720	402,828	5,189	740,754
2010/11	107,744	253,604	207,537	2,147	571,033
2011/12	100,907	201,957	334,139	1,309	638,312
2012/13	48,425	95,669	237,572	1,940	383,605
Average	95,023	190,238	295,519	2,646	583,426
Mid- and North Atlantic (NE)					
2009/10	292,747	255,840	2,081,436	26,638	2,656,660
2010/11	194,140	355,062	2,320,994	7,587	2,877,782
2011/12	238,469	285,894	1,012,176	13,461	1,550,000
2012/13	485,581	433,792	1,787,764	13,817	2,720,954
Average	302,734	332,647	1,800,592	15,376	2,451,349

Source: SEFSC MRIPACLspec_rec81_13wv6_21Feb14; SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and headboat landings for 2013 are not yet available.

Table 3.3.2.2. Black sea bass recreational landings (lb ww) by state, fishing year 2009/10–2012/13.

	FL	GA	SC	NC	NE	Total
2009/10	232,928	32,169	285,718	189,940	2,656,660	3,397,414
2010/11	221,968	41,436	156,218	151,410	2,877,782	3,448,815
2011/12	246,449	48,748	179,657	163,458	1,550,000	2,188,312
2012/13	106,209	13,548	138,706	125,143	2,720,954	3,104,560
Average	201,888	33,975	190,075	157,488	2,451,349	3,034,775

Source: SEFSC MRIPACLspec_rec81_13wv6_21Feb14; SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and headboat landings for 2013 are not yet available.

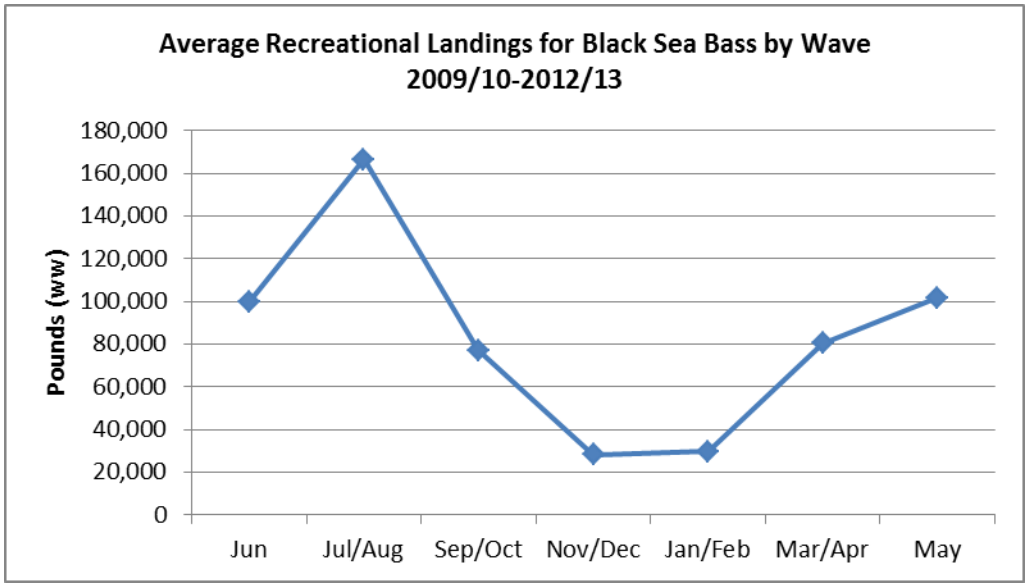

Figure 3.3.2.1. South Atlantic average recreational landings for black sea bass by wave, fishing year 2009/10-2012/13.
Source: SEFSC MRIPACLspec_rec81_13wv6_21Feb14; SERO-LAPP, 2014.
Note: Landings for 2013 are incomplete and headboat landings for 2013 are not yet available.

Effort

Recreational effort can be characterized in terms of the number of trips as follows:

1. Target effort - The number of individual angler trips, regardless of trip duration, where the intercepted angler indicated that the species was targeted as either the first or the second primary target for the trip. The species did not have to be caught.
2. Catch effort - The number of individual angler trips, regardless of trip duration and target intent, where the individual species was caught. The fish caught did not have to be kept.
3. All recreational trips - The total estimated number of recreational trips taken, regardless of target intent or catch success.

The source of the following target and catch trips is NOAA fisheries website for accessing recreational data: **http://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/index**.

Estimates of target and catch effort for black sea bass by fishing mode are presented in **Table 3.3.2.3** and those by state are shown in **Table 3.3.2.4**. Clearly apparent in these tables is the substantial difference between target and catch trips, with target trips being generally less than 10 percent (significantly less for some modes) of catch trips. The private mode dominated in both target and catch trips. The charter mode reported higher target trips but lower catch trips than the shore mode. On average, North Carolina recorded the highest target and catch trips, followed by South Carolina for target trips and Florida for catch trips.

Similar to harvests and likely for the same reasons, there is an apparent seasonality of both target and catch trips for black sea bass (**Figure 3.3.2.2**). Catch trips peaked in July/August, declined thereafter through January/February, and picked up in the next two waves. This is the same pattern as that for harvests shown in **Figure 3.3.2.1**. Target trips followed almost the same pattern from wave to wave, except that they troughed in November/December.

Table 3.3.2.3. Target and catch trips for black sea bass in the South Atlantic by fishing mode, fishing year 2009/10-2012/13.

	Charter	Private	Shore	Total
Target Trips				
2009/10	2,185	30,062	404	32,652
2010/11	2,153	37,383	648	40,184
2011/12	506	44,063	175	44,744
2012/13	31	26,895	0	26,926
Average	1,219	34,601	307	36,126
Catch Trips				
2009/10	30,613	381,891	98,925	511,429
2010/11	35,245	450,206	99,899	585,350
2011/12	34,767	542,699	119,211	696,677
2012/13	21,283	464,412	87,706	573,401
Average	30,477	459,802	101,435	591,714

Table 3.3.2.4. Target and catch trips for black sea bass in the South Atlantic by state, fishing year 2009/10-2012/13.

	FL	GA	NC	SC
Target Trips				
2009/10	7,411	2,016	14,627	8,597
2010/11	11,444	3,755	16,876	8,512
2011/12	12,247	4,687	15,055	13,403
2012/13	2,974	526	9,526	13,900
Average	8,519	2,746	14,021	11,103
Catch Trips				
2009/10	157,848	38,677	214,857	100,047
2010/11	211,034	46,255	243,760	84,301
2011/12	275,153	43,059	264,399	114,066
2012/13	175,076	38,048	262,819	97,457
Average	204,778	41,510	246,459	98,968

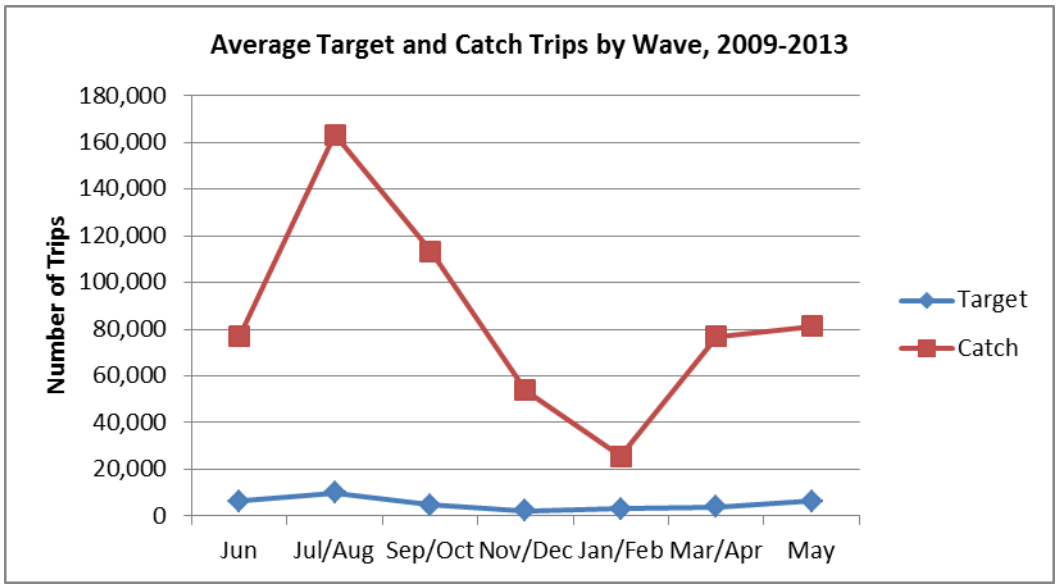

Figure 3.3.2.2. South Atlantic average target and catch trips by wave, fishing year 2009//10-2012/13.

Similar analysis of recreational effort is not possible for the headboat sector because headboat data are not collected at the angler level. Estimates of effort in the headboat sector are provided in terms of angler days, or the number of standardized 12-hour fishing days that account for the different half-, three-quarter-, and full-day fishing trips by headboats. **Table 3.3.2.5** displays the annual angler days by state for 2009/10-2012/13 and **Table 3.3.2.6** displays their average (2009/10-2012/13) monthly distribution. Confidentiality issues required combining Georgia estimates with those of Northeast Florida.

Headboat angler days (trips) varied from year to year across various states. Total headboat angler trips fell followed a see-saw pattern, increasing in 2010/11, falling in the next year, and increasing the following year (**Table 3.3.2.5**). Southeast Florida registered the highest number of angler trips, followed by Georgia/Northeast Florida, South Carolina, and North Carolina. Clearly Florida dominated all other states in terms of headboat angler days.

On average (2009/10-2012/13), overall angler days peaked in July and troughed in November (**Table 3.3.2.6**). All states recorded peak angler trips in July, similar to the overall peak month. None of the states, however, had the same trough month as the overall angler trips. North Carolina had a trough in February, South Carolina in January, Georgia/Northeast Florida in November, and Southeast Florida in October.

Table 3.3.2.5. South Atlantic headboat angler days, by state, fishing year 2009/10-2012/13.

	2009/10	2010/11	2011/12	2012/13	AVERAGE
NC	19,353	20,325	18,656	20,402	19,684
SC	40,703	46,175	44,126	39,510	42,629
GA/NEFL	61,108	50,859	31,239	28,509	42,929
SEFL	67,457	76,613	99,466	111,665	88,800
TOTAL	188,621	193,972	193,487	200,086	194,042

Source: SEFSC Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

Table 3.3.2.6. Average monthly distribution of headboat angler days in the South Atlantic, by state, fishing year 2009/10-2012/13.

