Regulatory Amendment 16

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

Snapper Grouper AP Discussion Document

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

Including an Environmental Impact Statement

March 27, 2014

A publication of the South Atlantic Fishery Management Council pursuant to
National Oceanic and Atmospheric Administration
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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:	Modify 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

Chapter 1.
Introduction

1.1 What Action Is Being Proposed?

Modifications to the annual prohibition on the use of commercial black sea bass pot gear from November 1 through April 30 are being reconsidered.

1.2 Who is Proposing the Actions?

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

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 South Atlantic Council Considering Action?/Purpose & Need

In 2013, the SSC recommended an increase to the ABC for black sea bass which allowed for an increase in the commercial and recreational ACLs. The Council and NMFS, through Regulatory Amendment 19 (SAFMC 2013), modified the ABC, ACLs, recreational ACT, and OY for the black sea bass stock in the South Atlantic. Because an increase to the commercial ACL could extend 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 ESA-listed whales - the South Atlantic Council and NMFS implemented a prohibition on the use of black sea bass pot gear from November 1 through April 30 each year.

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 Endangered Species Act (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 South Atlantic Council 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 can be completed.

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 reduce socio-economic impacts to black sea bass pot endorsement holders while maintaining protection for ESA-listed whales in the South Atlantic region. Fishermen have reported that fishing for black sea bass during winter months is important to them; 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.

Purpose for Action

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

Need for Action

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

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 Fishery Management Plan (FMP) (SAFMC 1983) (**Figure 1-1**). Black sea bass is one of 59 fish managed by the South Atlantic Council under the Snapper Grouper FMP.

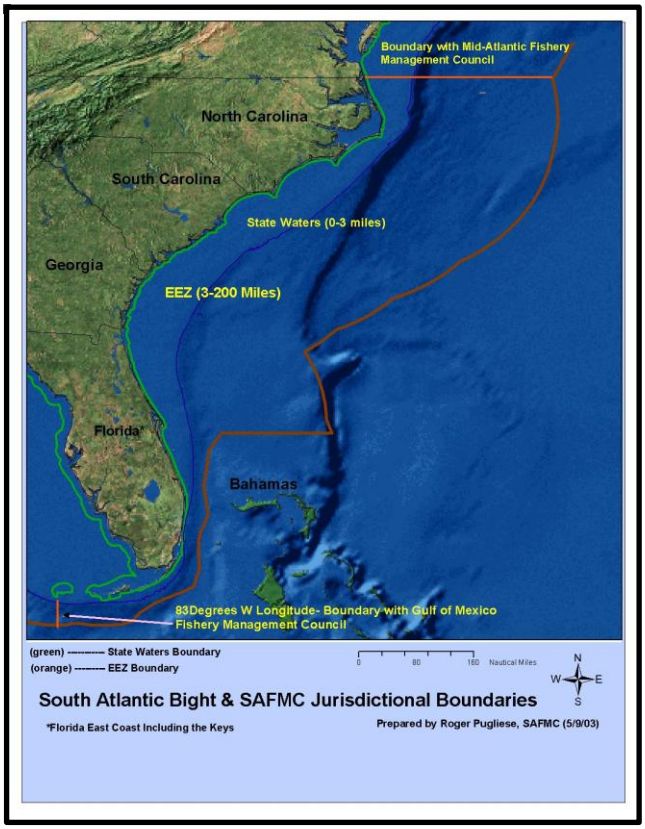


Figure 1-1. Jurisdictional boundaries of the South Atlantic Fishery Management Council.

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 1.1**) (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 South Atlantic 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 recommendations.

Table 1.1. 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 History of Management

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 pound gutted weight (lb 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 X**.

Chapter 2. Proposed Action and Alternatives

2.1 Modify the annual November 1 to April 30 prohibition on the use of black sea bass pot gear

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 ESA-listed whales. The South Atlantic Fishery Management Council does not intend to change these provisions through this amendment.

