# Regulatory Amendment 19

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

## Increases to Black Sea Bass Annual Catch Limits and a Seasonal Closure of the Pot Sector

**Including an Environmental Assessment**

**Final 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 |
| $\mathbf{B_{MSY}}$ | the stock biomass expected to exist under equilibrium conditions when fishing at $F_{MSY}$ |
| $\mathbf{B_{OY}}$ | the stock biomass expected to exist under equilibrium conditions when fishing at $F_{OY}$ |
| $\mathbf{B_{CURR}}$ | The current stock biomass |
| **CPUE** | catch per unit effort |
| **DEIS** | draft environmental impact statement |
| **EA** | environmental assessment |
| **EEZ** | exclusive economic zone |
| **EFH** | essential fish habitat |
| **F** | a measure of the instantaneous rate of fishing mortality |
| $\mathbf{F_{30\%SPR}}$ | fishing mortality that will produce a static SPR = 30% |
| $\mathbf{F_{CURR}}$ | the current instantaneous rate of fishing mortality |
| $\mathbf{F_{MSY}}$ | the rate of fishing mortality expected to achieve MSY under equilibrium conditions and a corresponding biomass of $B_{MSY}$ |
| $\mathbf{F_{OY}}$ | the rate of fishing mortality expected to achieve OY under equilibrium conditions and a corresponding biomass of $B_{OY}$ |
| **FEIS** | final environmental impact statement |
| **FMP** | fishery management plan |
| **FMU** | fishery management unit |
| **M** | natural mortality rate |
| **MARMAP** | Marine Resources Monitoring Assessment and Prediction Program |
| **MFMT** | maximum fishing mortality threshold |
| **MMPA** | Marine Mammal Protection Act |
| **MRFSS** | Marine Recreational Fisheries Statistics Survey |
| **MRIP** | Marine Recreational Information Program |
| **MSFCMA** | Magnuson-Stevens Fishery Conservation and Management Act |
| **MSST** | minimum stock size threshold |
| **MSY** | maximum sustainable yield |
| **NEPA** | National Environmental Policy Act |
| **NMFS** | National Marine Fisheries Service |
| **NOAA** | National Oceanic and Atmospheric Administration |
| **OFL** | overfishing limit |
| **OY** | optimum yield |
| **RIR** | regulatory impact review |
| **SAMFC** | 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 19 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region with Environmental Assessment

| | |
|---|---|
| **Proposed action:** | Modify the annual catch limits, recreational annual catch target, and optimum yield for black sea bass for the June 1 through May 31 fishing year, beginning in 2013, based on the results of a recent stock assessment. Implement a prohibition on use of black sea bass pots, annually, from November 1 through April 30. |
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# Summary

A Southeast Data, Assessment, and Review (SEDAR) stock assessment update for black sea bass was completed in 2013, and suggests the annual catch limit (ACL) for this species could be increased based upon the new acceptable biological catch (ABC) levels recommended by the South Atlantic Fishery Management Council's (South Atlantic Council) Scientific and Statistical Committee (SSC). The stock assessment update indicates 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.

At their December 2012 meeting, the South Atlantic Council determined it would be appropriate to modify certain management measures that are currently in place for black sea bass including changes to the commercial and recreational fishing years. The South Atlantic Council is considering modification to black sea bass management measures in Regulatory Amendment 14 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP), which is currently being developed.

The South Atlantic Council stated in Section 1.4 of the Comprehensive ACL Amendment that necessary changes to the ABCs, ACLs, annual catch targets (ACT), and accountability measures for snapper grouper species would be made through the framework procedure modified in Amendment 17B to the Snapper Grouper FMP, which is a more rapid process than a plan amendment. In Regulatory Amendment 19 to the Snapper Grouper FMP (Regulatory Amendment 19), the South Atlantic Council is proposing:

- adjustments to the ACLs (including sector ACLs), recreational ACT, and optimum yield for black sea bass based on the ABC recommendation of the SSC, which is supported by the recent stock assessment update; and
- an annual prohibition on the use of black sea bass pots from November 1 through April 30 to minimize the probability of interactions between black sea bass pot gear and Endangered Species Act-listed whales during large whale migrations and right whale calving season off the southeastern coast.

**Preferred Alternative 4.** For black sea bass, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment (SEDAR 25 Update 2013). Change the ACL formula to

1. 2013-2015 ACL = OY = 1,814,000 lbs ww
2. 2016 onwards ACL = OY = 1,756,450 lbs ww (yield at 75%$F_{MSY}$ when the stock is at equilibrium).

Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

**Table 2.2.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update 2013 and Alternative 4. Values in pounds whole weight (ww).

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| **2013** | **2,258,000** | **2,133,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2014** | **2,102,000** | **1,992,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2015** | **1,921,000** | **1,814,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2016** | **1,921,000** | **1,814,000** | **1,756,450** | **755,274** | **1,001,177** | **875,228** |

[1] Using values provided by the SSC.

[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A (SAFMC 2012a).

In addition, it is the South Atlantic Council's intent that:

1. All black sea bass pots must be removed from the water from November 1 through April 30.
2. Black sea bass pots may not be onboard a vessel in the South Atlantic EEZ from November 1 through April 30.

In accordance with the provisions set forth in the Magnuson-Stevens Fishery Conservation and Management Act, the intent of Regulatory Amendment 19 is to: prevent unnecessary negative socio-economic impacts that may otherwise be realized in the snapper grouper fishery and fishing community; prevent overfishing; and ensure the use of best available science.

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# Chapter 1.
# Introduction

## 1.1 What Actions Are Being Proposed?

Adjustments to annual catch limits (ACLs) (including sector ACLs), the recreational annual catch target (ACT), and optimum yield for black sea bass are being proposed based on the results of a recent stock assessment update. An annual prohibition on the use of commercial black sea bass pot gear from November 1 through April 30 is also being proposed.

## 1.2 Who is Proposing the Actions?

The South Atlantic Fishery Management Council (South Atlantic Council) is proposing the actions. 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 through Florida, and Dolphin-Wahoo, which is from Maine through Florida.

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

A stock assessment update for black sea bass was recently completed. The update indicated the stock is no longer undergoing overfishing, is not overfished, and is rebuilt. The South Atlantic Council's Scientific and Statistical Committee (SSC) reviewed the stock assessment update, applied the approved acceptable biological catch (ABC) control rule, and recommended an updated ABC for black sea bass. Based on the new ABC recommendation and stock assessment, the South Atlantic Council is proposing to update the ACLs, optimum yield (OY), and recreational annual catch target (ACT) for this species.

The SSC recommended a larger ABC for black sea bass than is currently in place, which allows for an increase in the commercial and recreational ACLs. The purpose of this amendment is to modify the ABC, ACLs, recreational ACT, and OY for the upcoming 2013 fishing year. 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 -- the South Atlantic Council is proposing a prohibition on the use of black sea bass pot gear from November 1 through April 30 each year. Without the proposed prohibition on the use of black sea bass pots during the large whale migration and right whale calving season, a reinitiation of formal consultation for the snapper grouper fishery would be triggered under the Endangered Species Act (ESA). The consultation would require 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 could not be completed in time to allow the ACL increases to be implemented for the 2013-2014 fishing season, which begins on June 1. The proposed black sea bass pot prohibition is 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.

### *Purpose for Action*

Modify the annual catch limits, recreational annual catch target, and optimum yield for black sea bass for the June 1 through May 31 fishing year, beginning in 2013, based on the results of a recent stock assessment.

### *Need for Action*

The need for action is to (1) ensure black sea bass management benchmarks are based upon the best available science, (2) ensure overfishing of black sea bass does not occur, (3) enhance socioeconomic benefits to fishermen and fishing communities that utilize the black sea bass portion of the snapper grouper fishery, and (4) prevent interactions between black sea bass pot gear and ESA-listed whales during large whale migrations and right whale calving season off the southeastern coast (approximately November 1 through April 30).

## 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 sixty fish managed by the South Atlantic Council under the Snapper Grouper FMP.

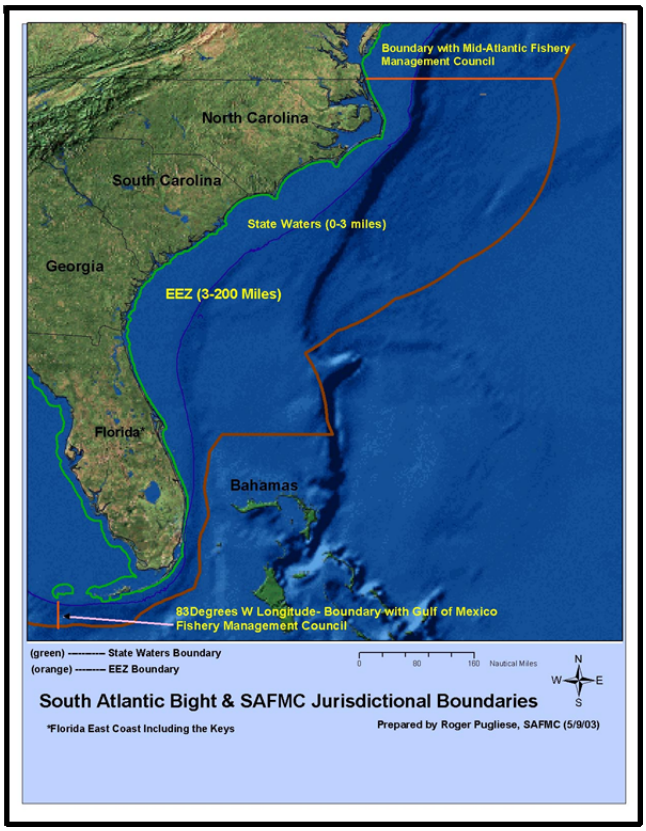


**Figure 1-1.** Jurisdictional boundaries of the South Atlantic Fishery Management Council.

## 1.5 What is the Stock Status of Black Seas 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 are 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.

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

## 1.7 What are the Biological Reference Points (Maximum Sustainable Yield, Overfishing Level, and Acceptable Biological Catch) for Black Sea Bass?

### MSY for Black Sea Bass

Amendment 15A (SAFMC 2008a) specified a formula for MSY for black sea bass, which is the yield at $F_{MSY}$ and is defined by the most recent SEDAR stock assessment. Because an assessment update was recently completed for black sea bass (SEDAR 25 Update 2013), a new value for MSY is specified in this amendment using the established MSY formula from Amendment 15A (SAFMC 2008a) and does not require any action by the South Atlantic Council. Based the results of the stock assessment update the new values for MSY and $F_{MSY}$ appear in **Table 1.2**.

**Table 1.2.** Current and proposed values for MSY in pounds whole weight (lbs ww) and $F_{MSY}$ for black sea bass.

| Management Reference Point | Current Value (SEDAR 25 2011) | Proposed New Value (SEDAR 25 Update 2013) |
|---|---|---|
| MSY | 1,767,000 lbs ww | 1,780,000 lbs ww |
| $F_{MSY}$ | 0.698 | 0.61 |

Source: SEDAR 25 Update 2013.

Similar to updating the ACLs, updating the MSY value for black sea bass according to the outcome of the SEDAR 25 Update 2013 would result in a more accurate reference point that is based on data that incorporates the most recent harvest information for the stock.