	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
NC	3,978	4,605	3,574	2,059	1,794	320	3	15	0	175	898	2,263
SC	9,081	11,401	8,239	3,382	2,283	583	107	44	97	1,098	2,834	3,481
GA/NEFL	6,909	7,277	4,576	2,531	2,312	1,526	2,030	1,673	1,917	3,341	4,228	4,610
SEFL	8,998	10,371	7,524	4,545	3,806	4,559	6,223	6,609	7,406	9,974	9,920	8,867
TOTAL	28,965	33,654	23,913	12,517	10,194	6,987	8,363	8,340	9,420	14,588	17,879	19,221

Source: SEFSC Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab.

Economic Values and For-Hire Vessel Financials

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

The NMFS Southeast Science Center (Carter and Liese 2012) developed estimates of consumer surplus per fish, per angler trip. These estimates were culled from various studies – Haab *et al.* (2009), Dumas *et al.* (2009), and NOAA SEFSC SSRG (2009). The values/ranges of consumer surplus estimates are (in 2013 dollars) $121 to $139 for red snapper, $134 to $139 for grouper, $11.9 for other snappers, and $87 for snapper grouper. Haab *et al.* (2009) also estimated consumer surplus for snapper in general to range from $12 to $34 (2013 dollars) for one additional fish caught and kept.

While anglers receive economic value as measured by the consumer surplus associated with fishing, for-hire businesses receive value from the services they provide. Producer surplus is the measure of the economic value these operations receive. Producer surplus is the difference between the revenue a business receives for a good or service, such as a charter or headboat trip,

and the cost the business incurs to provide that good or service. Estimates of the producer surplus associated with for-hire trips are not available. However, proxy values in the form of net operating revenues are available (Christopher Liese, NMFS SEFSC, personal communication, August 2010). These estimates were culled from several studies – Liese *et al.* (2009), Dumas *et al.* (2009), Holland *et al.* (1999), and Sutton *et al.* (1999). Estimates of net operating revenue per angler trip (2013 dollars) on representative charter trips (average charter trip regardless of area fished) are $158 for Louisiana through east Florida, $147 for east Florida, $170 for northeast Florida, and $139 for North Carolina. For charter trips into the EEZ only, net operating revenues are $153 in east Florida and $161 in northeast Florida. For full-day and overnight trips only, net operating revenues are estimated to be $169-$174 in North Carolina. Comparable estimates are not available for Georgia, South Carolina, or Texas.

Net operating revenues per angler trip are lower for headboats than for charter boats. Net operating revenue estimates (2013 dollars) for a representative headboat trip are $52 in the Gulf of Mexico (all states and all of Florida), and $68-$74 in North Carolina. For full-day and overnight headboat trips, net operating revenues are estimated to be $81-$84 in North Carolina. Comparable estimates are not available for Georgia and South Carolina.

A study of the North Carolina for-hire fishery provides some information on the financial status of the for-hire fishery in the state (Dumas *et al.* 2009). Depending on vessel length, regional location, and season, charter fees per passenger per trip ranged from $182.58 to $273.20 for a full-day trip and from $101.70 to $134.63 for a half-day trip; headboat fees ranged from $78.71 to $88.75 for a full-day trip and from $41.32 to $46.60 for a half-day trip. Charter boats generated a total of $60.48 million in passenger fees, $3.5 million in other vessel income (e.g., food and beverages), and $5.2 million in tips. The corresponding figures for headboats were $10.67 million in passenger fees, $0.22 million in other vessel income, and $0.97 million in tips. Non-labor expenditures (e.g., boat insurance, dockage fees, bait, ice, fuel) amounted to $46.6 million for charter boats and $5.8 million for headboats. Summing across vessel lengths and regions, charter vessels had an aggregate value (depreciated) of $130.70 million and headboats had an aggregate value (depreciated) of $11.08 million. All these values are in 2013 dollars.

A more recent study of the for-hire sector provides estimates on gross revenues generated by the charter boats and headboats in the South Atlantic (Holland *et al.* 2012). Average annual revenues (2013 dollars) per charter boat are estimated to be $130,524 for Florida vessels, $55,348 for Georgia vessels, $104,417 for South Carolina vessels, and $105,593 for North Carolina vessels. For headboats, the corresponding per vessel estimates are $216,975 for Florida vessels and $159,332 for vessels in the other states.

3.3.3 Social and Cultural Environment

Black sea bass are commercially harvested using a variety of gear including hook and line gear and pots. The majority of commercial harvest is landed using pot gear off the coasts of North and South Carolina. In the recent Amendment 18A, the Council implemented restrictions

on the number of pots (35) and a prohibition on overnight soaking of pots (leaving them in the water). These were considered to be viable alternatives to reduce interactions with marine mammals (SAFMC 2011).

In addition, Amendment 18A added an endorsement to limit participation in the pot sector, reducing the number of active fishermen from approximately 55-60 (SAFMC 2011) to 32 valid or renewable endorsements. Currently, 15 endorsements are associated with communities in North Carolina, 9 endorsements with communities in South Carolina, and 8 endorsements with Florida communities. Most of the North Carolina endorsements are associated with areas in Onslow County, primarily Sneads Ferry, with other communities with black sea bass pot fishermen in Carteret County and further north into the Outer Banks (Wanchese) (see **Figure 3.3.1**). In South Carolina, communities associated with black sea bass pot fishing include Little River, Georgetown, and Charleston. The Florida communities of note include several communities north of Cape Canaveral, including Port Orange, Ormond Beach, and Ponce Inlet. Of the 32 endorsements issued, only five endorsements have been transferred from the original issuee to a different snapper grouper permit holder.

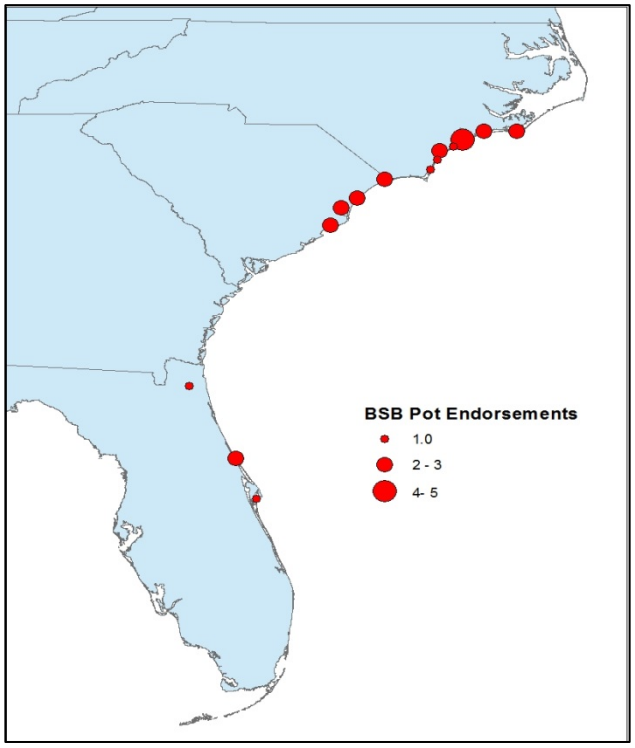

Figure 3.3.3.1. Black sea bass pot endorsements by homeport community.
Source: SERO Permits 2013

Black sea bass is part of the larger snapper grouper complex and while this species is harvested commercially using several different gear types, the proposed regulatory action within this amendment will primarily affect commercial black sea bass pot fishermen, with some indirect effects for black sea bass fishermen using other types of gear.

Figure3.3.3.2 shows South Atlantic the top fishing communities by the combined vessel local quotient (LQ). The vessel LQ is a measure of the proportion of an individual vessel's total landings of one species (in this case, black sea bass) in a fishing year compared to landings of all species in that year. An individual vessel LQ illustrates if a species is a large part of a vessel's catch, which can indicate that the vessel (and associated captain, owner, crew, fish house) is relatively more reliant on a species. For **Figure 3.3.3.2**, the vessel LQs in each community are combined to allow for a comparison among communities, and to show how vessels' reliance in a community on black sea bass has changed in recent years.

Figure 3.3.3.2 suggests that the communities of Sneads Ferry, North Carolina; Georgetown, South Carolina; and Little River, South Carolina, have vessels with relatively higher reliance on black sea bass harvested with pots within the region over the last few years. It should be noted that **Figure 3.3.3.2** also shows how the combined vessel LQs for a community changed after the endorsement program was implemented. Sneads Ferry, Georgetown and Little River have almost always been the top three communities, while most other communities have fluctuated. In particular, the graph shows that Ponce Inlet, Florida, and Cape Carteret, North Carolina, have increased combined vessel LQs over recent years, suggesting growth in one or several black sea bass pot businesses in those communities.

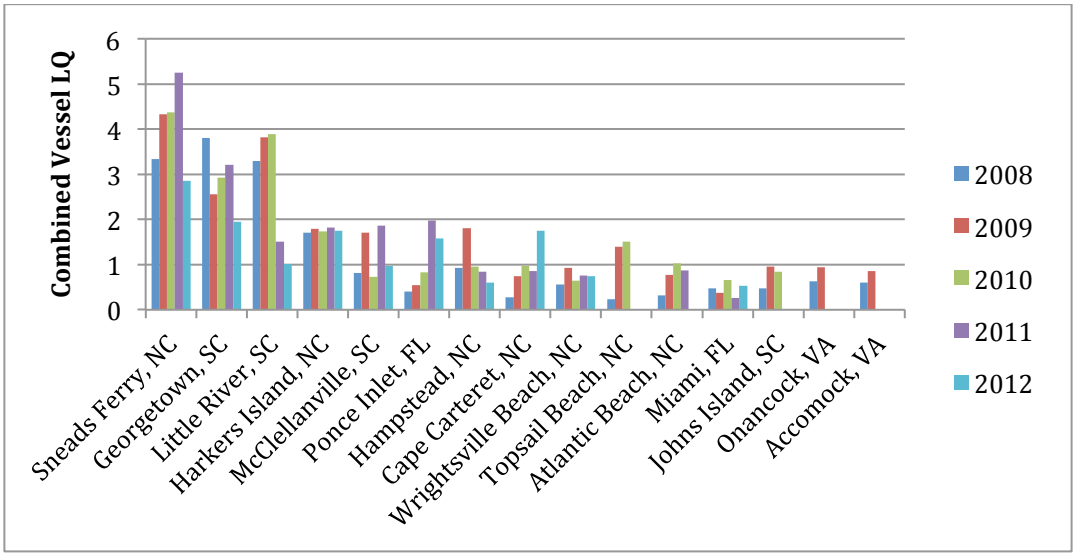

Figure 3.3.3.2. Combined vessel local quotients (LQs) for black sea bass harvested with pots in the top communities for 2008-2012. Source:

Figure 3.3.3.3 shows the combined vessel LQs for black sea bass harvested with bandit gear in the top communities in recent years. This figure illustrates how communities may compare to one another in terms of reliance on black sea bass hook and line fishing, and how this has changed over the past few years. Communities in North Carolina and South Carolina are dominant in the region for black sea bass harvest with bandit gear, particularly Little River,

South Carolina. **Figure 3.3.3.3** also suggests growth in black sea bass harvest with bandit gear for fishing businesses in several communities since the pot endorsement program began.