Amendment 18A (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 lb gw;

Add ALWTRP Provisions

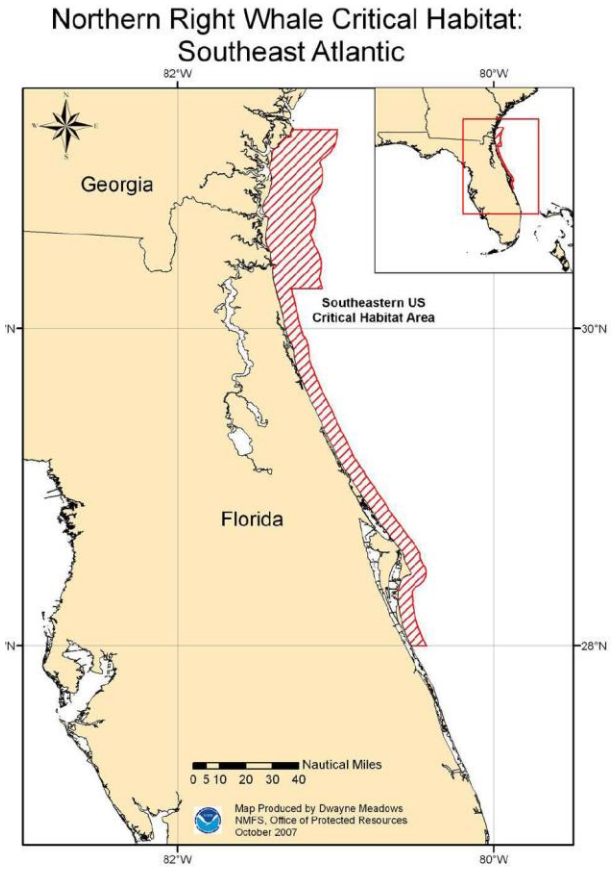
Alternative 2. Remove the annual November 1 to April 30 prohibition on the retention, possession, and fishing for black sea bass using black sea bass pot gear.

Alternative 3. The black sea bass pot closure applies to waters inshore of points X-X listed below; approximately X, Florida, to X, Georgia. The closure applies to the area annually from November 15 through April 15.

Note: This area represents designated right whale critical habitat in the South Atlantic region that was specified on X. The map below provides approximate location of proposed boundary. The boundary would not automatically change if the boundary for the right whale critical habitat were to change.

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 3.