### OFL Values for Black Sea Bass

For black sea bass, overfishing is determined on an annual basis by either by the Maximum Fishing Mortality Threshold (MFMT) or the Overfishing Level (OFL). The MFMT uses fishing mortality rates while OFL uses catch levels. The estimate of MFMT (and $F_{MSY}$) for black sea bass from the SEDAR 25 Update 2013 is 0.61 and the OFL for 2013, 2014, and 2015 are based upon projections of P*=0.5. (**Table 1.3**). Amendment 18A (SAFMC 2012a) established that if either the MFMT (during an assessment year) or the OFL method (during a non-assessment year) is exceeded, the stock will be considered to be undergoing overfishing.

**Table 1.3.** Revised Overfishing Level (OFL) for black sea bass, shown in both landings and discards and landings only, based on SEDAR 25 Update 2013. Values in pounds whole weight.

| Fishing Year | OFL (landings + discards) | OFL (landings only) |
|---|---|---|
| 2013 | 2,433,000 | 2,296,000 |
| 2014 | 2,194,000 | 2,074,000 |
| 2015 | 1,973,000 | 1,857,000 |

The SEDAR 25 Update 2013 concluded that black sea bass are not overfished and overfishing is not occurring. Current fishing mortality (F) is well below $F_{MSY}$ ($F_{Current}/F_{MSY}$=0.659; **Table 1.1**). Until another assessment or assessment update is conducted, overfishing will not occur as long as landings are less than or equal to the values for OFL (landings only) in **Table 1.3**.

Each OFL value has a corresponding probability of overfishing percentage (referred to as a P*). For 2013, 2014, and 2015, if landings are at the OFL level (landings only) for the respective year, there is a 50% chance that the stock is undergoing overfishing (P* equal to 0.5). For example, if reported landings in 2014 are 2,194,000 lbs ww, there is a 50% chance the stock is undergoing overfishing; however, the stock would not be declared as undergoing overfishing since landings did not exceed the OFL. This assumes the discards for that year are within the value used to calculate the OFL and ignores implementation error (e.g., errors affiliated with measuring landings). The SEFSC did not provide OFL and ABC projections beyond 2015 in the SEDAR 25 Update 2013; as such, the SSC has not provided an OFL value beyond 2015. Therefore, there is no OFL value in 2016.

## ABC Values for Black Sea Bass

The Comprehensive ACL Amendment (SAFMC 2011c) established an ABC control rule for assessed snapper grouper species (See **Table 1.5**). In accordance with National Standard 1 guidelines, the control rule takes into account scientific and data uncertainties that may exist for certain species managed within the snapper grouper fishery management unit.

The South Atlantic Council's SSC reviewed the SEDAR 25 Update 2013 for black sea bass in April 2013. The SSC is the responsible entity for recommending an ABC for species managed under the South Atlantic Council's jurisdiction. After reviewing the stock assessment update, the SSC applied the approved ABC control rule for assessed species (**Table 1.5**) and revised the P* recommendation to 40% (increased from P*=0.275), which resulted in the ABC values included in **Table 1.4**. Because the ABC recommended by the SSC is based on the South Atlantic Council's established ABC control rule, no alternatives are presented for choosing an ABC. The ABC is an established value (or a series of annually adjusted values in this case) from which other management references points such as the ACL and ACT are based.

**Table 1.4.** Revised ABC for black sea bass, shown in both landings and discards and landings only, based on SEDAR 25 (2013). Values in pounds whole weight.

| Fishing Year | ABC (landings + discards) | ABC (landings only) |
|---|---|---|
| 2013 | 2,258,000 | 2,133,000 |
| 2014 | 2,102,000 | 1,992,000 |
| 2015 | 1,921,000 | 1,814,000 |

Black sea bass is neither overfished nor undergoing overfishing according to the SEDAR 25 Update 2013. The ABC, ACL, OY, and MSY levels currently in place are based on a time series of data used in SEDAR 25 (2011), which included information through 2010. Since the SEDAR 25 Benchmark (2011) was completed, several recently implemented management measures have significantly modified how the black sea bass component of the snapper grouper fishery is prosecuted (Amendment 18A; SAFMC 2012a). These management measures include:

- a pot endorsement program with 32 participants;
- a limit on pots to 35 per vessel;
- a requirement for pots to be brought back to shore after each trip;
- a 1,000 lb gw commercial trip limit;
- an increase in the commercial size limit from 10” to 11” TL; and
- an increase in the recreational size limit from 12” to 13” TL.

Regulatory Amendment 9 (SAFMC 2011a) reduced the recreational bag limit from 15 black sea bass to 5 per person per day. Therefore, the data added to the most recent stock assessment update provided information reflective of the way the black sea bass component of the snapper grouper fishery is currently prosecuted. The South Atlantic Council has determined that it is appropriate at this time to update management reference points and management measures for black sea bass through Regulatory Amendment 19.

From the SEDAR 25 Update 2013, the SSC recommended an OFL based upon projections of P*=0.5 (**Table 1.3**). The SSC’s recommendation of ABC is based on their application of the approved ABC control rule, which accounts for dead discards, scientific and management uncertainty, and other characteristics of the stock such as the vulnerability to overfishing. The SSC also recommended a 3-year projection at a P* = 40% for the ABC. The P* is an uncertainty buffer, or difference between OFL and ABC, and is expressed in terms of a reduction in the probability of overfishing. The adjustment score for P* is provided by the approved ABC control rule as shown in **Table 1.5**.

The new ABC recommendation and subsequent proposed annual ACLs are based on biologically sound principles and an ABC control rule accepted by the SSC and the South Atlantic Council. Because the new ABC recommended by the SSC is an increase from the current ABC (which is based upon SEDAR 25 (2011) benchmark assessment), a corresponding increase in the ACLs is being proposed.

**Table 1.5.** The South Atlantic Council's SSC's ABC Control Rule.
Note: The ABC control rule provides a hierarchy of dimensions and tiers within dimensions used to characterize uncertainty associated with stock assessments in the South Atlantic.
Parenthetical values indicate (1) the maximum adjustment value for a dimension; and (2) the adjustment values for each tier within a dimension (SAFMC 2011c).

| **Level 1 – Assessed Stocks** | |
|---|---|
| **Tier** | **Tier Classification and Methodology to Compute ABC** |
| ***1. Assessment Information (10%)*** | 1. Quantitative assessment provides estimates of exploitation and biomass; includes MSY-derived benchmarks. (0%)<br>2. Reliable measures of exploitation or biomass; no MSY benchmarks, proxy reference points. (2.5%)<br>3. Relative measures of exploitation or biomass, absolute measures of status unavailable. Proxy reference points. (5%)<br>4. Reliable catch history. (7.5%)<br>5. Scarce or unreliable catch records. (10%) |
| ***2. Uncertainty Characterization (10%)*** | 1. Complete. Key Determinant – uncertainty in both assessment inputs and environmental conditions are included. (0%)<br>2. High. Key Determinant – reflects more than just uncertainty in future recruitment. (2.5%)<br>3. Medium. Uncertainties are addressed via statistical techniques and sensitivities, but full uncertainty is not carried forward in projections. (5%)<br>4. Low. Distributions of $F_{MSY}$ and MSY are lacking. (7.5%)<br>5. None. Only single point estimates; no sensitivities or uncertainty evaluations. (10%) |
| ***3. Stock Status (10%)*** | 1. Neither overfished nor overfishing. Stock is at high biomass and low exploitation relative to benchmark values. (0%)<br>2. Neither overfished nor overfishing. Stock may be in close proximity to benchmark values. (2.5%)<br>3. Stock is either overfished or overfishing. (5%)<br>4. Stock is both overfished and overfishing. (7.5%)<br>5. Either status criterion is unknown. (10%) |
| ***4. Productivity and Susceptibility – Risk Analysis (10%)*** | 1. Low risk. High productivity, low vulnerability, low susceptibility. (0%)<br>2. Medium risk. Moderate productivity, moderate vulnerability, moderate susceptibility. (5%)<br>3. High risk. Low productivity, high vulnerability, high susceptibility. (10%) |
| **Level 2 - Unassessed Stocks. Reliable landings and life history information available** | |
| | OFL derived from "Depletion-Based Stock Reduction Analysis" (DBSRA).<br>ABC derived from applying the assessed stocks rule to determine adjustment factor if possible, or from expert judgment if not possible. |
| **Level 3 - Unassessed Stocks. Inadequate data to support DBSRA** | |
| | ABC derived directly, from "Depletion-Corrected Average Catch" (DCAC). Done when only a limited number of years of catch data for a fishery are available. Requires a higher level of "informed expert judgment" than Level 2. |
| **Level 4 - Unassessed Stocks. Inadequate data to support DCAC or DBSRA** | |
| | OFL and ABC derived on a case-by-case basis. ORCS ad hoc group is currently working on what to do when not enough data exist to perform DCAC. |

The Magnuson-Stevens Act national standard 1 establishes the relationship between conservation and management measures, preventing overfishing, and achieving OY from each stock, stock complex or fishery. The National Standard Guidelines discuss the relationship of OFL to MSY and ACT or ACL to OY. The OFL is an annual amount of catch that corresponds to the estimate of maximum fishing mortality threshold applied to a stock or complex's abundance; MSY is the long-term average of such catches. The ACL is the limit that triggers AMs, and an ACT, if specified, would be the management target for a species. Management measures for a species should, on an annual basis, prevent the ACL from being exceeded.

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

*…if catch exceeds the ACL for a given stock or stock complex more than once in the last four years, the system of ACLs and AMs should be re-evaluated, and modified if necessary, to improve its performance and effectiveness. 50 C.F.R.§ 600.310(g)(3).*

If an evaluation concludes that the ACL is being chronically exceeded for any one species or species group, and post-season AMs are repeatedly needed to correct for ACL overages, adjustments to management measures would be made. If the ACL is exceeded repeatedly over the course of four years, the South Atlantic Council would reassess the system of ACLs and AMs for the species. Amendment 17B (SAFMC 2010b) updated the Framework Procedure for the Snapper Grouper FMP to allow OFL, ABC, ACLs, AMs, and ACTs to be modified via framework amendment, which requires less time to implement compared to an FMP amendment.

The current recreational AM for black sea bass is (Amendment 18A; SAFMC 2012a): "If the recreational sector black sea bass ACL is met or is projected to be met, independent of stock status, prohibit the harvest and retention of black sea bass. If the recreational sector black sea bass ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the recreational sector ACL in the following season by the amount of the overage". The current commercial AM for black sea bass is (Amendment 18A; SAFMC 2012a): "If the commercial sector black sea bass ACL is met or is projected to be met, independent of stock status, all subsequent purchase and sale of black sea bass is prohibited and harvest and/or possession is limited to the black sea bass bag limit. If the commercial sector black sea bass ACL is exceeded, independent of stock status, the Regional Administrator shall publish a notice to reduce the commercial sector black sea bass ACL in the following season by the amount of the overage". For both the recreational and commercial sectors, ACL paybacks are not required when new projections are adopted that incorporate ACL overages and the ACLs are adjusted in accordance with those projections.

# Chapter 2. Proposed Actions and Alternatives

## 2.1 Action 1: Revise the Annual Catch Limits, Recreational Annual Catch Target, and Optimum Yield for Black Sea Bass

**Alternative 1 (No Action)**. For black sea bass, retain the current annual catch limits (ACLs), optimum yield (OY), and recreational annual catch target (ACT) formulas and values:

Current ACL = 847,000 lbs whole weight (ww) = 718,000 lbs gutted weight (gw)
Commercial ACL = 309,000 lbs gw (364,620 lbs ww) (June 1 –May 31 fishing year)
Recreational ACL = 409,000 lbs gw (482,620 lbs ww) (June 1-May 31 fishing year)
Recreational ACT = 357,548 lbs gw (421,907 lbs ww) (June 1 –May 31 fishing year)

Acceptable Biological Catch (ABC), Annual Catch Limits, and Optimum Yield
ACL = ABC = OY. Sector ACLs based on the existing allocations of 43% for the commercial sector and 57% for the commercial sector. ACLs will not increase automatically in a subsequent year if the present year's projected catch has exceeded the total ACL.