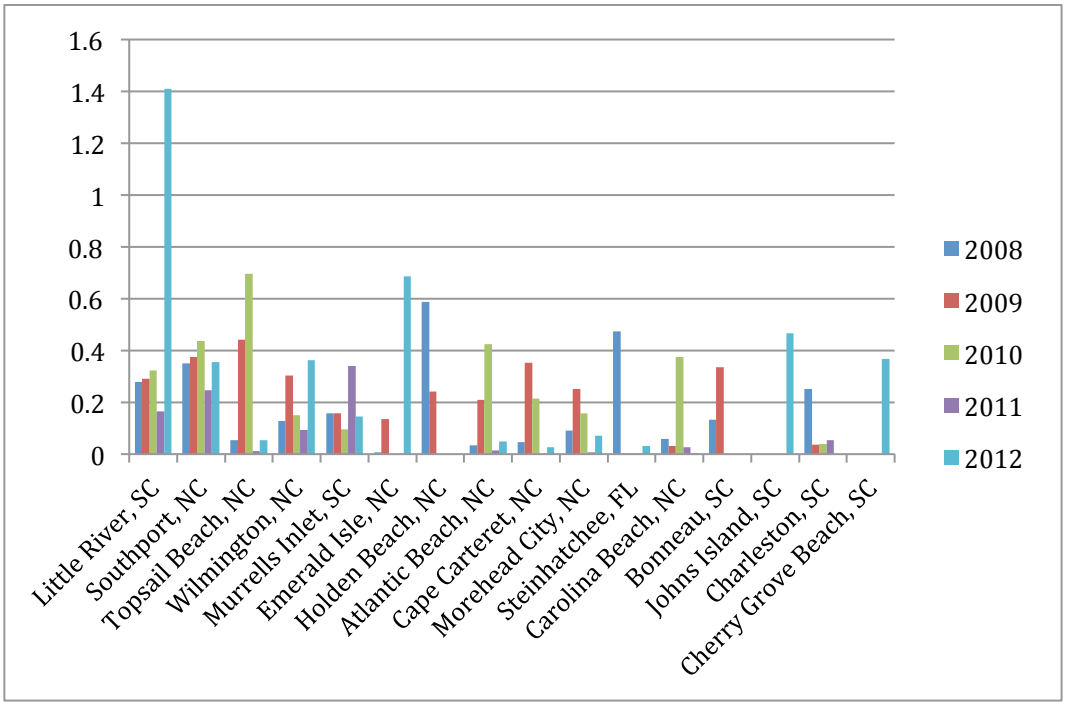

Figure 3.3.3.3. Combined vessel local quotients (LQs) for black sea bass harvested with bandit gear in the top communities for 2008-2012. Source:

Commercial Fishing Engagement and Reliance

While we can characterize the fleet landings with regard to those communities that have high regional quotients for landings and value, it is more difficult to characterize the fleet and its labor force regarding demographics and places of residence for captains and crew of vessels. There is little to no information on captains and crew, including demographic makeup of crew, so we are left with descriptions regarding the engagement and reliance of fishing communities and their social vulnerability. To further delineate which communities are more dependent upon fishing, a suite of measures has been developed which uses the top communities identified in the RQ graphics and applies indices of fishing engagement and reliance.

Several indices composed of existing permit and landings data were created to provide a more empirical measure of fishing dependence (Jacob et al. 2012; Colburn and Jepson 2013; Jepson and Colburn 2013). Fishing engagement uses the absolute numbers of permits, landings and value, while fishing reliance includes many of the same variables as engagement, but divides by population to give an indication of the per capita impact of this activity.

Using a principal component and single solution factor analysis each community receives a factor score for each index to compare to other communities. Factor scores are represented by colored bars and are standardized, therefore the mean is zero. Two thresholds of 1 and ½

standard deviation above the mean are plotted onto the graphs to help determine thresholds for significance. Because the factor scores are standardized, a score above 1 is also above one standard deviation.

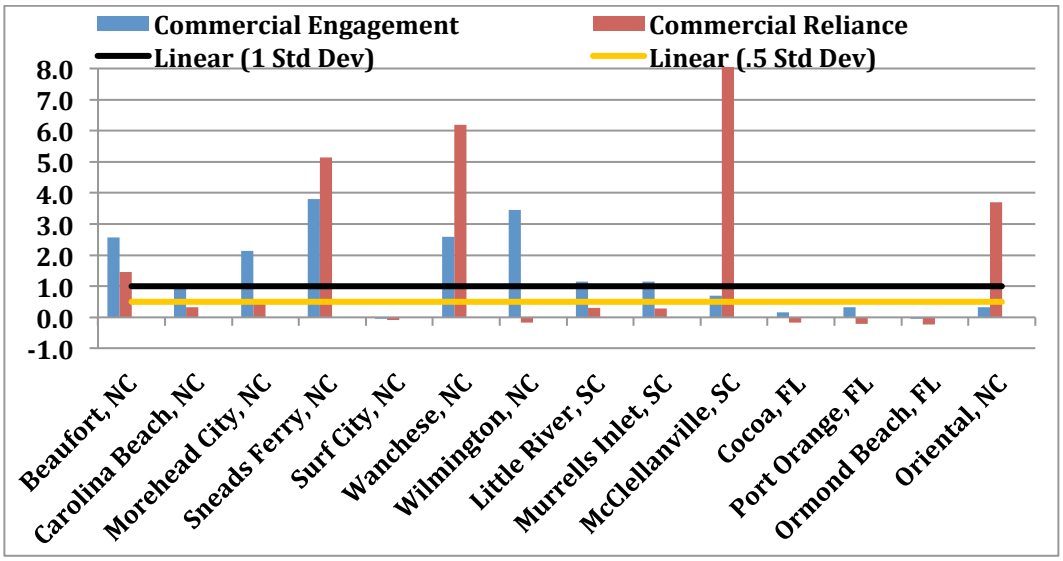

Figure 3.3.3.4. Commercial fishing engagement and reliance for top black sea bass fishing communities. Source: SERO Social Indicator Database 2013

The communities included in **Figures 3.3.3.4** have varying combinations of reliance and engagement. The communities of Beaufort, Sneads Ferry and Wanchese, North Carolina are considered likely dependent upon fishing overall as they exceed both thresholds for fishing reliance and engagement measures. Other communities might be considered commercially engaged as they exceed the highest threshold for commercial engagement. Those communities are: Morehead City, and Wilmington, North Carolina; Little River and Murrell's Inlet, South Carolina. Finally, communities like McClellanville, South Carolina and Oriental are commercially reliant as they exceed the highest threshold for commercial reliance.

Broader Affected Social Environment

In addition to fishermen and fishing communities as part of the social environment, this amendment may also have a broader Affected Social Environment because it addresses protection of North Atlantic right whales, which are protected under two federal laws, the MMPA and ESA. The mandates and authority under these laws were established with the end-goal that protection of these species is important to U.S. citizens and society. Specifically, the MMPA states that:

> ..marine mammals have proven themselves to be resources of **great international significance, esthetic and recreational as well as economic,** and it is the sense of the Congress that they should be protected and encouraged to develop to the greatest extent feasible commensurate with sound policies of resource management and that the primary objective of their management should be to maintain the health and

stability of the marine ecosystem. (16 U.S. Code § 1361) (emphasis added)

The ESA also includes language that states:

> …these species of fish, wildlife, and plants are **of esthetic, ecological, educational, historical, recreational, and scientific value to the Nation and its people**;
>
> …encouraging the States and other interested parties, through Federal financial assistance and a system of incentives, to develop and maintain conservation programs which meet national and international standards is a key to meeting the Nation's international commitments and to better safeguarding, **for the benefit of all citizens**, the Nation's heritage in fish, wildlife, and plants. (16 U.S. Code § 1531) (emphasis added)

Therefore, the United States and its citizens are included in the social environment for purposes of analysis of potential social effects in **Section 4.3**.

3.3.4 Environmental Justice

In order to assess whether a community may be experiencing EJ issues, a suite of indices created to examine the social vulnerability of coastal communities (Colburn and Jepson 2012; Jacob et al. 2012) is presented in **Figure 3.3.4.1**. The three indices are poverty, population composition, and personal disruptions. The variables included in each of these indices have been identified through the literature as being important components that contribute to a community's vulnerability. Indicators such as increased poverty rates for different groups, more single female-headed households and children under the age of 5, disruptions such as higher separation rates, higher crime rates, and unemployment all are signs of vulnerable populations. These indicators are closely aligned to previously used measures of EJ, which used thresholds for the number of minorities and those in poverty, but are more comprehensive in their assessment. Again, for those communities that exceed the threshold it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change. It should be noted that some communities may not appear in these figures as there are no census data available to create the indices.