Point	N Latitude	W Longitude

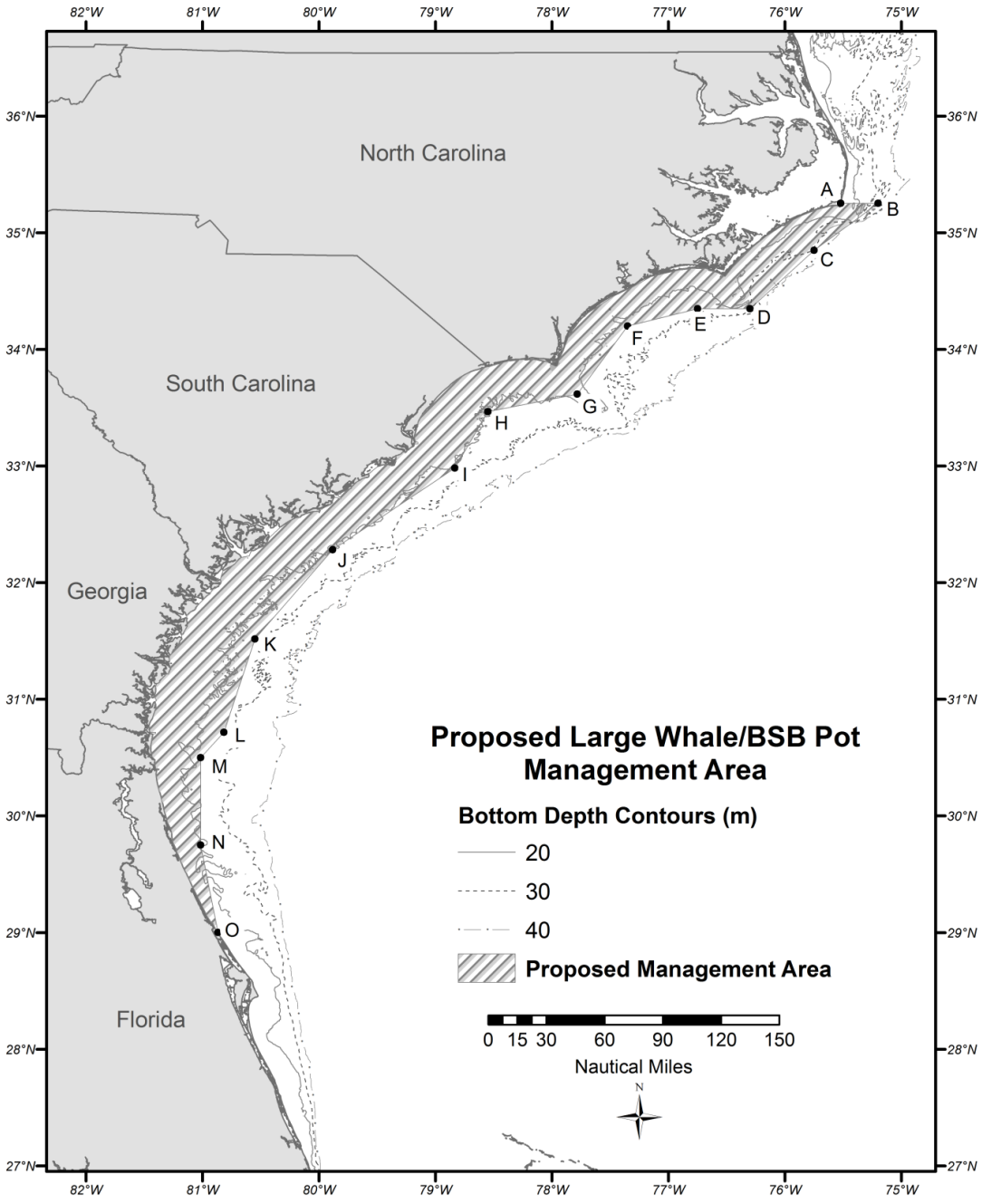


Alternative 4. The black sea bass pot closure applies to waters inshore of points A-O listed below; approximately Ponce Inlet, Florida, to Cape Hatteras, North Carolina. The closure applies to the area annually from November 1-April 30.

Note: This area represents….. (To be completed)

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 4.

Point	N Latitude	W Longitude
A	35°15.19′ N	at shoreline
B	35°15.19'	75°12'
C	34°51'	75°45'
D	34°21'	76°18'
E	34°21' N	76°45'
F	34°12'	77°21'
G	33°37'	77°47
H	33°28'	78°33
I	32°59'	78°50'
J	32°17'	79°53'
K	31°31'	80°33'
L	30°43'	80°49'
M	30°30'	81°01'
N	29°45'	81°01'
O	29°00'	at shoreline