Commercial ACT
There is no ACT for the commercial black sea bass sector.

Recreational ACT
The recreational ACT equals recreational ACL*(1-PSE) or recreational ACL*0.5, whichever is greater. The average proportional standard error (PSE) from the Marine Recreational Fishery Statistics Survey (MRFSS) for black sea bass during 2005-2009 is 12.58%

**Alternative 2.** For black sea bass, retain the current ACL and ACT formulas and revise the ACLs and recreational ACT for the 2013/14 fishing season and beyond until modified as shown in the table below. Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

**Table 2.1.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update 2013 and **Alternative 2**. Values in pounds whole weight (ww).

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| 2013 | 2,258,000 | 2,133,000 | 2,133,000 | 917,190 | 1,215,810 | 1,062,861 |
| 2014 | 2,102,000 | 1,992,000 | 1,992,000 | 856,560 | 1,135,440 | 992,602 |
| 2015 | 1,921,000 | 1,814,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |

[1] Using values provided by the SSC.
[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A (SAFMC 2012a).

**Alternative 3.** For black sea bass, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment (SEDAR 25 Update 2013). Retain the values until modified. Change the ACL formula to ACL = OY = yield at 75%$F_{MSY}$ when the stock is at equilibrium. The specified OY, ABC, ACLs, and recreational ACT would remain in place until modified. Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

ACL = OY = yield at 75%$F_{MSY}$ = 1,756,450 lbs ww
Commercial ACL = 755,274 lbs ww
Recreational ACL = 1,001,177 lbs ww
Recreational ACT = 875,229 lbs ww
Note: values represent landings only.

**Preferred Alternative 4.** For black sea bass, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment (SEDAR 25 Update 2013). Change the ACL formula to

1. 2013-2015 ACL = OY = 1,814,000 lbs ww
2. 2016 onwards ACL = OY = 1,756,450 lbs ww (yield at 75%$F_{MSY}$ when the stock is at equilibrium).

Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

**Table 2.2.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update 2013 and **Preferred Alternative 4**. Values in pounds whole weight (ww).

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| 2013 | 2,258,000 | 2,133,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2014 | 2,102,000 | 1,992,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2015 | 1,921,000 | 1,814,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2016 | 1,921,000 | 1,814,000 | 1,756,450 | 755,274 | 1,001,177 | 875,228 |

[1] Using values provided by the SSC.
[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A (SAFMC 2012a).

In addition, it is the South Atlantic Council's intent for **Alternatives 2, 3,** and **4 (Preferred)** that:

1. All black sea bass pots must be removed from the water from November 1 through April 30.
2. Black sea bass pots may not be onboard a vessel in the South Atlantic EEZ from November 1 through April 30.

### *Whole Weight vs. Gutted Weight*

Black sea bass are landed whole, and landings are recorded in whole weight (ww). The quota is specified in gutted weight (gw). Because all fish landed and sold were at one time whole and landings are recorded in whole weight, whole weight will be used as the unit of weight measurement for black sea bass throughout this document. Where appropriate, gutted weight (gw) and whole weight (ww) values will be given. The conversion factor to convert black sea bass poundage from ww to gw or vice versa is 1.18 (ww = gw *1.18 and gw = ww/1.18). Current regulations specify ACLs for black sea bass in ww and gw.

## Summary of the Effects of Alternatives

Biological

The values for **Alternative 1 (No Action)** are based upon the results of SEDAR 25 (2011) benchmark assessment (data through 2010); OY = ACL = ABC; ABC = 847,000 lbs ww is from the Scientific and Statistical Committee's (SSC) recommendation using the approved ABC control rule (bycatch is incorporated into the SEDAR Assessments); allocation is 43% commercial and 57% recreational; and the recreational sector ACT definition is ACT = ACL*(1-PSE) or ACL*0.5, whichever is greater. The average PSE used in the ACT definition, from MRFSS for black sea bass during 2005-2009, is 12.58%. **Alternative 1 (No Action)** would maintain the current ACL, which would cap total harvest at 847,000 lbs ww until modified. Because **Alternative 1 (No Action)** would constrain harvest to a lower level than either **Alternatives 2, 3**, or **Preferred Alternative 4**, the biological benefits under **Alternative 1 (No Action)** would be expected to be greater than under the other three alternatives. However, the 2013 stock assessment update indicates black sea bass is no longer undergoing overfishing, nor is the stock overfished. Furthermore, black sea bass have been rebuilt.

**Alternative 2** would adopt the ABC projections at the 40% P* level for 2013-2015 from the SEDAR 25 Update 2013 and use the OY=ABC=ACL formula adopted in Amendment 18A to the Snapper Grouper FMP to specify the ACL and OY. The values for **Alternative 2** are shown in **Table 2.1**. Under **Alternative 2**, the ACL would be set equal to the ABC, and would increase to 2,133,000 lbs ww in 2013 and then decrease to 1,814,000 lbs ww in 2015. These values are based upon the results of SEDAR 25 Update 2013 with data through 2012; **Appendix A**). The assessment update indicated the presence of one or two good year classes that resulted in projected yields for 2013-2014 that are above MSY. The ABCs decline over time because fishing activity would be removing the "excess" biomass and "fishing the stock down" to the level that can produce MSY. The 2015 ABC, based on landings only, is 1,814,000 lbs ww. The 2015 ABC carries a risk of driving the stock back down below the $SSB_{MSY}$ (43% probability the spawning stock biomass is above the spawning stock biomass at MSY; Table 19 in SEDAR 25 Update 2013). If landings exceed the OFL of 1,857,000 lbs ww (Table 20 in SEDAR 25 Update 2013) overfishing would be occurring. The OY, ABC, ACLs, and recreational ACT would remain at the levels specified for 2015 until modified. Therefore, **Alternative 2** could have long-term, adverse impacts to the black sea bass stock and associated species as it could result in

fishing mortality levels higher than the yield at 75%$F_{MSY}$ levels for 2015 and beyond, which could result in biomass levels of the black sea bass stock below $SSB_{MSY}$. **Alternative 2** could result in the largest negative impacts to the biological environment among the proposed alternatives. The South Atlantic Council's SSC recommended ABC levels for 2013-2015 based on the approved ABC Control Rule, but did not provide an ABC beyond 2015 because projection values were not provided by the SEFSC in the stock assessment. In addition, the South Atlantic Council intends to prohibit the use of black sea bass pot gear during the November 1 through April 30 closure to prevent interactions with right whales during the calving season. Amendment 18A (SAFMC 2012a) implemented a prohibition on possession of black sea bass on a vessel with pot gear and required that all black sea bass pots be removed from the water once the commercial ACL was met or projected to be met. It is the South Atlantic Council's intent that black sea bass pots be removed from the water and that they cannot be on-board a vessel during the November 1 – April 30 closure.

**Alternative 3** would have a greater positive biological effect than **Alternative 2** because it would create a buffer between the ACL/OY and ABC that would account for management uncertainty. **Alternative 3** would result in the total ACL increasing from 847,000 lbs ww to 1,756,450 lbs ww in 2013/14 onwards. Under **Alternative 2**, managers would be faced with declining yield over three years but this level of harvest may not allow catch levels to reach the equilibrium point, and could allow overfishing to occur after 2015. **Alternative 3** avoids this situation for black sea bass by relying on the equilibrium estimate of yield at 75% of $F_{MSY}$ to set ACL and OY. However, if catches are not kept less than the OFL, overfishing would occur under **Alternative 3**. The alternative of using the estimated equilibrium value as a catch limit is a risk averse approach that sacrifices some yield over the short term (376,550 lbs ww in 2013, 235,550 lbs ww in 2014, and 57,550 lbs ww in 2014 and future years) to gain stability over the long-term and prevent unrealistic expectations of fishery potential by constituents. The biological benefits from **Alternative 3** would not be realized if the monitoring systems do not limit the landings to the ACL.

**Preferred Alternative 4** would implement an ACL and OY of 1,814,000 lbs ww in 2013, 2014, and 2015. This value is equal to the projection at the 40% P* level for 2015 and is also the SSC's ABC recommendation for 2015. Beginning in 2016, the ACL would be reduced to 1,756,450 lbs ww and would remain in place beyond 2016 until modified. This value is equal to the yield at 75%$F_{MSY}$ when the stock is at equilibrium. **Preferred Alternative 4** would establish the lowest ACL in the string of ACLs in **Alternative 2** and then switch to the ACL in **Alternative 3** beginning in 2016. In 2013 and 2014, the ACLs in **Preferred Alternative 4** are between the ACLs in **Alternatives 2** and **3**. As such, the biological impacts to the black sea bass stock in 2013 and 2014 are intermediate of the impacts outlined for **Alternatives 2** and **3**. **Preferred Alternative 4** would not be expected to have long-term, adverse impacts to the black sea bass stock and associated species as would be expected from **Alternative 2**. The ACL for 2016 and beyond would be set at the equilibrium estimate of yield at 75% of $F_{MSY}$ and would have a buffer between the ACL/OY and ABC to account for management uncertainty.

Economic

Commercial sector ACLs would increase in 2013 and then decrease for 2014-2015 under **Alternative 2**. The ex-vessel revenue increase would be approximately $1.2 million in 2013, $1.1 million in 2014, and $900,000 in 2015 using average 2007-2011 ex-vessel prices in real 2011 dollars (see **Table 4.1.4**). Projections indicate that for 2013-2015, if the black sea bass gear prohibition is not imposed, the commercial fishing season for black sea bass would last until just past the first of November for 2013 and 2014. With the black sea bass pot prohibition, the black sea bass commercial season (using hook-and-lines) is expected to last until the beginning of April in 2014. Likewise, in 2014, the commercial season is expected to continue until the end of January 2015. In general, **Alternative 2** offers greater economic benefits than **Alternative 1 (No Action)** with the hook-and-line sector benefitting most from the November 1 to April 30 prohibition on the use of black sea bass pots, especially in 2013 and 2014.

**Alternative 3** specifies a commercial ACL of 755,274 lbs ww (640,062 lbs gw). The result is an increase in the commercial sector ACL of 390,654 lbs ww (see **Table 4.1.1**). Under **Alternative 3**, the black sea bass pot sector would also be subject to a closure from November 1 through April 30 each year. Some projections indicate that whether the black sea bass pot prohibition is imposed, or not, the commercial fishing season would close at the end of October. Compared to the scenario under **Alternative 1 (No Action)**, the commercial ACL would increase by an additional 390,654 lbs gw, potentially amounting to an approximate increase in ex-vessel revenue of approximately $883,000 (using average ex-vessel prices 2007-2011 in real 2011 dollars). This does not account for additional species landed during those same trips.