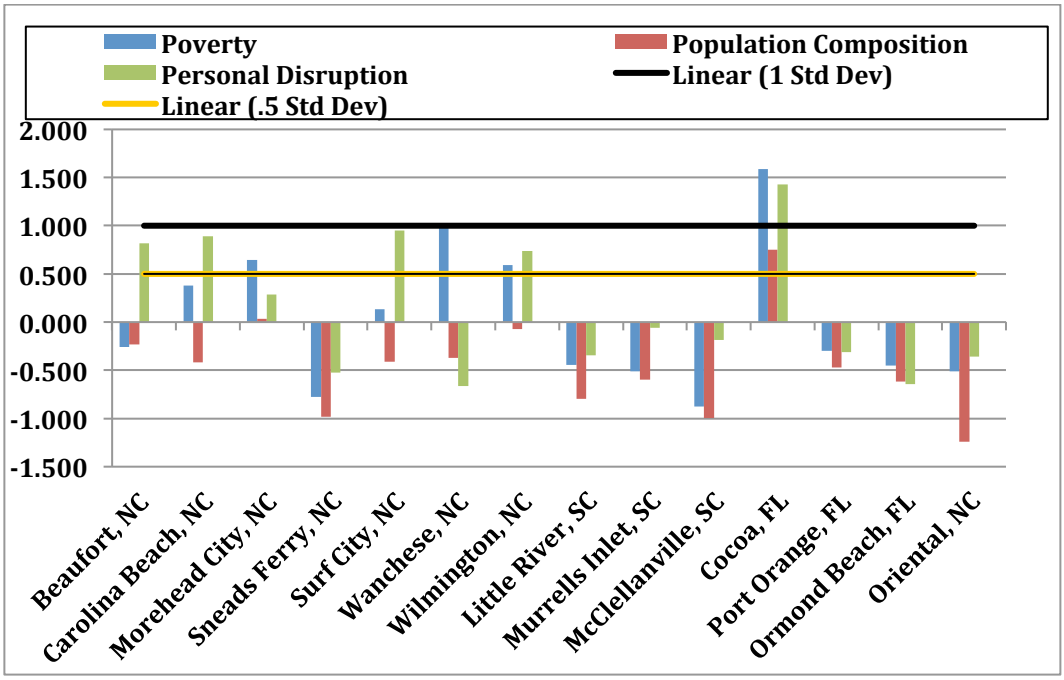

Figure 3.3.4.1. Social Vulnerability indices for black sea bass fishing communities in terms of pounds and value regional quotient in the South Atlantic.
Source: SERO Social Indicator Database 2014

There is one community in **Figure 3.3.4.1** that exceeds both thresholds for at least two indices: Cocoa, Florida. Wilmington, North Carolina, exceeds the lower threshold for poverty and personal disruption, with a few other communities exceeding the lower threshold for one or the other: Beaufort, Carolina Beach, Morehead City and Wanchese, North Carolina. While most communities in **Figure 3.4.4.1** are not experiencing much social vulnerability, there could still be some negative social effects that are exacerbated by other vulnerabilities that occur but are not represented by these indicators. However, these measures of social vulnerability are representative of many common social vulnerability factors.

Finally, the general participatory process used in the development of fishery management measures (e.g., scoping meetings, public hearings, and open South Atlantic Council meetings) is expected to provide sufficient opportunity for meaningful involvement by potentially affected individuals to participate in the development process of this amendment and have their concerns factored into the decision process. Public input from individuals who participate in the fishery has been considered and incorporated into management decisions throughout development of the amendment.

3.5 Administrative Environment

3.5.1 The Fishery Management Process and Applicable Laws

3.5.1.1 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 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 matters, are open to the public. The South Atlantic Council uses its SSC to review the data and science being used in assessments and fishery management plans/amendments. In

addition, the regulatory process is in accordance with the Administrative Procedure Act, in the form of "notice and comment" rulemaking.

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

3.5.1.3 Enforcement

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

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

Administrative monetary penalties and permit sanctions are issued pursuant to the guidance found in the Policy for the Assessment of Civil Administrative Penalties and Permit Sanctions for the NOAA Office of the General Counsel – Enforcement Section. This Policy is published at the Enforcement Section's website: http://www.gc.noaa.gov/enforce-office3.html .

Chapter 4. Environmental Consequences and Comparison of Alternatives

4.1 Biological Effects

Alternatives[1]
(preferred alternatives in bold)

1. No action. Closure would remain.
2. No closure.
3. Closure of the North Atlantic right whale critical habitat area Nov 15 – April 15.
4. Closure from Ponce Inlet, FL to Cape Hatteras from Nov 1 – April 30 based on extrapolated model outputs.
5. Closure from Nov 1 – April 30 in depths 25 m or shallower from C. Canaveral to Savannah and 30 m or shallower from Savannah to C. Hatteras.
6. Partial closure from Nov 1 – April 30 between C. Canaveral & C. Hatteras based on NGO comments.
7. Partial closure from Nov 1 – April 30 between Sebastian, FL & C. Hatteras, NC based on NGO comments.
8. Closure of the North Atlantic right whale critical habitat area & north to C. Hatteras in depths 25 m or shallower
   8a. Nov 1 – Dec 15 & Mar 15 – Apr 30
   8b. Off NC/SC Nov 1 – Dec 15/Mar 15 – April 30 and off FL/GA Nov 15 – April 15

[1]See Chapter 2 for a more detailed description of the alternatives.

Black Sea Bass

The alternatives range from maintaining the current prohibition on use of black sea bass pots, annually, from November 1 through April 30 (**Alternative 1 (No Action)**) to removing the prohibition on use of black sea bass pots (**Alternative 2**). **Alternative 3** evaluates prohibiting black sea bass pots within northern right whale critical habitat, annually, from November 15 through April 15. **Alternatives 4-7** evaluate various areas in which use of black sea bass pots would be prohibited, annually, from November 1 through April 30. Finally, **Alternative 8** combines northern right whale critical habitat with additional area off the Carolinas and northern Georgia and has two sub-alternatives that would close the areas for differing times.

The expected closure date ranges and the estimated percent of the commercial black sea bass ACL expected to be harvested are shown in **Table 4.1.1.1**. The ranges of closing dates, and in the case of **Sub-alternative 8b**, the range of expected percentages of the commercial ACL that would be landed, are due to different scenarios considered in the analyses (SERO-LAPP-2014-09; included as **Appendix X**). The scenarios considered various combinations of the spatial distribution of landings and effort, and factors that affected catch rate projections.

Regardless of which alternative the South Atlantic Council chooses, no biological impacts to the black sea bass stock are expected. Adverse effects are prevented because overall harvest in the commercial sector is limited to the commercial ACL by the commercial accountability measures, and the ACL is reduced from the overfishing level as required to address assessment uncertainty. In addition, there is no evidence to suggest that changing the timing of harvest within the periods covered by the alternatives would have adverse biological impacts. These alternatives offer no advantages to the black sea bass stock in terms of further reduced harvest because it is estimated

that 97-100% of the ACL would be taken (**Table 4.1.1.1**). Therefore, there is no difference in the biological effects on black sea bass from the alternatives.

Table 4.1.1.1 Expected closure dates for the commercial black sea bass fishery and percent of the ACL taken with a January 1 fishing year start date.

	Closure Date	% ACL
Alternative 1	No Closure	97%
Alternative 2	Aug 4 - Oct 2	100%
Alternative 3	Aug 5 - Oct 3	100%
Alternative 4	Oct 4 - Nov 30	100%
Alternative 5	Dec 8 - Dec 31	100%
Alternative 6	Dec 1 - Dec 24	100%
Alternative 7	Dec 8 - Dec 31	100%
Alternative 8a	Aug 17 - Oct 12	100%
Alternative 8b	Dec 17 - No Closure	99-100%

Source: SERO Analysis from October 2014

Protected Resources
Will be available by December 12, 2014.

4.2 Economic Effects

While all or nearly all of the commercial ACL would be expected to be taken under each of the alternatives, the economic effects of the various alternatives are not identical. Two factors that could create differences in economic effects among the various alternatives are potential lost opportunity should the fishing year end before the entire ACL is taken and potential differences in trip costs associated with various alternatives.

Under all of the scenarios considered to arrive at predicted closure dates, only **Alternative 1 (No Action)** estimated that the commercial ACL most likely would not be taken in a given fishing year. It is estimated that approximately 3% (23,400 lbs ww) of the commercial ACL would not be taken under **Alternative 1 (No Action)** resulting in a potential loss of $68,677 (in 2013 dollars). Of the remaining alternatives, only **Alternative 8b** had the possibility of some of the ACL not taken during the fishing year. It is estimated that approximately 1% (7,800 lbs ww) of the commercial ACL would not be taken under **Alternative 8b** resulting in a potential loss of $22,892 (in 2013 dollars).

All of the alternatives, except **Alternative 2**, result in at least in some temporal/spatial closures between shore and a specified distance from shore for all or part of the period of November 1 through April 30. Trips that would have otherwise occurred in the closed areas would have to travel further off shore to make a black sea bass pot trip increasing the amount of time and resources needed to make the trip to catch the same amount of fish. Additionally, closures that would increase the number of trips that would have to be taken before the entire ACL could be caught would increase trip costs. It is not possible to estimate these increased trip costs with the data currently available.

Fishermen have reported that fish caught during the November 1 through April 30 time period are darker in color and bring a higher ex-vessel price. However, it has been a number of years since fishermen were allowed to keep fish caught in these months, making an analysis of monthly price per pound based on current data not possible.

Making the assumption that alternatives which take the longest average time to catch the entire ACL, thus increasing trip costs, it possible to rank the alternatives from the most to the least direct, positive economic effects. **Alternative 2** which would open the entire closed area has the most positive economic effects, followed in order by **Alternative 3**, **Alternative 8a**, **Alternative 4**, **Alternative 6**, **Alternative 5**, **Alternative 7**, **Alternative 8b**, compared to **Alternative 1 (No Action)**.

4.3 Social Effects

The social effects of removal or modifications to the seasonal closure for black sea bass pots include direct effects on participants in the black sea bass pot fishery, and direct effects on participants in the hook-and-line (and other gear types) portion of the black sea bass fishery. For pot fishermen, the potential effects are primarily associated with foregone economic benefits due to restricted or no access to the black sea bass resource during the winter. For hook-and-line fishermen, the potential effects of removal or modifications to the seasonal closure for black sea bass pots are associated with greater competition with pot fishermen, less access to the increased black sea bass ACL, and a likely shorter fishing season because the ACL would be more available to the pot fishermen, who make up most of the landings. Minimal indirect effects are expected for recreational anglers and for-hire businesses.

Sections 3.3.3 and **3.3.4** provide detailed information about the social environment for the black sea bass fishery. **Figure 3.3.3.2** shows communities with the highest pounds of black sea bass harvested by pots, with the top ten including Sneads Ferry (North Carolina), Georgetown (South Carolina), Little River (South Carolina), Harkers Island (North Carolina), McClellanville (South Carolina), Ponce Inlet (Florida), Hampstead (North Carolina), Cape Carteret (North Carolina), Wrightsville Beach (North Carolina), and Topsail Beach (North Carolina). **Figure 3.3.3.3** shows communities with the highest pounds of black sea bass harvested by bandit gear, with the top three including Little River (South Carolina), Southport (North Carolina), and Topsail Beach (North Carolina). Additionally, consideration of engagement and reliance on commercial fishing for each community (**Figure 3.3.3.4**) and social vulnerability (**Figure 3.3.4.1**), the communities of Wanchese (North Carolina) and Sneads Ferry (North Carolina) are those that would be expected to experience positive and negative effects of changes for the black sea bass pot fishermen.