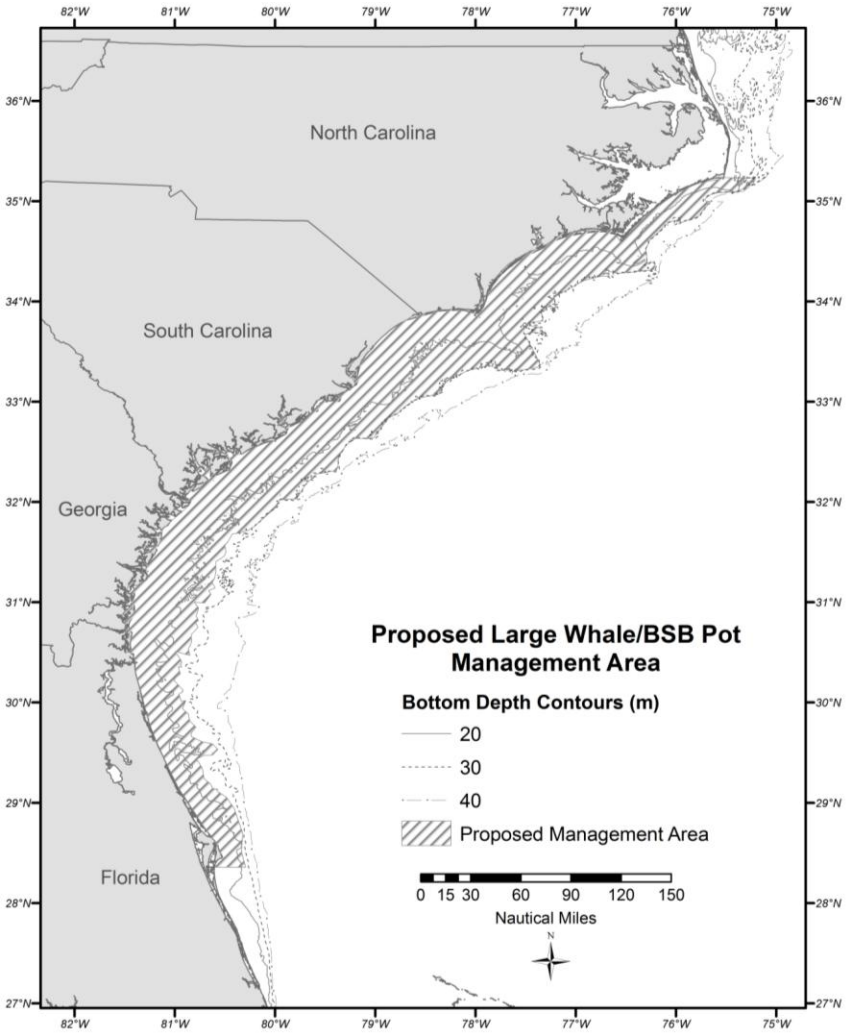

82°W
81°W
80°W
79°W
78°W
77°W
76°W
75°W
36°N
35°N
34°N
33°N
32°N
31°N
30°N
29°N
28°N
27°N
North Carolina
South Carolina
Georgia
Florida
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
Proposed Large Whale/BSB Pot Management Area
Bottom Depth Contours (m)
20
30
40
Proposed Management Area
0 15 30 60 90 120 150
Nautical Miles
N

Alternative 5. The black sea bass pot closure applies to waters inshore of points X-X listed below; approximately Cape Canaveral, Florida, to Cape Hatteras, North Carolina. The closure applies to the area annually from November 1 through April 30.

Note: The black sea bass pot closure applies to 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. The map below provides approximate location of proposed boundary.

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 5.

Point	N Latitude	W Longitude



Alternative 6. The black sea bass pot closure applies to waters inshore of points X-X listed below; approximately X, Florida, to X, North Carolina. The closure applies to the area annually from November 1 through April 30.

Note: This area represents the area petitioned by for right whale critical habitat by Center for Biological Diversity et al. in 2009. Off the coasts of Georgia and Florida, the closure includes the 75th percentile of sighting off Florida and Georgia suggested by 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.

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 6.