Under **Preferred Alternative 4**, the commercial sector would be able to harvest their ACL for 2015 from **Alternative 2** for the fishing seasons beginning in 2013 through 2015, 780,020 lbs ww (661,034 lbs gw). Beginning in 2016, the commercial sector would be allowed to harvest their ACL from **Alternative 3**, 755,274 lbs ww (640,062 lbs gw). The economic effects of **Preferred Alternative 4** fall between those of **Alternative 2** and **Alternative 3**. **Preferred Alternative 4** would impose the same prohibition on the use of black sea bass pots from November 1 through April 30. For the fishing years starting in 2013 through 2015, if the pot sector was not closed, the commercial season for black sea bass is expected to end November 1$^{st}$. With the pot sector closure, the vertical line season is expected to close on November 7$^{th}$. Beginning with the 2016 season, regardless of the status of the pot season closure, it is estimated the commercial black sea bass sector would close on October 28$^{th}$. Like **Alternative 3**, the commercial fishery has the potential to land the entire commercial ACL, even without the November 1 to April 30 closure.

**Alternatives 2, 3** and **Preferred Alternative 4** provide potential economic benefits over **Alternative 1 (No Action)** with **Alternative 2** providing the greatest economic benefits. The hook-and-line sector would benefit more that the black sea bass pot fishery under **Alternative 2** due to an extended season. The magnitude of the economic benefits for each sector under **Alternative 2** would depend on how much of the commercial ACLs indicated can be landed given the expected decrease in black sea bass pot gear effort. **Preferred Alternative 4** would

provide fewer direct positive economic effects than **Alternative 2**. However, **Preferred Alternative 4** would provide greater direct positive economic effects than **Alternative 3.**

The alternatives considered for the recreational ACL changes would increase the number of fish that could be caught by recreational anglers. Since the recreational ACL was implemented in 2010/11, the recreational sector has experienced fishing closures that resulted in shorter seasons every year. It is expected that any of the alternatives to increase the recreational ACL would still result in fishing closures. Harvests and CS under **Alternatives 2** through **Preferred Alternative 4** would be higher than those in **Alternative 1 (No Action)**. Depending on the discount rate, the net present value of CS changes over three years would range from about $40 million to $43 million with **Alternative 2**, $32 million to $35 million with **Alternative 3**, and $34 million to $37 million with **Preferred Alternative 4** (**Table 4.1.5**). Under **Alternative 2** or **Alternative 3 or Preferred Alternative 4**, private/rental anglers would be expected to gain more CS than the combined CS of the other fishing mode anglers. Headboat anglers would receive the second highest CS increase, followed by the charter and shore anglers. This distribution of CS increases is solely driven by the relative landings of each fishing mode. CS increases under **Alternative 2** would be substantially higher than those under **Alternative 3**, mainly because **Alternative 2** would provide for higher recreational ACLs than **Alternative 3** over the three-year period. **Preferred Alternative 4** would provide CS increases lower than **Alternative 2** but higher than **Alternative 3**.

Trips and NOR changes due to **Alternatives 2, 3,** and **Preferred Alternative 4** relative to **Alternative 1 (No Action)** are shown in **Table 4.1.8a**. Trips and NOR are totals over 2013, 2014, and 2015. Focusing only on the Mean Closure scenario and the 7% discount rate, the ACLs under **Alternative 2** would result in NOR increases (present value) of $1.14 million over three years. NOR increases under **Alternative 3** and **Preferred Alternative 4** would be about $930,000 over three years.

However, there apparently are differences in the long-term effects of the two alternatives on the status of the stock. The discussion on the biological effects of the two alternatives states that **Alternative 2** could have long-term, adverse impacts to the black sea bass stock and associated species as it could result in fishing mortality levels higher than the yield at 75%$F_{MSY}$ levels for 2016 and beyond, which could result in biomass levels of the black sea bass stock below $SSB_{MSY}$. It is understood that, if in the future the stock is impaired, the South Atlantic Council and NMFS could intervene to address the issue. This type of intervention would likely result in more stringent regulatory actions that would have negative consequences on the stream of economic benefits derivable from the black sea bass resource. If this were to occur, the long-term economic effects of **Alternative 2** would be less than those of either **Alternative 3** or **Preferred Alternative 4**. If, on the other hand, the concern expressed in the cited biological effects discussion did not materialize, selecting **Alternative 3** or **Preferred Alternative 4** would result in forgone economic benefits to the resource users.

Beyond the possibilities discussed above, there is the general issue as to which alternative would likely result in more restrictive fishing regulations over the long-term. As may be inferred

from the biological effects discussion, the risk of overfishing the stock may be more likely with **Alternative 2** than with **Alternative 3** or **Preferred Alternative 4**. Thus, more stringent regulations, possibly in the form of ACL reductions, would be more likely under **Alternative 2** than with the other two alternatives. In effect, **Alternative 3** or **Preferred Alternative 4** would more likely provide better economic prospects in the future than **Alternative 2,** and as discussed above, resource users would be better off under **Preferred Alternative 4** than under **Alternative 3**. Moreover, there is an expectation that some knowledge about future stringent regulations would prompt commercial and recreational resource users to adopt strategic behavior for their current operations/activities. This strategy would more likely involve taking advantage of current fishing opportunities before stringent regulations are imposed. In a sense, this strategic behavior could exacerbate the emergent derby attitude that presently appears to characterize the commercial and recreational sectors. The adverse economic effects of a derby attitude are now well known.

Social

The social effects of modifications to the black sea bass are associated with three main factors: updated ACLs based on the most recent information from the stock assessment update; increased access to the resource; and potential right whale interaction with black sea bass pots due to a potentially longer season. An increase in the recreational black sea bass ACL under **Alternatives 2, 3,** and **Preferred Alternative 4** would be expected to benefit the communities of Little River, South Carolina; Murrells Inlet, South Carolina; Morehead City, North Carolina; Carolina Beach, North Carolina, and Wanchese, North Carolina.

Because the ACL would not be adjusted to reflect new information and outcomes from the recent stock assessment update, **Alternative 1 (No Action)** would not result in any social benefits expected from incorporating more accurate and up-to-date information into setting ACLs. **Alternatives 2, 3,** and **Preferred Alternative 4** would be expected to be more beneficial to the fleet, private anglers, and other resource users because the new information better reflects current conditions with the black sea bass stock.

In general, a higher ACL under **Alternatives 2, 3,** and **Preferred Alternative 4** would be more beneficial to commercial and recreational fishermen as long as it is set to prevent overfishing. The increase in the black sea bass ACL under **Alternatives 2, ,3** and **Preferred Alternative 4** would be expected to improve harvest opportunities and extend the season for the commercial fleet, and have positive social effects on recreational anglers and for-hire businesses that catch black sea bass. In addition, **Alternative 3** and **Preferred Alternative 4** would be beneficial in that it would prevent unrealistic expectations of fishery potential among constituents.

# Chapter 3. Affected Environment

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

- **Habitat environment** (Section 3.1)
- **Biological and ecological environment** (Section 3.2)
- **Human environment** (Sections 3.3)
- **Administrative environment** (Section 3.4)

## 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 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.

### 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 lbs 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 |

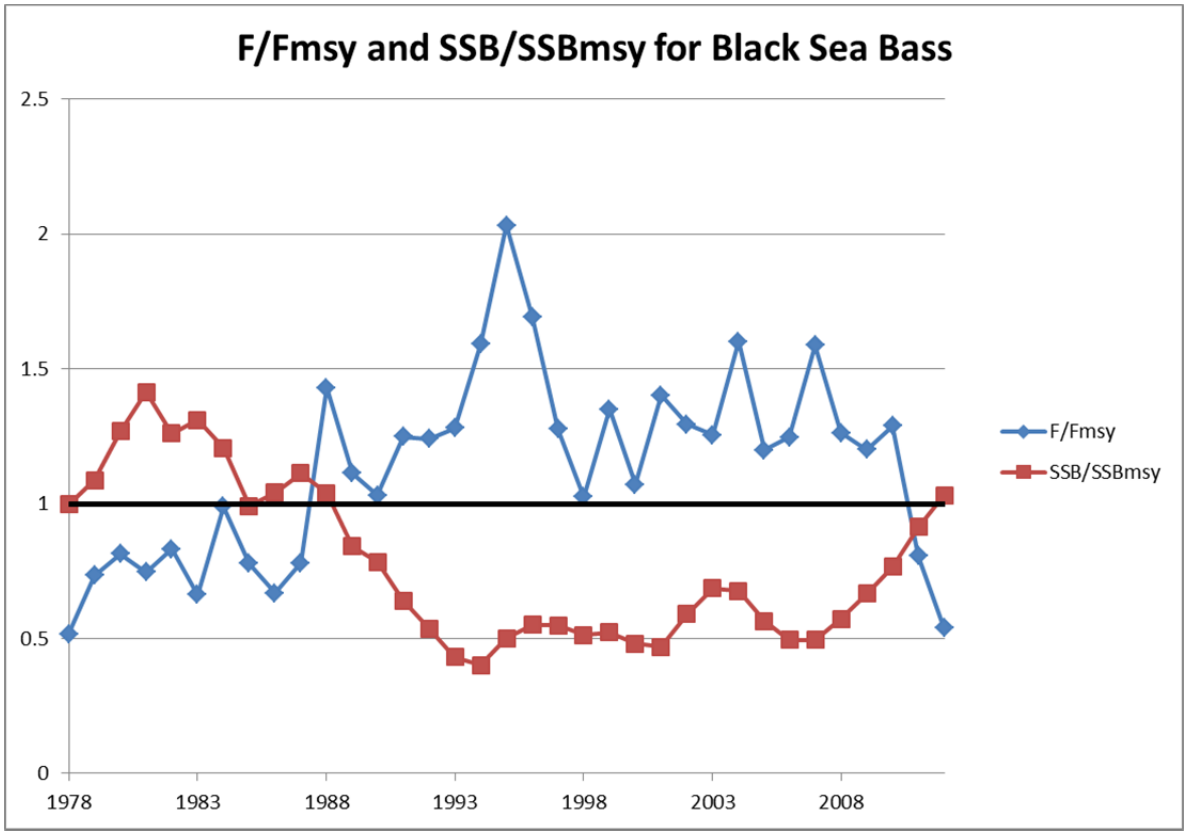


**Figure 3.2.1.** Spawning stock biomass (SSB) and exploitation (F) levels relative to expected conditions of the black sea bass stock at MSY. Relative biomass is depicted by $SSB/SSB_{MSY}$ and exploitation by $F/F_{MSY}$. The index line at 1 represents MSY conditions. Data are from the 2013 assessment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