Black sea bass pot fishermen have been affected by multiple management changes in a relatively short period of time through recent Council actions and Atlantic Large Whale Take Reduction Plan (ALWTRP) requirements. Following the restrictive catch limits implemented in the rebuilding plan, and an effort shift from other target species due to ACLs and AMs, pot fishermen have experienced increasingly shorter seasons and continual overages. When the endorsement program was implemented through Amendment 18A (SAFMC 2011), more than

half of active pot fishermen did not receive an endorsement and could no longer participate in the fishery. Although the landings level of active fishermen who did not qualify for an endorsement was relatively small (to qualify for a black sea bass endorsement, a fishermen with a valid snapper grouper commercial must have had black sea bass landings using black sea bass pot gear averaging at least 2,500 pounds whole weight, annually during the period January 1, 1999 through December 31, 2010), the endorsement program also created an additional barrier for future participants. Overall, the endorsement program permanently locked out most fishermen from this portion of the black sea bass fishery.

Fishermen, who did receive endorsements, were placed under a new trip limit, the new pot limit, and requirement to bring pots to shore at the end of each trip. When the final rule for Regulatory Amendment 19 (SAFMC 2013) indicated that the ACL could be more than doubled, there were only partial positive effects for the pot fishermen due to the closure from November through April that has restricted them from benefitting from the extended season and larger ACL. [While the closure was intended to minimize interaction of pot gear with large whales, it was also included in Regulatory Amendment 19 in order to expedite the increase in the black sea bass ACL due to the additional time that would have been required for NMFS to complete a Section 7 consultation for the snapper grouper fishery (SAFMC 2013)] Additionally, black sea bass pot fishermen are required to comply with the ALWTRP gear and seasonal requirements, which have been in place for the black sea bass pot fishery since 2007, with the most recently added requirements implemented in November 1, 2014.

Under **Alternative 1 (No Action)**, pot fishermen would continue to forego economic benefits that would be available if harvest by pot was allowed into the winter months. Some fishermen report that black sea bass caught in the winter are larger and more abundant, and market prices are better. However, some pot fishermen from the Carolinas have voiced concern that the winter pot fishery for black sea bass would favor Florida fishermen. Weather in Florida is generally better than weather conditions than in North Carolina and South Carolina, and Florida pot fishermen could catch a greater proportion of the commercial ACL in winter months. Public input also indicates that some pot fishermen feel that compliance with the ALWTRP requirements, in addition to the measures established with the endorsement program are sufficient to protect right whales and calves, and keeping the seasonal closure invalidates the rationale and purpose for all protection measures under the ALWTRP and through Amendment 18A.

For black sea bass participants who do not have a black sea bass pot endorsement, **Alternative 1 (No Action)** would be expected to provide the most benefits. The seasonal pot closure allows fishermen without a black sea bass pot endorsement to use gear types other than black sea bass pots to fish for black sea bass in the winter months. If pots are used during the winter months, it is more likely that the commercial ACL for black sea bass would be met before the end of the calendar year. Additionally, hook and line fishermen would have the opportunity to supply the winter market for black sea bass and take advantage of higher market prices.

As noted in **Section 3.3.3**, marine mammal protection has broad social effects as well, as conservation of endangered species can produce societal benefits by protecting species for aesthetic, economic, scientific and historical value to the U.S. and citizens. Maintaining the

seasonal closure for the pot fishery under **Alternative 1 (No Action)** could result in broad social benefits through improved protection of right whales during migration to and from calving grounds during the winter moreso than removal (**Alternative 2**) or modification to the closure area or period (**Alternatives 3-8**). As discussed in **Appendix E**, the relative risk to right whales will be is expected to be lower for alternatives with pot prohibitions that encompass larger areas and/or time periods during November through April. However, because the baseline value of risk is unknown, the actual increase or decrease in risk of interactions cannot be determined, so that any associated social benefits would also be unknown. With all other regulations and management measures in place for the black sea bass pot fishery that contribute to minimizing risk of interactions through Council actions and ALWTRP requirements (see **Section 1.6**), the return on investment of additional restrictions such as a spatial/temporal prohibition on black sea bass pot fishing could be low, particularly for a relatively small fishery such as the black sea bass pot fishery. Overall, any social benefits that would be expected to result from improved right whale protection will only be realized when biological benefits to the right whales can be measured and demonstrated.

The effects of **Alternatives 2-8** on fishermen and associated communities vary with the temporal and spatial characteristics of the closures. **Alternative 2** would likely be the most beneficial for the pot fishermen by allowing them to fish during the winter months, but would also contribute to a faster rate of harvest and early in-season closure, which would affect not only the pot fishing businesses but also the hook and line fishermen, dealers, and fish house owners. **Alternative 3** would provide an additional four weeks to the current fishing season for pots and allow pots to be fished outside of the right whale designated critical habitat, so that pot fishermen could take advantage of the increased ACL. Depending on the areas that could be closed to pot fishing and actual areas where fishermen place their pots, **Alternatives 3-7** all provide some way for pot fishing to continue to some degree in the winter months, and would be expected to generate some of the same benefits to pot fishermen as under **Alternative 2.** However, all possible negative effects under **Alternative 2** due to an earlier in-season closure would be expected under **Alternatives 3-7** as well.

Alternative 8 would be most beneficial to pot fishermen in North Carolina and South Carolina, which is where the largest proportion of pot endorsement holders are found and landings occur. **Alternative 8b** would provide more accessibility than **Alternative 8a** by allowing North Carolina and South Carolina pot fishermen to continue fishing to some degree in areas not included in the closure. However, **Alternative 8** would not benefit Florida pot fishermen, and allowing harvest in the primary areas for black sea bass pot fishing could result in the negative effects described for **Alternative 2**.

4.4 Administrative Effects

To Be Completed

Chapter 5. Council's Choice for the Preferred Alternative

5.1 Snapper Grouper Advisory Panel Comments and Recommendations

From their November 2013 meeting
Council staff reviewed alternatives to address the proposed annual closure of black sea bass pots from November 1 to April 30. Regulatory Amendment 19 implemented this regulation as well as an increase to the black sea bass ACL. The AP discussed the feasibility of the pot closure only applying to within designated Right Whale Critical Habitat. Some of the AP members from North Carolina indicated that migratory whales are frequently encountered in water 30-60 feet deep off the NC coast. Migrating whales are distributed from the Gulf of Maine south in spring and fall and congregate al calving grounds. The number of black sea bass pots the whales encounter in the South Atlantic is minuscule relative to the number of pots in the Gulf of Maine.

The AP approved the following motion:
MOTION: RECOMMEND ALTERNATIVE 4 AS PREFERRED
Alternative 4. Prohibit retention, possession, and fishing for black sea bass using black sea bass pot gear, annually, from November 1 to April 30, in designated right whale critical habitat in the South Atlantic region.

From their April 2014 meeting
The AP recommended that the closure on the use of pots be limited to designated Right Whale Critical Habitat in the South Atlantic region. The AP made no further recommendations on the amendment but reiterated that vertical lines in the northeast lobster fishery pose a much more severe threat to whales than black sea bass pots and questioned why there are no restrictions in place for the northeast lobster fishery.

From their October 2014 meeting
No analyses were available for the AP to comment on.
The following are highlights from the discussion:

- Concerns that the Council has not been given credit thus far for measures that have been implemented, e.g., endorsement program for pots, restriction on number of pots and soak time, etc.
- There have been no documented interactions between black sea bass pots and right whales.
- Amendment 18A drastically reduced effort effectively creating a day-boat fishery. Common sense indicates that there is very little risk to whales, especially since there has not been a single interaction between a whale and black sea bass pot even when the number of pots in the water was much larger and with longer soak times.

- While effort could potentially shift based on the area that is closed, it is very unlikely.
- Price of black sea bass is higher in winter. NC wants their winter fishery back.

The AP approved the following motions:
MOTION: RECOMMEND ALTERNATIVE 2 AS PREFERRED
Alternative 2. Remove the annual November 1 through April 30 prohibition on the retention, possession, and fishing for black sea bass using black sea bass pot gear.

MOTION: RECOMMEND THAT THE COUNCIL CONSIDER A SEPARATE ACL FOR THE COMMERCIAL HOOK AND LINE SECTOR FOR BLACK SEA BASS IF THE CURRENT CLOSURE ON BLACK SEA BASS POTS IS REMOVED.

5.2 Law Enforcement Advisory Panel Comments and Recommendations

The Law Enforcement Advisory Panel (LEAP) received a general overview of the alternatives proposed under Regulatory Amendment 16 during their March 3, 2014 meeting. The LEAP did not express concerns or provide recommendations. One LEAP member, however, stated that the annual closure of black sea bass pots is negatively impacting North Carolina fishermen who hold endorsements to fish for black sea bass using pot gear.

5.3 Scientific and Statistical Committee Comments and Recommendations

The SSC met in October 2014 and discussed Snapper Grouper Regulatory Amendment 16. The following is directly quoted from the report.

The SSC reviewed the analysis of Regulatory Amendment 16 alternatives conducted by SERO staff. The most relevant comments, concerns, and discussion points brought up during the SSC meeting included:

- *The SSC expressed concern about the lack of detail in uncertainty characterizations in the analysis. Several sensitivity runs were conducted to evaluate major uncertainties. However, the Committee expressed concern with the ability to discern differences between management alternatives given the information provided. The Committee advised that further exploration and reporting of within-model uncertainties would improve insight into the variability associated with model parameters and help to distinguish between the different alternatives considered. The SSC recognizes that conducting a more complete, in-depth uncertainty characterization would provide a more robust picture of the proposed management alternatives given the amount of uncertainty in model outputs. At the very least it would be useful to explore uncertainty in a subset of runs and give a better picture of how well this analysis can distinguish between alternatives.*
- *Dr. Nick Farmer explained that rerunning the original model using bootstrapping or MCMC technique is not feasible given the current timeline for the amendment. However, the SSC recommended clearly defining this particular deficiency in the analysis such that the Council understands that the ranking of considered alternatives might not hold true if a full uncertainty analysis was undertaken.*

Overall, the SSC felt the presentation was informative. The approach of ranking the alternatives on a relative scale was supported. Inferring that the analysis evaluates and quantifies risk to whale encounters was not supported. With some refinement, directed at providing information on error associated with estimated scalar values for the alternatives, the analysis could allow the Council to distinguish between the different alternatives.