Point	N Latitude	W Longitude

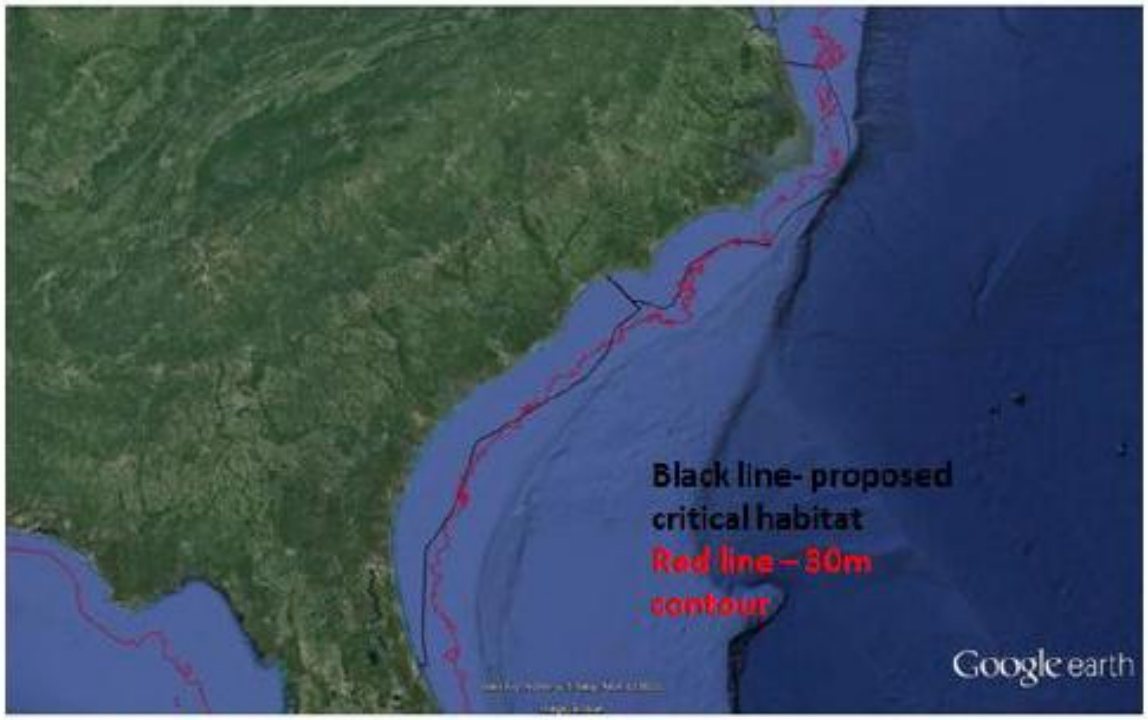


Figure 1. Closure in Petitioned Critical Habitat

Alternative 7. The black sea bass pot closure applies to waters inshore of points X-X listed below; approximately X, Florida, to X, North Carolina. The closure applies to the area annually from November 1 through April 30.

Note: This area represents the area currently designated as a Southeast Seasonal Gillnet Restricted Area off the coasts of Georgia and Florida. The closure applies in waters shallower than 30 meters northward from the designated seasonal restricted area off Georgia, South Carolina, and North Carolina.

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Alternative 7.

Point	N Latitude	W Longitude

Figure 2. Southeast Seasonal Gillnet Restricted Area

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

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.

Western Boundary Coordinates for the Proposed Black Sea Bass Pot Closure in Sub-alternative 8b.

Point	N Latitude	W Longitude

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, and 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 Populations Affected by this Amendment

Black Sea Bass

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 lb) (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 were 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.

3.2.2 Stock Status of Black Sea Bass

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 3.2.1**). 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 3.2.1** 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 3.2.1**). The trend in F shows a rapid increase from the late-1970s until 1988, when it surpassed F_{MSY} by a significant amount (**Figure 3.2.1** 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**). 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 3.2.1. 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