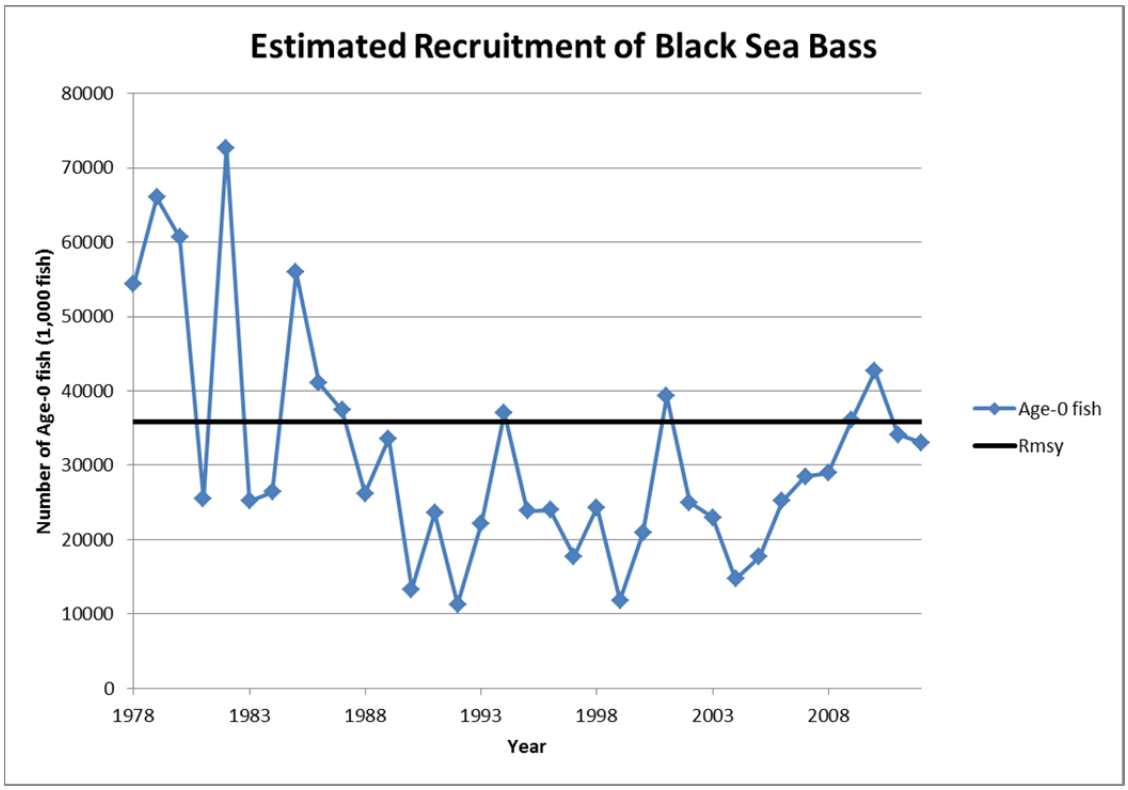


**Figure 3.2.2.** Estimated annual recruitment and expected recruitment at MSY conditions for black sea bass in number of age-0 fish. Data are from the 2013 assessment update report for black sea bass.

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.

## 3.3 Protected Species

There are 40 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. Six of these marine mammal species are also listed as endangered under the Endangered Species Act (ESA) (i.e., sperm, sei, fin, blue, humpback, and North Atlantic right whales). In addition to those six marine mammals, five species of sea turtles (green, hawksbill, Kemp's ridley, leatherback, and loggerhead); the smalltooth sawfish; five distinct population segments of Atlantic sturgeon; and 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 also occur within the South Atlantic Council's jurisdiction. **Section 3.5** in the Comprehensive ACL Amendment (SAFMC 2011c), and **Section 3.2.2** in Regulatory Amendment 13 to the Snapper Grouper FMP (SAFMC 2013a), describe the life history characteristics in detail for these non-marine mammal species. **Section 3.5** of the Comprehensive ACL Amendment and **Section 3.2.2** of Regulatory Amendment 13 are hereby incorporated by reference and may be found at: http://www.safmc.net/ecosystem/Home/EcosystemHome/tabid/435/Default.aspx and http://sero.nmfs.noaa.gov/sf/pdfs/Reg13_FINAL_Dec2012.pdf, respectively. Of the six marine mammal species protected by the ESA, the North Atlantic right whale and humpback whale are the most likely to overlap with temporally and spatially with the snapper-grouper fishery, particularly the black sea bass pot sector. A description of their life history characteristics is included below.

The potential impacts from the continued authorization of the South Atlantic snapper grouper fishery on all ESA-listed species have been considered in previous ESA Section 7 consultations. Summaries of those consultations and their determination are in **Appendix F**. Those consultations indicate that of the species listed above, sea turtles and smalltooth sawfish are the most likely to interact with the snapper grouper fishery.

### Humpback and North Atlantic Right Whales

Humpback whales have relatively long pectoral fins that can reach up to 33% of their body length (Clapham 2002). The dorsal fin is small but highly variable in shape. Humpbacks are rorqual whales with ventral pleats. Adult females are generally longer than males. Adults average 45-50 ft in length; calves are 13-14 ft on average at birth (Clapham 2002). Humpbacks have between 270-400 baleen plates (Clapham 2002) and feed on a number of species of small schooling fishes, particularly sand lance and Atlantic herring, targeting fish schools and filtering large amounts of water for their associated prey. It is hypothesized humpback whales may also feed on euphausiids (krill) as well as capelin (Waring et al. 2009, Stevick et al. 2006).

Humpback whales from most Atlantic feeding areas calve and mate in the West Indies and migrate to feeding areas in the northwestern Atlantic during the summer months. Sightings are most frequent from mid-March through November between 41$^{o}$N and 43$^{o}$N, from the Great

South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffrey's Ledge (CeTAP 1982), and peak in May and August. Small numbers of individuals may be present in this area year-round, including the waters of Stellwagen Bank.

In winter, whales from waters off New England, Canada, Greenland, Iceland, and Norway migrate to mate and calve, primarily in the West Indies, where spatial and genetic mixing among these groups does occur (Waring et al. 2013). Humpback whales use the Mid-Atlantic as a migratory pathway to and from the calving/mating grounds, but it 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 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. 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 during September through April in North Carolina and Virginia waters, and were composed primarily of juvenile humpback whales of no more than 11 meters in length (Wiley et al. 1995).

Entanglements in fishing gear are a threat to humpback whales. Between 2003 and 2007, humpback whales were the most commonly observed entangled whale species (Glass et al. 2009). Photographs taken between 2000 and 2002 indicate that approximately half (48-57%) of photographed individuals (187 animals) appeared to show signs of prior entanglement in fishing gear (Robbins and Mattila 2004). Evidence suggests that entanglements have occurred at a minimum rate of 8-10% per year (Robbins and Mattila 2004).

North Atlantic right whales are likely to occur in the areas under the SAFMC's jurisdiction from approximately November 1 through April 30. Historically, North Atlantic right whales have occurred in all the world's oceans from temperate to subarctic latitudes (Perry et al. 1999). North Atlantic right whales generally occur from the southeast United States to Canada (e.g., Bay of Fundy and Scotian Shelf) (Kenney 2002, Waring et al. 2013). They follow an 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 12 January, then again eleven days later (23 January) in Cape Cod Bay, less than a month later off Georgia (16 February), and back in Cape Cod Bay on 23 March, effectively making the round-trip migration to the Southeast and back at least twice during the winter season (Brown and Marx 2000). Calving occurs in the winter months off the coast of the southeast United States. Recent aerial survey data indicate calving and nursing occurs from the coasts of northeastern Florida and southeastern Georgia and as far north as North Carolina (Waring et al. 2013).

Systematic surveys conducted off the coast of North Carolina during the winters of 2001 and 2002 sighted 8 calves, suggesting the calving grounds may extend as far north as Cape Fear (Waring et al. 2013). One of the cows photographed was new to researchers, having effectively eluded identification over the period of its maturation, and another had not been previously

sighted in the Bay of Fundy or southern calving grounds (Pabst et al. 2009). Habitat modeling completed by Keller et al. (2012) also predicts that suitable calving habitat likely occurs over much of the continental shelf south of Cape Fear, North Carolina. The number of calves observed annually in the South Atlantic region varies. Since 2007/08, 133 calves have been documented in the region, varying annually from a high of 39 in 2008/09 to a low of 7 in 2011/12 (Waring et al. 2013; NMFS unpublished data).

North Atlantic right whales are robust, with their girth at time exceeding 60% of total body length, and no dorsal fin. Their heads are relatively large, comprising approximately 25-33% of their entire body length. The upper jaw is somewhat arched with 200-270 baleen plates on each side of the upper jaw. Baleen plates are usually narrow and 7-9 ft long. North Atlantic right whales feed primarily on copepods but also feed on zooplankton, krill, and pterodpods. Right whales feed by moving forward with mouths open, straining prey from the water. Feeding can occur anywhere in the water column, including at the surface, and dives are typically 10-20 minutes (Kenney 2002).

North Atlantic right whales are vulnerable to ship strikes and entanglement in fishing gear. Fixed fishing gear, including sink gillnets, drift nets, and trap/pot gear are all known to entangle right whales (Waring et al. 2013). Entanglements in fishing gear are very common in right whales with approximately 73% of North Atlantic right whales having some indications of being entangled in fishing gear at least once (Knowlton et al. 2008). Information from an entanglement event often does not include the detail necessary to assign the entanglements to a particular fishery or location (Waring et al. 2013). However, Johnson et al. (2005) found that when gear was identified, 89% consisted of either trap/pot or gill net gear.

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the proposed rule for the 2013 LOF classifies as a Category II (78 FR 23708; April 22, 2013). Gear types used in these sectors are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2001. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented in the snapper grouper fishery; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper grouper fishery in the South Atlantic are classified in the 2013 LOF (78 FR 23708; April 22, 2013) as Category III fisheries. Category II means that there is a remote likelihood or no known incidental mortality and serious injuries of marine mammals.

Although the black sea bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot sector operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3-36.6 meters) and these whales generally occur further offshore. However, the proposed November 1 through April 30 closure to the pot sector will further reduce the potential risk to protected species as this is the calving season for right whales in the South Atlantic. In addition, the potential risk to protected species has likely been reduced with implementation of Amendment 18A to the Snapper Grouper FMP, which established 32 black sea bass pot endorsements, limited the number of pots that can be fished to 35, and required that pots be returned to shore at the conclusion of a trip. There are no documented interactions between the black sea bass pot sector and large whales. NMFS' biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined that possible adverse effects resulting from the fishery are extremely unlikely.

## 3.4 Human Environment

## 3.4.1 Economic Description of the Commercial Sector

Additional information on the commercial snapper grouper sector is contained in previous amendments [Amendment 13C (SAFMC 2006), Amendment 15A (SAFMC 2008a), Amendment 15B (SAFMC 2008b), Amendment 16 (SAFMC 2009a), Regulatory Amendment 9 (SAFMC 2011a), and Comprehensive ACL Amendment for the South Atlantic Region (SAFMC 2011c)] and is incorporated herein by reference. Presented below is selected information on the commercial sector of the black sea bass portion of the snapper grouper fishery.

The major source of data summarized in this description is the 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. Real (inflation adjusted) prices are reported in 2011 constant dollars. Landings are expressed in whole weight to match with the method for collecting ex-vessel price information for black sea bass.

### 3.4.1.1 Annual Landings, Revenues, and Effort

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. The average 2007-2011 landings as shown in the table below were 447,360 lbs whole weight (ww). From 2007 through 2011, an average of 1,670 trips that landed at least one pound of black sea bass were taken by 240 permitted vessels. These trips landed 447,360 lbs ww of black sea bass valued at about $1.011 million in 2011 prices (**Table 3.4.1**). Trips landing black sea bass also landed other species; total revenues generated by these trips averaged $3,989,399 in nominal prices. On average, black sea bass price per pound was $2.17, or $2.26 when adjusted for inflation.