The SSC cautioned that assuming model output of co-occurrence between black sea bass pot effort and whale sightings is a proxy for whale interaction or entanglement overstates model and data capabilities. The Committee recommended presenting the scalar as a dimensionless value to avoid potential misunderstandings and misuse of the term 'risk'.

In terms of next steps regarding this issue the SSC provided the following recommendations:

1. *Convene an SSC ad hoc sub-Committee to advise Dr. Nick Farmer (SERO) on uncertainty analyses to more reliably distinguish between alternatives.*
2. *The SSC recommends an analysis of relative sea bass gear-whale sighting encounter scalar values (relative to alternative 2) that consider historic as well as current levels of effort.*
3. *The SSC also requested that a staff member from NMFS Protected Resources Division attend the next SSC meeting to address Committee questions and clarify how these types of analyses are used to create a Biological Opinion and guide management.*

5.4 Public Comments and Recommendations

To Be Completed

5.5 South Atlantic Council Choice for Preferred Alternative

To Be Completed

Chapter 6. Cumulative Effects

This Cumulative Effects Analysis (CEA) for the biophysical environment will follow a modified version of the 11 steps. Cumulative effects for the socio-economic environment will be analyzed separately.

6.1 Biological

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

CEQ 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 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. Therefore, the proper geographical boundary to consider effects on the biophysical environment is larger than the entire South Atlantic exclusive economic zone (EEZ). The ranges of affected species are described in **Section 3.2**. The most measurable and substantial effects would be limited to the South Atlantic region.

3. Establish the timeframe for the analysis.

The timeframe for the analysis of cumulative effects is 1999 through the present. Fishery managers implemented the first significant regulations pertaining to blueline tilefish in 1999 through Amendment 9 to the Snapper Grouper FMP (Amendment 9; SAFMC 1998). The regulations included a five fish aggregate grouper bag limit, which included blueline tilefish. In addition, fishery managers implemented a regulation where vessels with longline gear aboard may only possess snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish.

4. Identify the other actions affecting the resources, ecosystems, and human communities of concern (the cumulative effects to the human communities are discussed in Chapter 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 snapper grouper species addressed in this amendment

A. Past

The reader is referred to **Appendix B** for past regulatory activity all species in the Snapper Grouper FMP. Past regulatory activity for the relevant snapper grouper species in this amendment is listed below.

Amendment 9 to the Snapper Grouper FMP (Amendment 9; SAFMC 1998) established minimum size limits for yellowtail snapper, red and black grouper, gag, yellowfin and yellowmouth grouper, and scamp; and created a 20-fish aggregate recreational bag limit for snapper grouper species without a bag limit (with the exception of tomtate and blue runner), including yellowtail snapper. The amendment also prohibited the sale and purchase of gag, red porgy and black grouper during March and April; and included gag and black grouper within the 5-fish aggregate grouper bag limit, of which no more than 2 fish could be gag or black grouper (individually or in combination). The South Atlantic Council approved Amendment 9 at their December 1998 meeting. The final rule published in the *Federal Register* on January 25, 1999, and became effective on February 24, 1999.

Amendment 14 to the Snapper Grouper FMP (Amendment 14; SAFMC 2007) was implemented on February 12, 2009. Amendment 14 established eight Type II marine protected areas (MPAs) where fishing for and retention of snapper-grouper species is prohibited (as is the use of shark bottom longlines), but trolling for pelagic species such as tuna, dolphin, and billfish is allowed. The intent was to achieve a more natural sex ratio, age, and size structure of all species within the MPAs, while minimizing adverse social and economic effects. The South Atlantic Council approved Amendment 14 at their June 2007 meeting. The final rule published in the *Federal Register* on January 13, 2009, and became effective on February 12, 2009.

Amendment 15B to the Snapper Grouper FMP (Amendment 15B; SAFMC 2008b) became effective on December 16, 2009. Management measures in Amendment 15B included a prohibition of the sale of bag limit caught snapper grouper species for fishermen not holding a federal commercial permit for South Atlantic snapper grouper; an action to adopt, when implemented, the Atlantic Coastal Cooperative Statistics Program release, discard and protected species module to assess and monitor bycatch, allocations for snowy grouper, and management reference points for golden tilefish. Biological benefits from Amendment 15B are not expected to result in a significant cumulative biological effect when added to anticipated biological impacts under this amendment. The South Atlantic Council approved Amendment 15B at their

June 2008 meeting. The final rule published in the *Federal Register* on November 16, 2009, and became effective on December 16, 2009.

Amendment 17B to the Snapper Grouper FMP (Amendment 17B; SAFMC 2010b), which was implemented on January 31, 2011, established annual catch limits (ACL), annual catch targets, and accountability measures (AMs) for 8 species experiencing overfishing; modified management measures to limit total mortality to the ACL; and updated the framework procedure for specification of total allowable catch. Amendment 17B also prohibited the harvest and possession of deepwater snapper grouper species (snowy grouper, blueline tilefish, yellowedge grouper, misty grouper, queen snapper, and silk snapper) at depths greater than 240 feet. The intent of this measure was to reduce bycatch of speckled hind and warsaw grouper. The South Atlantic Council approved Amendment 17B at their September 2010 meeting. The final rule published in the *Federal Register* on December 30, 2010.

Regulatory Amendment 9 to the Snapper Grouper FMP (SAFMC 2011a) reduced the black sea bass recreational bag limit from 15 fish per person per day to 5 fish per person per day. The final rule published in the *Federal Register* on June 15, 2011.

The Comprehensive ACL Amendment (SAFMC 2011c) includes ACLs and AMs for federally managed species not undergoing overfishing in four FMPs (Snapper Grouper, Dolphin Wahoo, Golden Crab, and *Sargassum*). Actions contained within the Comprehensive ACL Amendment include: (1) Removal of species from the snapper grouper fishery management unit; (2) designation of ecosystem component species; (3) allocations; (4) management measures to limit recreational and commercial sectors to their ACLs; (5) AMs; and (6) any necessary modifications to the range of regulations. The South Atlantic Council approved the Comprehensive ACL Amendment in September 2011. The final rule published in the *Federal Register* on March 16, 2012, and became effective on April 16, 2012.

Amendment 18A to the Snapper Grouper FMP (SAFMC 2012a) contains measures to limit participation and effort for black sea bass. Amendment 18A established an endorsement program than enables snapper grouper fishermen with a certain catch history to harvest black sea bass with pots. In addition, Amendment 18A included measures to reduce bycatch in the black sea bass pot sector, modified the rebuilding strategy, and other necessary changes to management of black sea bass as a result of a 2011 stock assessment. The South Atlantic Council approved Amendment 18A in December 2011. The amendment was partially approved and the final rule published in the *Federal Register* on June 1, 2012, and became effective on July 1, 2012.

ADD REG 19

B. Present

In addition to snapper grouper fishery management issues being addressed in this amendment, other snapper grouper amendments have been developed concurrently and are in the process of approval and implementation.

The Joint Dealer Reporting Amendment has been approved for Secretarial Review by the Gulf of Mexico and South Atlantic Fishery Management Councils. This amendment is intended to improve the timeliness and accuracy of fisheries data reported by permitted dealers. The amendment would also create one dealer permit for all federally-permitted dealers in the southeast region. Requiring dealers to report landings data weekly will help to improve in-season quota monitoring efforts, which will increase the likelihood that AMs could be more effectively implemented prior to ACLs being exceeded. The notice of availability of the amendment and the proposed rule published on December 19, 2013, and January 2, 2014, respectively.

The South Atlantic Headboat Reporting Amendment 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. The proposed rule published in the *Federal Register* on September 27, 2013. The final rule published on December 27, 2013, and regulations became effective on January 27, 2014.

At their September 2012 meeting, the Council directed staff to develop Amendment 27 to the Snapper Grouper FMP to address issues related to blue runner, and extension of management into the Gulf of Mexico for Nassau grouper. The proposed rule published in the *Federal Register* on September 27, 2013. The final rule published on December 27, 2013, and regulations became effective on January 27, 2014.

The Council has recently completed and is developing amendments for coastal migratory pelagic species, spiny lobster, golden crab, dolphin-wahoo, shrimp, and octocorals. See the Council's Web site at http://www.safmc.net/ for further information on Council-managed species.

C. Reasonably Foreseeable Future

The Joint Commercial Logbook Reporting Amendment would require electronic reporting of landings information by federally-permitted commercial vessels, which would increase the timeliness and accuracy of landings data.

The Joint Charter Boat Reporting Amendment would require charter vessels to regularly report their landings information electronically. Including charter boats in the recreational harvest reporting system would further improve the agency's ability to monitor recreational catch rates in-season.

At their June 2012 meeting, the Council further discussed Amendment 22 to the Snapper Grouper FMP to consider measures such as a tag program to allow harvest of red snapper as the stock rebuilds. Scoping of Amendment 22 was conducted during January and February 2011. At their September 2012 meeting, the Council stated their intent to further develop Amendment 22 in 2013 focusing on a recreational tag program for red snapper, golden tilefish, snowy

grouper and wreckfish. In June 2013, the Council changed to focus of Amendment 22 to a recreational tag program to monitor harvest of species with small ACLs.

At their June 2013 meeting, the Council requested development of Regulatory Amendment 16 to the Snapper Grouper FMP to adjust management measures for black sea bass by removing the November through April prohibition on the use of black sea bass pots in Regulatory Amendment 19 (SAFMC 2013f). An options paper was reviewed by the Council in September 2013. The Council held scoping meetings in January 2014. **Appendix N** describes the results of the scoping process.

At their September 2012 meeting, the Council requested development of Regulatory Amendment 17 to the Snapper Grouper FMP to consider MPAs to provide additional protection for speckled hind and warsaw grouper. This action was previously considered in Comprehensive Ecosystem-Based Amendment 3. The Council discussed the regulatory amendment in September 2013. The Council will hold scoping meetings in 2014.

The Council requested development of Regulatory Amendment 14 to the Snapper Grouper FMP at their September 2013 meeting. Options included in Regulatory Amendment 14 are: changes in the fishing years for greater amberjack and black sea bass; changes in AMs for vermilion snapper and black sea bass; and modification of the gag trip limit.

At their June 2013 meeting, the Council began development of Amendment 29 to the Snapper Grouper FMP, which would consider adjustments to the ABCs for data poor snapper grouper species, and management measures for gray triggerfish. Public hearings took place in January 2014, and the Council is expected to take final action in June 2014.