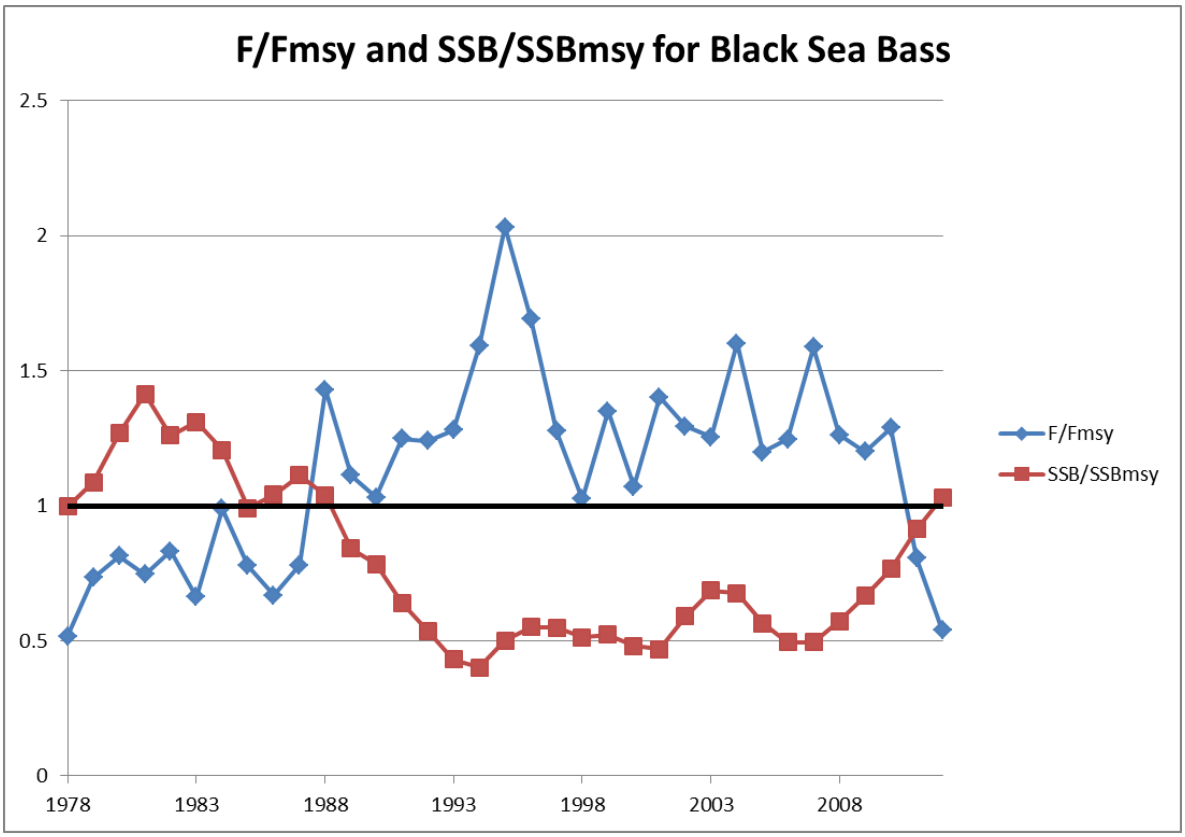


Figure 3.2.1. Spawning stock biomass (SSB) and exploitation (F) levels relative to expected conditions of the black sea bass stock at MSY. Relative biomass is depicted by SSB/SSB_{MSY} and exploitation by F/F_{MSY}. The index line at 1 represents MSY conditions. Data are from the 2013 assessment update report for black sea bass.