**Table 3.4.1.** Selected characteristics for trips landing at least one pound (whole weight) of black sea bass, 2007-2011.

| Item | 2007 | 2008 | 2009 | 2010 | 2011 | Average |
|---|---|---|---|---|---|---|
| Number of trips | 1,962 | 1,961 | 2,395 | 1,357 | 676 | 1,670 |
| Number of boats | 260 | 259 | 286 | 214 | 179 | 240 |
| Number of dealers purchasing BSB | 128 | 116 | 112 | 107 | 82 | 109 |
| Lbs whole weight | 410,151 | 438,795 | 635,468 | 449,591 | 302,793 | 447,360 |
| Nominal price per pound | $2.41 | $2.18 | $2.12 | $2.07 | $2.06 | $2.17 |
| Real price per pound (in 2011 $) | $2.60 | $2.27 | $2.23 | $2.13 | $2.06 | $2.26 |
| Total BSB revenue (in nominal $) | $988,610 | $958,468 | $1,346,063 | $928,952 | $622,326 | $968,884 |
| Total BSB revenue (in 2011 $) | $1,067,699 | $996,807 | $1,413,366 | $956,821 | $622,326 | $1,011,404 |
| Total Trip value that landed BSB | $4,522,297 | $4,890,847 | $5,553,441 | $3,435,400 | $1,565,015 | $3,989,399 |

Source: NMFS SEFSC Coastal Fisheries Logbook and Accumulated Landings Data Base Systems (2013).

### 3.4.1.2 Monthly Landings, Revenues, and Effort

Beginning in 2008, the commercial black sea bass season lasted less than a full calendar year. During each of the years in this time series, the black sea bass season began in June. As the stock recovered and the fish became more abundant, a derby developed and the seasons became shorter and shorter. The season that began in June of 2011 lasted less than two months. Because of the generally shorter length of time of each subsequent black sea bass season, the majority of trips occurred in the first two months of the season. In 2010, the black sea bass season was projected to close in October. However, bad weather kept the full ACL from being harvested. A short season of 10 days was opened in December 2010 to allow the fishermen to catch the remaining ACL.

Selected monthly average characteristics for trips landing at least one pound of black sea bass are shown in **Table 3.4.2**.

**Table 3.4.2.** Selected monthly average characteristics for trips landing at least one pound (ww) of black sea bass, 2007-2011.
Lbs are in thousands gutted weight and revenues are in thousand dollars.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Trips** | 111 | 106 | 88 | 96 | 99 | 280 | 216 | 184 | 137 | 97 | 123 | 131 |
| **Boats** | 35 | 36 | 30 | 36 | 38 | 53 | 50 | 45 | 42 | 34 | 40 | 42 |
| **Days Away** | 2.06 | 2.18 | 2.66 | 2.56 | 2.93 | 2.47 | 2.47 | 2.69 | 2.76 | 2.73 | 2.26 | 2.03 |
| **Lbs.** | 793 | 729 | 825 | 746 | 1,012 | 854 | 1,046 | 995 | 1,072 | 931 | 814 | 835 |
| **Nom. Rev.** | $2,126 | $1,909 | $2,089 | $2,113 | $2,822 | $2,228 | $2,768 | $2,626 | $2,857 | $2,430 | $2,133 | $2,171 |
| **Real Rev.** | $2,238 | $2,019 | $2,216 | $2,231 | $2,973 | $2,304 | $2,872 | $2,748 | $2,985 | $2,559 | $2,249 | $2,284 |

Source: NMFS SEFSC Coastal Fisheries Logbook and Accumulated Landings Data Base Systems (2013).

### 3.4.1.3 Average Landings, Revenues, and Effort by Gear Type

Black sea bass pots were the dominant gear in the harvest of black sea bass (**Table 3.4.3**) for the period 2007-2011. This gear type accounted for about 76% of total average annual black sea bass landings (**Table C**). Hook and line gear (including bandit rigs) accounted for 24% of the total average annual black sea bass landings, with other gears accounting for less than 1%.

Selected monthly average characteristics for trips landing at least one pound of black sea bass by gear type are shown in **Table 3.4.3.**

**Table 3.4.3.** Selected average characteristics for trips landing at least one pound (whole weight) of black sea bass, by gear type, 2007-2011.

| | Hook & Line | BSB Pots | Other |
|---|---|---|---|
| Trips | 1,076 | 484 | 111 |
| Vessels | 79 | 20 | 35 |
| Days | 3.12 | 1.51 | 1.65 |
| Lbs BSB | 43 | 705 | 32 |
| Total Lbs | 971 | 787 | 1,111 |
| BSB Rev. (Nominal) | $105 | $1,732 | $71 |
| Total Rev. (Nominal) | $2,688 | $1,844 | $2,304 |

Source: NMFS SEFSC Coastal Fisheries Logbook and Accumulated Landings Data Base Systems, (2013).

### 3.4.1.4 Permits

A commercial permit is required to harvest or possess commercial quantities of snapper grouper from the EEZ. There are two types of commercial snapper grouper permits, an unlimited permit, which is a transferable (subject to restrictions) that allows unlimited harvest of snapper grouper species, subject to trip limits or seasonal restrictions, and a non-transferable trip-limited permit that limits the owner to 225 lbs of snapper grouper harvest per trip. Both permits are limited access permits. The number of commercial snapper grouper permits for 2007-2012 is provided in **Table 3.4.4**. According to the Southeast Regional Office Website, the Constituency Services Branch (Permits) unofficially listed 121 225-pound trip-limited snapper grouper permit holders and 551 unlimited snapper grouper permit holders as of January 22, 2013.

Every year from 2007 through 2011, the number of vessels landing at least one pound of snapper grouper was higher than the number of snapper grouper permits (**Table 3.4.1** and **Table 3.4.4**). This is not totally unexpected. While a permit is assigned to a vessel, permits and vessels need not have a one-to-one correspondence as a permit can be used on multiple vessels at different times during a year or across multiple years. On the other hand, the average annual number of vessels landing black sea bass was approximately 31% of snapper grouper permits, indicating the relative importance of black sea bass as a source of revenue for many vessels in the commercial snapper grouper fishery. It is probable that some vessels, particularly those that fished black sea bass pots relied more on black sea bass as their major source of revenue from the snapper grouper fishery.

**Table 3.4.4.** Number of South Atlantic commercial snapper grouper permits, 2007-2012.

| | Unlimited | Limited | Total |
|---|---|---|---|
| 2007 | 695 | 165 | 860 |
| 2008 | 665 | 151 | 816 |
| 2009 | 640 | 144 | 784 |
| 2010 | 624 | 139 | 763 |
| 2011 | 569 | 126 | 695 |
| 2012 | 558 | 123 | 681 |
| Average | 625 | 141 | 766 |

Source: NMFS SERO Permits Data Base

### 3.4.2 Economic Description of the Recreational Sector

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.

#### 3.4.2.1 Harvest

The annual trend of recreational harvest of black sea bass in the South Atlantic was not uniform across fishing modes during the fishing years 2007/08-2011/12 (**Table 3.4.5**). Harvests decreased in 2008/09 for all fishing modes, but the pattern in subsequent years differed across fishing modes. Charter harvests went up in 2009/10 but declined in the next two years; headboat harvests increased in 2009/10 and 2010/11 but fell in 2011/2012; private/rental mode harvests fell in 2009/2010 but increased in the next two years; shore mode harvests followed a see-saw pattern throughout. The private/rental mode was the dominant sector in the harvest of black sea bass, followed by headboats, charter boats, and shore mode.

Recreational harvest trend for black sea bass also differed across the four South Atlantic states (**Table 3.4.5**). Harvests in Florida decreased in 2008/09, went up the next two years, and fell in 2011/12; harvests in Georgia increased in 2008/09 but declined the next three years; harvests in North Carolina followed a see-saw pattern throughout; and, harvests in South Carolina fell in 2008/09, increased in the next two years, and fell in 2011/12. Florida was the dominant state, followed by South Carolina, North Carolina, and Georgia.

**Table 3.4.5.** Harvest (pounds whole weight) of black sea bass in the South Atlantic based on June-May fishing year, 2007/08-2011/12.

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Average |
|---|---|---|---|---|---|---|
| **By Fishing Mode** | | | | | | |
| Charter | 66,772 | 46,781 | 131,749 | 103,978 | 101,694 | 90,195 |
| Headboat | 117,302 | 108,540 | 209,720 | 253,604 | 170,263 | 171,886 |
| Private/Rental | 430,731 | 328,307 | 306,058 | 328,008 | 352,088 | 349,038 |
| Shore | 5,125 | 1,524 | 5,034 | 1,984 | 2,418 | 3,217 |
| **By State** | | | | | | |
| Florida East | 214,362 | 147,932 | 238,684 | 308,120 | 265,040 | 234,828 |
| Georgia | 74,940 | 91,974 | 44,853 | 35,712 | 35,252 | 56,546 |
| N. Carolina | 141,772 | 76,937 | 162,217 | 135,923 | 163,382 | 136,046 |
| S. Carolina | 188,857 | 168,310 | 206,808 | 207,819 | 162,788 | 186,916 |

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

There is an apparent seasonality of recreational black sea bass harvests, with May through October generally being the peak season for all fishing modes and states in the South Atlantic (**Table 3.4.6**). November-December is also important in the private/rental mode, and these two months are also important for Georgia and South Carolina. Average (2007/08-2011/12) harvests by all fishing modes peaked in May-June and July-August and troughed in January-February. One feature that appears to stand out is the relatively large harvests by the private mode in November-December. The peaks and troughs are partly conditioned by the closures in the recreational harvests of black sea bass. For example, recreational closures occurred on February 12, 2011 for the 2010/11 season; on October 17, 2011 for the 2011/12 season; and, on September 4, 2012 for the 2012/13 season. This last closure did not affect the described seasonality in harvests because only harvests through May 2012 were included in the analysis.

There is apparently a slight variation in the seasonality of black sea bass harvests by state. Harvests in Florida peaked in July-August and troughed in Novemer-December, whereas harvests in all other states peaked in May-June and troughed in January-February (**Table 3.4.6**).

**Table 3.4.6.** Average harvest (pounds whole weight) of black sea bass in the South Atlantic, by month/wave, 2007/08-2011/12.

| | June | Jul-Aug | Sep-Oct | Nov-Dec | Jan-Feb | Mar-Apr | May |
|---|---|---|---|---|---|---|---|
| **By Fishing Mode** | | | | | | | |
| Charter | 17,793 | 29,987 | 12,987 | 3,995 | 219 | 6,137 | 19,077 |
| Headboat | 27,463 | 54,546 | 26,298 | 11,821 | 8,594 | 19,533 | 23,631 |
| Private/Rental | 36,726 | 87,535 | 47,930 | 56,359 | 26,859 | 47,744 | 45,885 |
| Shore | 455 | 890 | 289 | 0 | 0 | 1,113 | 470 |
| **By State** | | | | | | | |
| Florida East | 22,575 | 81,106 | 33,572 | 18,200 | 34,683 | 21,313 | 23,379 |
| Georgia | 12,822 | 9,925 | 1,982 | 10,022 | 95 | 9,457 | 12,244 |
| N. Carolina | 22,936 | 41,470 | 23,305 | 14,573 | 531 | 8,821 | 24,411 |
| S. Carolina | 24,104 | 40,458 | 28,646 | 29,380 | 362 | 34,937 | 29,030 |

Source: The Headboat Survey, NOAA Fisheries, SEFSC, Beaufort Lab and MRFSS database, NOAA Fisheries, NMFS, SERO.

### 3.4.2.2 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.

Estimates of target and catch effort for black sea bass by fishing mode are presented in **Table 3.4.7** and **Table 3.4.8** and those by state are shown in **Table 3.4.9** and **Table 3.4.10**. Clearly apparent in these tables is the substantial difference between target and catch trips, with target trips being generally less than 10 percent of catch trips.