At their December 2013 meeting, the Council began development of Regulatory Amendment 21 to the Snapper Grouper FMP, which would consider redefining the minimum stock size threshold for species, including blueline tilefish, with small natural mortality rates. The Council also began development of Amendment 32 to the Snapper Grouper FMP, which would include actions to end overfishing of blueline tilefish and rebuild the stock.

Once stock assessments are completed for mutton snapper and snowy grouper, the Council will begin development of an amendment to update the ACLs.

II. Non-Council and other non-fishery related actions, including natural events affecting snapper grouper species 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.

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 CO_2 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 has not been detected in the South Atlantic region, and is not likely to pose a threat to the 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.

In terms of the biophysical environment, the resources/ecosystems identified in earlier steps of the CEA are the fish populations directly or indirectly affected by the regulations. This step should identify the trends, existing conditions, and the ability to withstand stresses of the environmental components. Information on species most affected by this amendment are provided in **Section 3.2** of this document.

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

This step is important in outlining the current and probable stress factors on the affected species, ecosystems, and human communities identified in the previous steps. The goal is to determine whether these species are approaching conditions where additional stresses could have an important cumulative effect beyond any current plan, regulatory, or sustainability threshold (CEQ 1997). Sustainability thresholds can be identified for some resources, which are levels of impact beyond which the resources cannot be sustained in a stable state. Other thresholds are established through numerical standards, qualitative standards, or management goals. The CEA

should address whether thresholds could be exceeded because of the contribution of the proposed action to other cumulative activities affecting resources.

Fish populations

This document updates thresholds already specified for black sea bass to ensure future overfishing does not occur, and to ensure these stocks can be maintained at sustainable levels. With current AMs in place for both species it is unlikely that these thresholds would be exceeded. If the harvest limits are exceeded, management measures are in place to either restrict further fishing or correct for the overage in the following fishing season.

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 significantly impact snapper grouper species in the future, but the level of impacts cannot be quantified at this time, nor is the time frame known in which these impacts will occur. In the near term, it is unlikely that the management measures contained in Regulatory Amendment 16 would compound or exacerbate the ongoing effects of climate change on snapper grouper species.

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.

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

The cause and effect relationship of fishing and regulatory actions is shown in **Table 6.1**.

Table 6.1. The cause and effect relationship of fishing and regulatory actions within the time period of the Cumulative Effects Analysis (CEA).

Time period/dates	Cause	Observed and/or Expected Effects
Pre-January 12, 1989	Habitat destruction, growth overfishing of vermilion snapper.	Damage to snapper grouper habitat, decreased yield per recruit of vermilion snapper.
January 1989	Trawl prohibition to harvest fish (Snapper Grouper Amendment 1; SAFMC 1988).	Increase yield per recruit of vermilion snapper; eliminate trawl damage to live bottom habitat.
Pre-January 1, 1992	Overfishing of many snapper grouper species.	Spawning stock ratio of these species is estimated to be less than 30% indicating that they are overfished.
January 1992	Prohibited gear: fish traps south of Cape Canaveral, FL; entanglement nets; longline gear inside of 50 fathoms; powerheads and bangsticks in designated SMZs off SC. Size/Bag limits: 10" TL vermilion snapper (recreational only); 12" TL vermilion snapper (commercial only); 10 vermilion snapper/person/day; aggregate grouper bag limit of 5/person/day; and 20" TL gag, red, black, scamp, yellowfin, and yellowmouth grouper size limit (Snapper Grouper Amendment 4; SAFMC 1991).	Reduce mortality of snapper grouper species.
Pre-June 27, 1994	Damage to *Oculina* habitat.	Noticeable decrease in numbers and species diversity in areas of *Oculina* off FL
July 1994	Prohibition of fishing for and retention of snapper grouper species (HAPC renamed Oculina Experimental Closed Area (OECA). Snapper Grouper Amendment 6; SAFMC 1993.	Initiated the recovery of snapper grouper species in OECA.
1992-1999	Declining trends in biomass and overfishing continue for a number of snapper grouper species including golden tilefish.	Spawning potential ratio for golden tilefish is less than 30% indicating that they are overfished.
July 1994	Snapper Grouper Amendment 6; SAFMC 1993.	Commercial quota for golden tilefish; commercial trip limits for golden tilefish; include golden tilefish in grouper recreational aggregate bag limits.
February 24, 1999	Snapper Grouper Amendment 6; SAFMC 1993.	All S-G without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners. Vessels with longline

Time period/dates	Cause	Observed and/or Expected Effects
		gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish.
Effective October 23, 2006	Stock assessments indicate black sea bass vermilion snapper, red porgy, and snowy grouper are undergoing overfishing. Snapper grouper FMP Amendment 13C (SAFMC 2006)	Management measures implemented to end overfishing of these species.
Effective February 12, 2009	Recognized need to provide additional protection to deep-water snapper grouper species, and to protect spawning locations. Snapper grouper FMP Amendment 14 (SAFMC 2007).	Use MPAs as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived deep-water snapper grouper species (e.g., speckled hind, snowy grouper, warsaw grouper, yellowedge grouper, misty grouper, golden tilefish, blueline tilefish, and sand tilefish). Gag and vermilion snapper occur in some of these areas.
Effective March 20, 2008	Stock assessments indicate snowy grouper, black sea bass, and red porgy are overfished. Snapper grouper FMP Amendment 15A (SAFMC 2008a).	Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy.
Effective Dates Dec 16, 2009, to Feb 16, 2010.	Concern that bag limit sales of snapper grouper species obfuscates accurate reporting of landings data. Snapper grouper FMP Amendment 15B (SAFMC 2008b).	End double counting in the commercial and recreational reporting systems by prohibiting the sale of bag-limit caught snapper grouper, and minimize impacts on sea turtles and smalltooth sawfish.
Effective Date July 29, 2009	Stock assessment indicates gaga is experiencing overfishing and is approaching an overfished condition. Snapper grouper FMP Amendment 16 (SAFMC 2009a).	Protect spawning aggregations and snapper grouper in spawning condition by increasing the length of the spawning season closure, decrease discard mortality by requiring the use of dehooking tools, reduce overall harvest of gag and vermilion snapper to end overfishing.
Effective Date January 4, 2010	Stock assessment indicated red snapper is overfished and undergoing overfishing. Red Snapper Interim Rule.	Prohibit commercial and recreational harvest of red snapper from January 4, 2010, to June 2, 2010 with a possible 186-day extension. Reduce overfishing of red snapper while long-term measures to end overfishing are addressed in Amendment 17A.
Effective Dates June 3, 2010, to Dec 5, 2010	Stock assessment indicated red snapper is overfished and undergoing overfishing. Extension of Red Snapper Interim Rule	Extended the prohibition of red snapper to reduce overfishing of red snapper while long-term measures to end overfishing are addressed in Amendment 17A.
Effective Date December 4, 2010	Stock assessment indicated red snapper is overfished and undergoing overfishing. Snapper Grouper FMP Amendment 17A (SAFMC 2010a).	Specified SFA parameters for red snapper; ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; accountability measures. Establish

Time period/dates	Cause	Observed and/or Expected Effects
		rebuilding plan for red snapper. Large snapper grouper area closure inn EEZ of NE Florida. Emergency rule delayed the effective date of the snapper grouper closure.
Effective Date January 31, 2011	Reauthorized Magnuson-Stevens Act requires ACLs for all species undergoing overfishing. Snapper Grouper Amendment 17B (SAFMC 2010b).	Specified ACLs and ACTs; management measures to limit recreational and commercial sectors to their ACTs; AMs, for species undergoing overfishing. Established a harvest prohibition of six snapper grouper species in depths greater than 240 feet.
Effective Date June 1, 2011	New red snapper assessment indicates stock is undergoing overfishing and is overfished but area closures approved in Amendment 17B are not needed. Regulatory Amendment 10 (SAFMC 2010c).	Removed of snapper grouper area closure approved in Amendment 17A.
Effective Date July 15, 2011	Additional management measures are considered to help ensure overfishing of black sea bass, vermilion snapper, and gag does not occur. Desired to have management measures slow the rate of capture to prevent derby fisheries. Regulatory Amendment 9 (SAFMC 2011a)	Harvest management measures for black sea bass; commercial trip limits for gag, vermilion snapper, and greater amberjack
Effective Date May 10, 2012	New analysis demonstrates prohibition to harvest of 6 deep-water species in Amendment 17B is not an effective measure to reduce bycatch of speckled hind and warsaw grouper. Regulatory Amendment 11 (SAFMC 2011b)	Removed the harvest prohibition of six deep-water snapper grouper species implemented in Amendment 17B.
Effective Date April 16, 2012	Reauthorized Magnuson-Stevens Act requires ACLs for species not undergoing overfishing. Comprehensive ACL Amendment (SAFMC 2011c).	ACLs ACTs, and AMs for species not experiencing overfishing; accountability measures; an action to remove species from the fishery management unit as appropriate; and management measures to limit recreational and commercial sectors to their ACTs.
Effective Date July 11, 2012	Stock assessment indicates red grouper is overfished and undergoing overfishing. Amendment 24 (Red Grouper) (SAFMC 2011d).	Established a rebuilding plan for red grouper, specified ABC, and established ACL, ACT and revised AMs for the commercial and recreational sectors.
Effective Date July 1, 2012	Need to slow rate of harvest in black sea bass pot sector to ease derby conditions. Amendment 18A (SAFMC 2012a).	Established an endorsement program for black sea bass commercial sector; established a trip limit; specified requirements for deployment and retrieval of pots; made improvements to data reporting for commercial and for-hire sectors