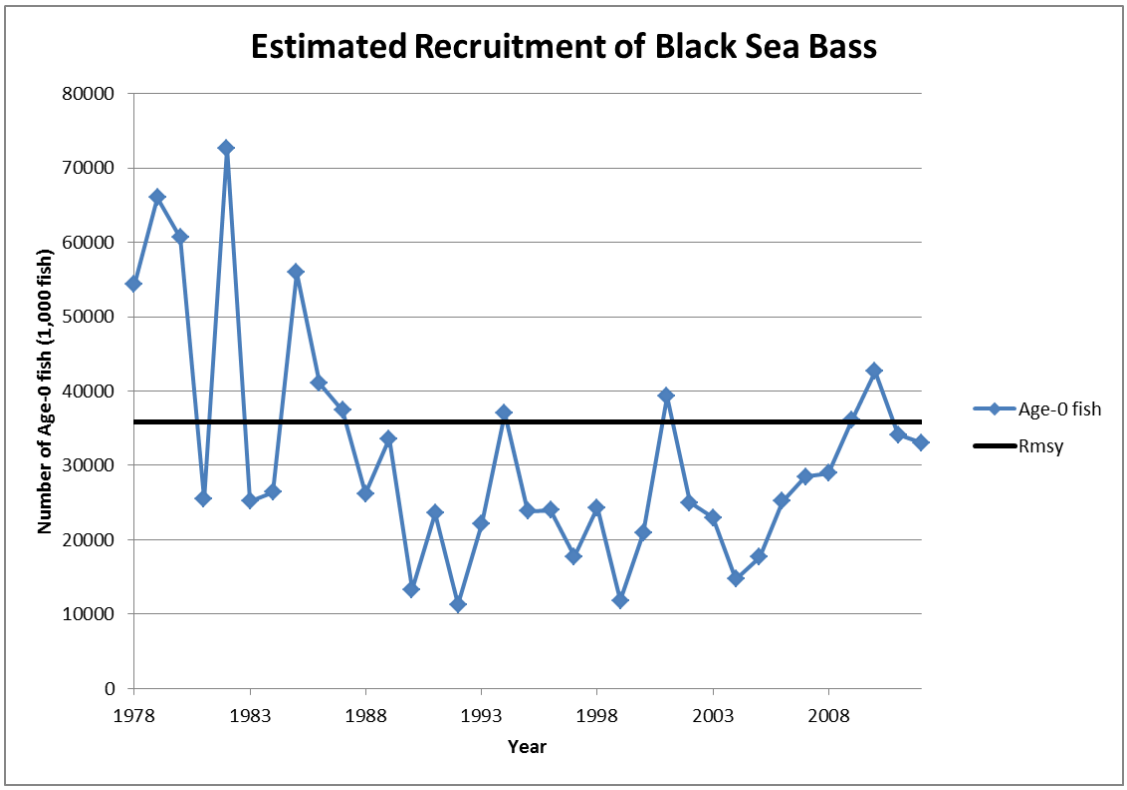


Figure 3.2.2. Estimated annual recruitment and expected recruitment at MSY conditions for black sea bass in number of age-0 fish. Data are from the 2013 assessment update report for black sea bass.

The SSC reviewed the 2013 update of the black sea bass assessment at their April 9-11, 2013 meeting. The SSC recommended that the update assessment be considered best available science, and agreed that the assessment findings are useful for providing fishing level recommendations. Based on both the deterministic results of the base run and probabilistic runs incorporating assessment uncertainty, the stock has rebuilt ($SSB>SSB_{MSY}$) and is no longer experiencing overfishing ($F<F_{MSY}$). Applying the ABC control rule resulted in an adjustment of 10% for assessment uncertainty, providing a P* of 40%. Projection runs incorporating assessment uncertainty and covering the period 2013-2015 were used to provide ABC and OFL recommendations. Recommended OFL is based on the projection runs at 50% chance of overfishing occurring (P* = 50%), and ABC is based on the projection having a 40% chance of overfishing occurring (P* = 40%). The SSC provided OFL and ABC values for 3 years and requested that an assessment update be available in time to provide ABC and OFL recommendations for 2016 and beyond.

The SSC noted that estimates of ABC over the next few years exceed the equilibrium estimates of MSY from the base run. This is addressed in the assessment report, and is largely due to recent recruitment being higher than expected average recruitment and a stock biomass that is slightly greater than the biomass expected at MSY conditions. The sustainability of ABCs above equilibrium MSY will depend upon future recruitment conditions.