The annual changes (from the previous year) in target and catch trips differed from each other for all fishing modes with the exception of private target trips (**Table 3.4.7)**. Shore mode target trips fell in 2008/09 and 2009/10 but increased slightly over the next two years; on the other hand, shore mode catch trips increased throughout the period. Charter target trips increased only in 2009/10 while charter catch trips see-sawed throughout the period. Private target trips were down in all years, except the last while private catch trips declined in the first two years and increased in the last two years. 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.

Similar to harvests, there is an apparent seasonality of both target and catch trips for black sea bass, with May through October being the peak season for all fishing modes in the South Atlantic (**Table 3.4.8**). Several features, however, may be worth noting. First, average (2007/08-2011/12) target trips for the private mode were quite evenly spread throughout the season. Second, peak catch trips for all fishing mode occurred in July-August and troughs occurred in January-February, which correlates well with the seasonality of harvests. Third, relatively high catch trips were recorded in March-April for the private mode.

**Table 3.4.7.** Target and catch trips for black sea bass in the South Atlantic based on June-May fishing year, by fishing mode, 2007/08-2011/12.

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Average |
|---|---|---|---|---|---|---|
| **Target Trips** | | | | | | |
| Shore | 2,638 | 1,983 | 0 | 404 | 826 | 1,170 |
| Charter | 3,541 | 1,203 | 2,430 | 2,210 | 439 | 1,964 |
| Private | 36,341 | 33,259 | 32,237 | 26,302 | 43,810 | 34,390 |
| **Catch Trips** | | | | | | |
| Shore | 61,418 | 89,972 | 94,606 | 101,370 | 124,734 | 94,420 |
| Charter | 45,634 | 12,328 | 33,190 | 27,725 | 31,315 | 30,038 |
| Private | 515,600 | 480,227 | 341,312 | 430,256 | 539,138 | 461,307 |

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

**Table 3.4.8.** Average target and catch trips for black sea bass in the South Atlantic, by month/wave and mode, 2007/08-2011/12.

| | June | Jul-Aug | Sep-Oct | Nov-Dec | Jan-Feb | Mar-Apr | May |
|---|---|---|---|---|---|---|---|
| **Target Trips** | | | | | | | |
| Shore | 0 | 607 | 0 | 0 | 36 | 528 | 0 |
| Charter | 344 | 554 | 600 | 13 | 37 | 186 | 230 |
| Private | 4,616 | 5,648 | 4,559 | 5,288 | 3,357 | 5,629 | 5,292 |
| **Catch Trips** | | | | | | | |
| Shore | 12,006 | 31,146 | 12,867 | 7,935 | 2,041 | 15,046 | 13,378 |
| Charter | 4,745 | 12,836 | 2,985 | 1,123 | 520 | 3,781 | 4,048 |
| Private | 55,382 | 122,216 | 84,387 | 53,372 | 27,430 | 58,358 | 60,162 |

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

Annual target trips by state for black sea bass did not follow the same pattern as catch trips. Target trips in Florida and Georgia followed a see-saw pattern that is almost the exact opposite see-saw pattern for catch trips (**Table 3.4.9**). Target trips in North Carolina increased throughout, except in 2011/12 whereas catch trips fell only in 2008/09. Target trips in South Carolina decreased throughout, except in 2011/12; catch trips increased in 2008/09, fell in two subsequent years, and rebounded in the last year. South Carolina dominated in target trips, followed by North Carolina, Florida, and Georgia. North Carolina recorded the highest average catch trips, followed closely by Florida, and then by South Carolina and Georgia.

The seasonality of target and catch trips for all states followed closely, but not exactly, the seasonality of these trips by mode (**Table 3.4.10**), with May through October being the peak season; November-December is also important for target trips in Florida, North Carolina, and South Carolina. In Florida, the trough in both target and catch trips occurred in September-October. In addition, all states exhibited some relatively high target and catch trips in March-April.

**Table 3.4.9.** Target and catch trips for black sea bass in the South Atlantic based on June-May fishing year, by state, 2007/08-2011/12.

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Average |
|---|---|---|---|---|---|---|
| **Target Trips** | | | | | | |
| Florida East | 8,492 | 6,451 | 10,650 | 4,760 | 12,199 | 8,510 |
| Georgia | 11,462 | 2,704 | 3,034 | 402 | 4,622 | 4,445 |
| N. Carolina | 3,841 | 10,285 | 12,574 | 14,931 | 14,922 | 11,311 |
| S. Carolina | 18,725 | 17,002 | 14,612 | 8,822 | 13,332 | 14,499 |
| **Catch Trips** | | | | | | |
| Florida East | 179,024 | 190,011 | 157,217 | 200,522 | 280,269 | 201,409 |
| Georgia | 64,536 | 75,725 | 34,481 | 54,946 | 41,459 | 54,230 |
| N. Carolina | 238,958 | 159,713 | 178,666 | 213,537 | 259,019 | 209,979 |
| S. Carolina | 140,131 | 157,076 | 98,742 | 90,346 | 114,439 | 120,147 |

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

**Table 3.4.10.** Average target and catch trips for black sea bass in the South Atlantic, by month/wave and state, 2007/08-2011/12.

| | June | Jul-Aug | Sep-Oct | Nov-Dec | Jan-Feb | Mar-Apr | May |
|---|---|---|---|---|---|---|---|
| **Target Trips** | | | | | | | |
| Florida East | 1,080 | 2,251 | 310 | 1,119 | 2,043 | 873 | 834 |
| Georgia | 503 | 897 | 901 | 147 | 0 | 1,773 | 224 |
| N. Carolina | 1,298 | 3,293 | 1,027 | 1,188 | 1,386 | 1,093 | 2,025 |
| S. Carolina | 2,645 | 1,042 | 2,921 | 2,848 | 0 | 2,604 | 2,439 |
| **Catch Trips** | | | | | | | |
| Florida East | 22,871 | 42,871 | 24,083 | 25,297 | 26,782 | 38,021 | 21,484 |
| Georgia | 9,976 | 12,365 | 6,038 | 4,991 | 0 | 11,429 | 9,431 |
| N. Carolina | 24,195 | 76,975 | 46,296 | 14,406 | 3,208 | 14,990 | 29,908 |
| S. Carolina | 15,091 | 33,988 | 23,822 | 17,735 | 0 | 12,744 | 16,766 |

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

Similar analysis of recreational effort is not possible for the headboat sector because the 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 3.4.11** displays the annual angler days by state and **Table 3.4.12** displays their average (2007/08-2011/12) monthly distribution. Confidentiality issues required combining Georgia estimates with those of Northeast Florida.

Headboat angler days varied from year to year but generally declined since 2007 (**Table 3.4.11**). 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, overall angler days peaked in July and troughed in January (**Table 3.4.12**). North Carolina and South Carolina had similar peaks and troughs as the overall average. Angler days in Georgia/Northeast Florida peaked in June and troughed in January while those in Southeast Florida peaked in July and troughed in October.

**Table 3.4.11.** South Atlantic headboat angler days, by state, 2007/8-2011/12.

| | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | AVERAGE |
|---|---|---|---|---|---|---|
| NC | 29,002 | 16,982 | 19,468 | 21,071 | 18,457 | 20,996 |
| SC | 60,729 | 47,287 | 40,919 | 44,951 | 44,645 | 47,706 |
| GA/NEFL | 53,762 | 52,521 | 66,447 | 53,676 | 46,256 | 54,532 |
| SEFL | 103,388 | 71,598 | 69,973 | 69,986 | 77,785 | 78,546 |
| TOTAL | 246,881 | 188,388 | 196,807 | 189,684 | 187,143 | 201,781 |

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

**Table 3.4.12.** Average monthly distribution of headboat angler days in the South Atlantic, by state, 2007/08-2011/12.

| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NC | 50 | 45 | 352 | 1,287 | 2,445 | 4,266 | 4,661 | 3,807 | 1,828 | 1,833 | 398 | 23 |
| SC | 67 | 200 | 1,295 | 3,463 | 4,376 | 10,023 | 12,617 | 8,879 | 3,190 | 2,597 | 836 | 163 |
| GA/NEFL | 2,165 | 2,959 | 4,936 | 5,918 | 5,458 | 8,497 | 8,470 | 5,551 | 2,797 | 2,627 | 2,179 | 2,976 |
| SEFL | 6,105 | 8,453 | 8,779 | 8,330 | 6,715 | 8,090 | 8,910 | 5,618 | 3,728 | 2,655 | 4,167 | 6,235 |
| TOTAL | 8,387 | 11,657 | 15,363 | 18,997 | 18,993 | 30,876 | 34,658 | 23,854 | 11,542 | 9,713 | 7,579 | 9,398 |

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

### 3.4.2.3 Permits

For-hire vessels are required to have a for-hire snapper grouper permit to fish for or possess snapper grouper species in the South Atlantic EEZ. The number of vessels with for-hire snapper grouper permits for the period 2007-2012 is provided in **Table 3.4.13**. This sector operates as an open access fishery and not all permitted vessels are necessarily active in the fishery. Some vessel owners may have obtained open access permits as insurance for uncertainties in the fisheries in which they currently operate.

The number of for-hire permits issued for the South Atlantic snapper grouper fishery decreased from 2,026 permits in 2007 to 1,797 permits in 2012. It was only in 2009 and 2012 that for-hire snapper grouper permits increased during this period. The majority of snapper grouper for-hire permitted vessels were home-ported in Florida; a relatively high proportion of these permitted vessels were also home-ported in North Carolina and South Carolina. Many vessels with South Atlantic for-hire snapper grouper permits were homeported in states outside of SAFMC's area of jurisdiction, particularly in the Gulf states of Alabama through Texas. Although the number of vessels with South Atlantic for-hire snapper-grouper permits homeported in states outside of South Atlantic Council's area of jurisdiction increased from 2007 to 2011, they still account for approximately the same proportion (9-11%) of the total number of permits.

**Table 3.4.13.** Number of South Atlantic for-hire snapper-grouper vessel permits, 2007-2012.

| Home Port State | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | Avg. |
|---|---|---|---|---|---|---|---|
| North Carolina | 353 | 338 | 349 | 331 | 330 | 312 | 340 |
| South Carolina | 152 | 139 | 146 | 145 | 132 | 138 | 143 |
| Georgia | 37 | 26 | 30 | 27 | 26 | 26 | 29 |
| Florida | 1,312 | 1,121 | 1,131 | 1,109 | 1,099 | 1122 | 1,154 |
| Gulf States (AL-TX) | 79 | 76 | 83 | 86 | 91 | 93 | 83 |
| Other States | 93 | 105 | 113 | 114 | 103 | 106 | 106 |
| **Total** | 2,026 | 1,805 | 1,852 | 1,812 | 1,781 | 1,797 | 1,855 |

Source: NMFS SERO Permits Data Base.

For-hire permits do not distinguish charter boats from headboats. Based on a 1997 survey, Holland et al. (1999) estimated that a total of 1,080 charter vessels and 96 headboats supplied for-hire services in all South Atlantic fisheries during 1997. By 2013, the estimated number of headboats supplying for-hire services in all South Atlantic fisheries had fallen to 75, indicating a decrease in fleet size of approximately 22% between 1997 and 2013 (K. Brennan, Beaufort Laboratory, SEFSC, personal communication, 2013).

According to the Southeast Regional Office Website, the Constituency Services Branch (Permits) unofficially listed 1,462 current holders of South Atlantic for-hire snapper grouper permits as of January 22, 2013. There are no specific permitting requirements for recreational anglers to harvest snapper grouper. Instead, anglers are required to possess either a state recreational fishing permit that authorizes saltwater fishing in general, or be registered in the federal National Saltwater Angler Registry system, subject to appropriate exemptions.