Time period/dates	Cause	Observed and/or Expected Effects
Effective Dates: September 17, 2012 (commercial); September 14, 2012 (recreational)	As red snapper stock rebuilds some limited harvest of red snapper can occur, as long as rebuilding is not compromised. Temporary Rule through Emergency Action (Red snapper).	Established limited red snapper fishing seasons (commercial and recreational) in 2012.
Effective Date January 7, 2013	Clarification of action in Amendment 18A for black sea bass pot endorsement transferability was needed. Amendment 18A Transferability Amendment.	Reconsidered action to allow for transfer of black sea bass pot endorsements that was disapproved in Amendment 18A.
Effective Date October 26, 2012	Some wreckfish catch shares have become available over time. Amendment 20A (Wreckfish) (SAFMC 2012b).	Redistributed inactive wreckfish shares.
Effective Date October 9, 2012	Stock assessment indicates golden tilefish overfishing has been ended and catch levels can be increased. Regulatory Amendment 12 (SAFMC 2012c).	Adjusted the golden tilefish ACL based on the results of a new stock assessment and modified the recreational golden tilefish AM.
Effective Date May 23, 2013	There is a need to reduce effort in the commercial longline sector that targets golden tilefish to ease derby conditions. Snapper Grouper Amendment 18B (SAFMC 2013a)	Establish a commercial longline endorsement program for golden tilefish; establish an appeals process; allocate the commercial ACL by gear; establish trip limit for the hook-and-line sector.
Target 2014	There is a need to control recreational harvest of snapper grouper species with very small ACLs. Snapper Grouper Amendment 22 (under development).	Develop a recreational tag program for snapper grouper species in the South Atlantic.
Effective Date July 17, 2013	The recreational data collection system has changed from MRFSS to MRIP. ACLs and allocations in place utilize MRFSS data. Regulatory Amendment 13. (SAFMC 2013b).	Adjust ACLs and allocations for unassessed snapper grouper species with MRIP recreational estimates
Effective Date January 27, 2014	Blue runner are caught primarily in state waters of FL, and it is not clear if federal management is needed. Nassau grouper is no longer managed by Gulf Council. Council would like to be able to make adjustment to ACLs more quickly after a stock assessment has been completed. Snapper Grouper Amendment 27 (Approved by Council).	Establish the Council as the managing entity for yellowtail and mutton snappers and Nassau grouper in the Southeast U.S., modify the SG framework; modify placement of blue runner in an FMU or modify management measures for blue runner
Effective Date August 23, 2013	As the red snapper stock rebuilds, some allowable harvest could occur if rebuilding is not affected. Snapper Grouper Amendment 28 (SAFMC 2013d).	Modify red snapper management measures including the establishment of a process to determine future annual catch limits and fishing seasons.
Target 2014	Council's SSC has identified new methods to estimate ABC for data poor species. Snapper Grouper Amendment 29 (under development).	Update ABCs, ACLs, and ACTs for snapper grouper species based on recommendations from SSC.

Time period/dates	Cause	Observed and/or Expected Effects
Effective Date September 12, 2013	New stock assessments completed for vermilion snapper and red porgy. Regulatory Amendment 18 (SAFMC 2013e).	Adjust ACLs and management measure for vermilion snapper and red porgy based on results from new update assessment.
Effective Date September 23, 2013	New stock assessment for black sea bass indicates the stock is rebuilt and catch levels can be increased. Regulatory Amendment 19 (SAFMC 2013f).	Increase recreational and commercial ACLs for black sea bass. Black sea bass pots prohibited from November 1 through April 30 (effective October 23, 2013).
Effective Date September 5, 2013	New stock assessment indicates catch levels of yellowtail snapper can be increased. Accountability measures for gag can be adjusted because effective means are in place to ensure overfishing does not occur. Regulatory Amendment 15 (SAFMC 2013c).	Increase yellowtail snapper ACL, remove accountability measure for gag that closes commercial harvest for all shallow water grouper species when the gag ACL is met. Reduce gag ACL to account for dead discards when fishermen target co-occurring shallow water grouper species.
Effective Date January 27, 2014	Southeast Fisheries Science Center has established a program that allows headboats to report landings through electronic means. Generic For-Hire Reporting Amendment (Approved by Council).	Require all federally-permitted headboats in the South Atlantic to report landings information electronically and on a weekly basis.
Target 2014	Joint Commercial Logbook Reporting Amendment	Require all federally-permitted commercial fin fish fishermen in the southeast to report electronically.
Target 2014	Regulatory Amendment 14	Change the fishing years for greater amberjack and black sea bass, change in AMs for vermilion snapper and black sea bass, and modify the gag trip limit.
Target 2014	Generic AM and dolphin allocation amendment.	Modify AMs for snapper grouper species and golden crab. Modify allocations for dolphin.
Target 2014/2015	Joint Charterboat Reporting Amendment	Require all federally-permitted charterboats to report landings information electronically.

9. Determine the magnitude and significance of cumulative effects.

When species in the snapper grouper fishery management unit are assessed, stock status may change as new information becomes available. In addition, changes in management regulations, fishing techniques, social/economic structure, etc. can result in shifts in the percentage of harvest between user groups over time. As such, the Council has determined that certain aspects of the current management system should be restructured as necessary. As shown in **Table 6.1.1** above, a number of amendments could be implemented in the near future. For instance,

Amendment 22 would establish a recreational tag program for snapper grouper species with very low ACLs.

The cumulative effects of the actions are not expected to significantly affect the magnitude of bycatch, diversity and ecosystem structure of fish communities, or safety at sea of fishermen targeting snapper grouper, and other species managed by the Council. Based on the cumulative effects analysis presented herein, the proposed actions will not have any significant cumulative impacts combined with other past, present, and foreseeable future actions.

The actions are not likely to result in direct, indirect, or cumulative effects to unique areas, such as significant scientific cultural, or historical resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas as the proposed action is not expected to substantially increase fishing effort or the spatial and/or temporal distribution of current fishing effort within the South Atlantic region. The USS 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.

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 necessary for the successful implementation of the proposed actions in this amendment.

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

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

No specific observer program is in place for the 32 permits in the black sea bass pot fishery; however. In the programs described below, any gear recovered from an animal is analyzed to try and determine which fishery caused the entanglement. Because of the difficulty of identifying a specific fishery from the entangling gear, very few entanglements are identified beyond the gear type (i.e., a trap/pot or gillnet gear entanglement, without indicating a specific fishery).

NMFS authorizes organizations and volunteers in the Marine Mammal Stranding Program to respond to marine mammal strandings throughout the United States. Stranding network participants are trained to respond to, and collect samples from live and dead marine mammals that strand along southeastern United State beaches. As part of the network, the SEFSC coordinates stranding events, monitors stranding rates, monitors human-caused mortalities, and maintains a stranding database for the region, among other things. The Atlantic Large Whale Disentanglement Network responds to reports of entangled whales and attempts to remove

entangling gear when possible. The network includes numerous governmental and non-governmental agencies, fishermen, and other trained individuals from Canada to Florida. Additionally, the MMPA and the Marine Mammal Authorization Program require that all commercial fishermen report all incidental injuries and mortalities of marine mammals that have occurred as a result of commercial fishing operations. Those reports must be sent to NMFS within 48 hours of the end of a fishing trip in which the serious injury or mortality occurred, or, for non-vessel fisheries, within 48 hours of the occurrence.

6.2 Socioeconomic

To Be Completed

Chapter 7. List of Preparers

Table 7.1.1. List of Regulatory Amendment 16 preparers. UPDATE

Name	Agency/Division	Area of Amendment Responsibility
Andy Herndon	NMFS/SF	Protected Resources Biologist
Brian Cheuvront	SAFMC	Economist
Gregg Waugh	SAFMC	Deputy Executive Director/IPT co-lead
Jack McGovern	NMFS/SF	Fishery Scientist
Kari MacLauchlin	SAFMC	Fishery Social Scientist
Mike Errigo	SAFMC	Fishery Scientist
Myra Brouwer	SAFMC	Fishery Biologist/IPT co-lead
Nick Farmer	NMFS/SF	Fishery Scientist
Rick DeVictor	NMFS/SF	Fishery Biologist/IPT co-lead
Tony Lamberte	NMFS/SF	Economist
Kate Quigley	SAFMC Contractor	Economist
Barb Zoodsma	NMFS/PR	Protected Resources Biologist

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

Table 7.1.2. List of Regulatory Amendment 16 interdisciplinary plan team members. UPDATE

Name	Organization	Title
Akbar Marvasti	SEFSC	
Andy Herndon	NMFS/PR	Protected Resources Biologist
Anna Martin	SAFMC	Fishery Scientist
Brian Cheuvront	SAFMC	Economist
David Dale	NMFS/HC	EFH Specialist
David Keys	NMFS/SER	Regional NEPA Coordinator
Gregg Waugh	SAFMC	Deputy Executive Director
Jack McGovern	NMFS/SF	Fishery Biologist
Jessica Powell	NMFS/PR	Fishery Biologist
John Carmichael	SAFMC	Science and Statistics Program Manager
Kari MacLauchlin	SAFMC	Fishery Social Scientist
Karla Gore	NMFS/SF	Fishery Biologist
Kate Andrews	NMFS/SEFSC	Mathematical Statistician
Kate Michie	NMFS/SF	Fishery Biologist
Mara Levy	NOAA GC	Attorney
Mike Errigo	SAFMC	Data Analyst
Mike Jepson	NMFS/SF	Fishery Social Scientist
Monica Smit-Brunello	NMFS SERO/GC	Attorney
Myra Brouwer	SAFMC	Fishery Biologist
Nick Farmer	NMFS/SF	Fishery Biologist

Name	Organization	Title
Otha Easley	NOAA/OLE	Special Agent
Rick DeVictor	NMFS/SF	Fishery Biologist
Roger Pugliese	SAFMC	Sr. Fishery Biologist
Scott Sandorf	NMFS/SF	Technical Writer & Editor
Stephen Holiman	NMFS/SF	Supervisory Industry Economist
Tony Lamberte	NMFS/SF	Economist
Barb Zoodsma	NMFS/PR	Protected Resources Biologist

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

Chapter 8. List of Agencies, Organizations, and Persons to Whom Copies of the Statement are Sent

Responsible Agency

Regulatory Amendment 16:
South Atlantic Fishery Management Council
4055 Faber Place Drive, Suite 201
Charleston, South Carolina 29405
(843) 571-4366 (TEL)
Toll Free: 866-SAFMC-10
(843) 769-4520 (FAX)
safmc@safmc.net

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

List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
North Carolina Coastal Zone Management Program
South Carolina Coastal Zone Management Program
Georgia Coastal Zone Management Program
Florida Coastal Zone Management Program
Florida Fish and Wildlife Conservation Commission
Georgia Department of Natural Resources
South Carolina Department of Natural Resources
North Carolina Division of Marine Fisheries
North Carolina Sea Grant
South Carolina Sea Grant
Georgia Sea Grant
Florida Sea Grant
Atlantic States Marine Fisheries Commission
Gulf and South Atlantic Fisheries Development Foundation
Gulf of Mexico Fishery Management Council
National Marine Fisheries Service
- Washington Office
- Office of Ecology and Conservation
- Southeast Regional Office
- Southeast Fisheries Science Center

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Chapter 10. Index

To Be Completed