#### 3.4.2.4 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 2009 dollars) $112 to $128 for red snapper, $123 to $128 for grouper, $11 for other snappers, and $80 for snapper grouper. Haab et al. (2009) also estimated consumer surplus for snapper in general to range from $9 to $25 (2000 dollars) for one additional fish caught and kept. This latter number would be more relevant for purposes of the current amendment.

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 (2009 dollars) on representative charter trips (average charter trip regardless of area

fished) are $146 for Louisiana through east Florida, $135 for east Florida, $156 for northeast Florida, and $128 for North Carolina. For charter trips into the EEZ only, net operating revenues are $141 in east Florida and $148 in northeast Florida. For full-day and overnight trips only, net operating revenues are estimated to be $155-$160 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 for a representative headboat trip are $48 in the Gulf of Mexico (all states and all of Florida), and $63-$68 in North Carolina. For full-day and overnight headboat trips, net operating revenues are estimated to be $74-$77 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 $168.14 to $251.59 for a full-day trip and from $93.63 to $123.95 for a half-day trip; headboat fees ranged from $72.50 to $81.78 for a full-day trip and from $38.08 to $45 for a half-day trip. Charter boats generated a total of $55.7 million in passenger fees, $3.2 million in other vessel income (e.g., food and beverages), and $4.8 million in tips. The corresponding figures for headboats were $9.8 million in passenger fees, $0.2 million in other vessel income, and $0.9 million in tips. Non-labor expenditures (e.g., boat insurance, dockage fees, bait, ice, fuel) amounted to $43.6 million for charter boats and $5.3 million for headboats. Summing across vessel lengths and regions, charter vessels had an aggregate value (depreciated) of $120.4 million and headboats had an aggregate value (depreciated) of $10.2 million.

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 (2011 dollars) per charter boat are estimated to be $126,032 for Florida vessels, $53,443 for Georgia vessels, $100,823 for South Carolina vessels, and $101,959 for North Carolina vessels. For headboats, the corresponding per vessel estimates are $209,507 for Florida vessels and $153,848 for vessels in the other states.

## 3.4.3 Social and Cultural Environment

More detailed descriptions of the social environment for the snapper grouper fishery and specifically black sea bass fishery appear in the Comprehensive ACL Amendment (SAFMC 2011c) and Amendment 18A (SAFMC 2012a). Communities with substantial commercial landings of snapper grouper species are identified in the Comprehensive ACL Amendment with demographic descriptions for those communities. **Figure 3.4.1** below provides a portrayal of black sea bass regional quotient landings and value of commercial landings for South Atlantic communities during 2011. A regional quotient is the amount of local commercial landings and/or value divided by the total landings and value for the region. For this analysis, total landings for Florida Keys communities were included as we are unable to disaggregate landings at the community level to Gulf or Atlantic at this time. Actual percentages for lbs and value regional quotients are not reported to maintain confidentiality, but **Figure 3.4.1** still provides a glimpse of the proportion of black sea bass that is landed by the top twenty commercial fishing communities.

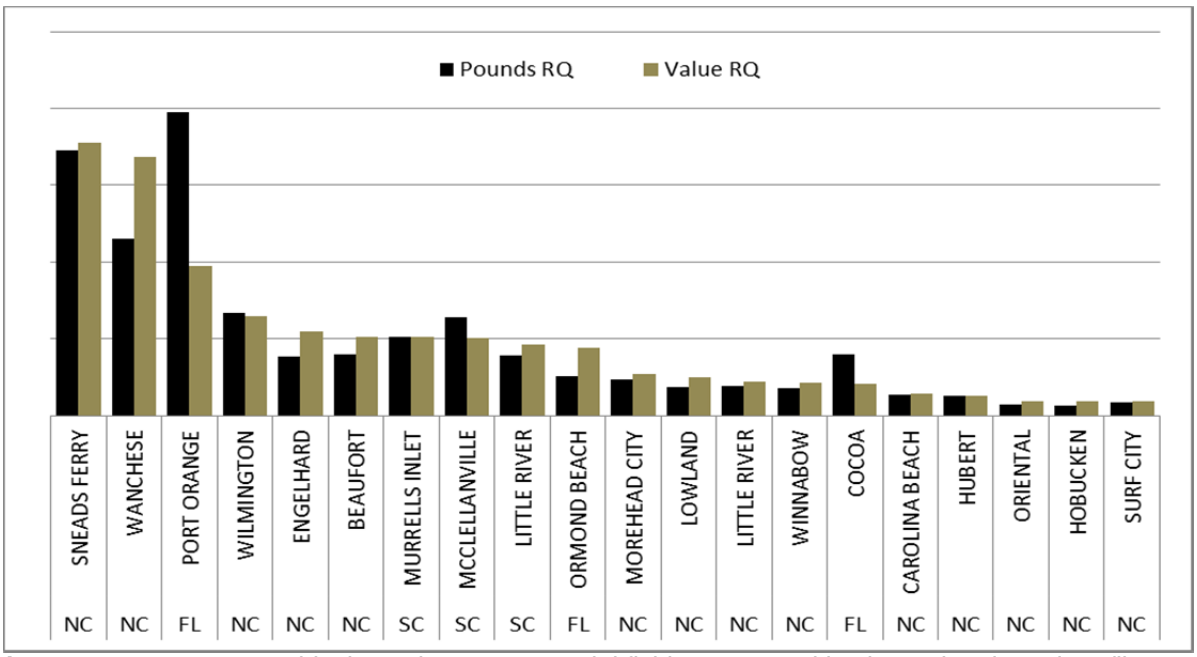


**Figure 3.4.1.** Top twenty black sea bass commercial fishing communities by regional quotient (lbs and value) for 2011.
Source: SERO ALS 2011.

To better understand how South Atlantic black sea bass communities are engaged and reliant on fishing, indices were created using secondary data from permit and landings information for the commercial sector and permit information for the recreational sector (Colburn and Jepson 2012; Jacob et al. 2012). Fishing engagement is primarily the absolute numbers of permits, landings and value. For commercial fishing, the analysis used the number of vessels designated commercial by homeport and owner address, value of landings and total number of commercial permits for each community. For recreational engagement we used the number of recreational

permits, vessels designated as recreational by homeport and owners address. Fishing reliance has the same variables as engagement divided by population to give an indication of the per capita influence 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. Taking the twenty communities in **Figure 3.4.1**, factor scores of both engagement and reliance for both commercial and recreational fishing were plotted onto radar graphs. Each community's factor score is located on the axis radiating out from the center of the graph to its name. Factor scores are connected by colored lines and are standardized, therefore the mean is zero. Two thresholds of one and ½ standard deviations above the mean are plotted onto the graphs to help determine a threshold for significance. The factor scores are standardized therefore a score above 1 is also above one standard deviation. A score above ½ standard deviation is considered engaged or reliant with anything above 1 standard deviation to be very engaged or reliant.

In **Figure 3.4.2**, several communities have factor scores that exceed ½ standard deviation above the mean for commercial engagement and reliance. The communities of McClellanville, South Carolina; Murrells Inlet, South Carolina; Little River, South Carolina; Wilmington, North Carolina; Wanchese, North Carolina; Sneads Ferry, North Carolina; Beaufort, North Carolina; Oriental, North Carolina; and Morehead City, North Carolina all exceed the threshold of ½ standard deviation above the mean for commercial fishing engagement or reliance.

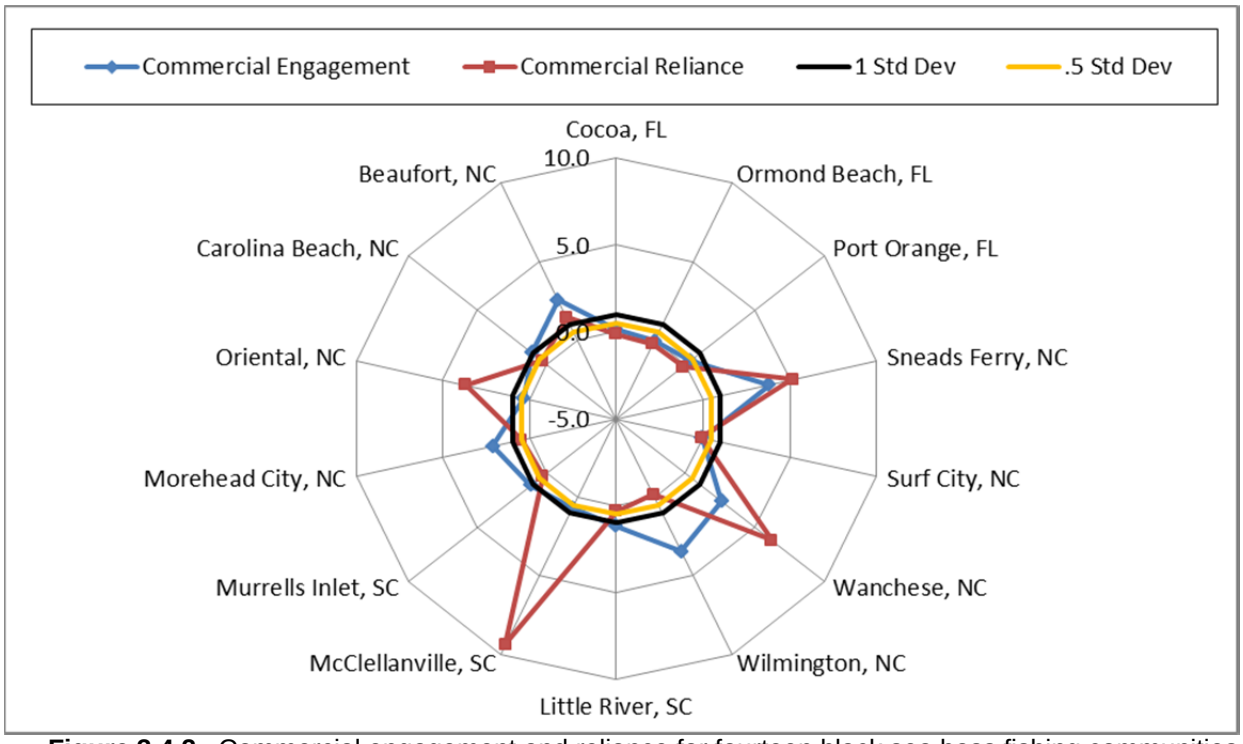


**Figure 3.4.2**. Commercial engagement and reliance for fourteen black sea bass fishing communities. Source: SERO Social Indicators Database 2013.

McClellanville, South Carolina; Wanchese, North Carolina; and Sneads Ferry, North Carolina are the most prominent black sea bass communities in terms of reliance and engagement in commercial fishing.

Although the fifteen communities selected above in **Figure 3.4.2** are those with the most commercial landings, because we have few data that allows us to demonstrate where most black sea bass recreational landings occur, we are assuming that they would likely be the same communities where the most commercial landings are. By plotting the recreational engagement and reliance factor scores in **Figure 3.4.3** it becomes evident that four communities show tendencies toward being engaged in recreational fisheries with one being reliant. The communities of Little River, South Carolina; Murrells Inlet, South Carolina; Morehead City, North Carolina; and Carolina Beach, North Carolina are all engaged in recreational fishing for black sea bass. The community of Wanchese, North Carolina is also reliant.

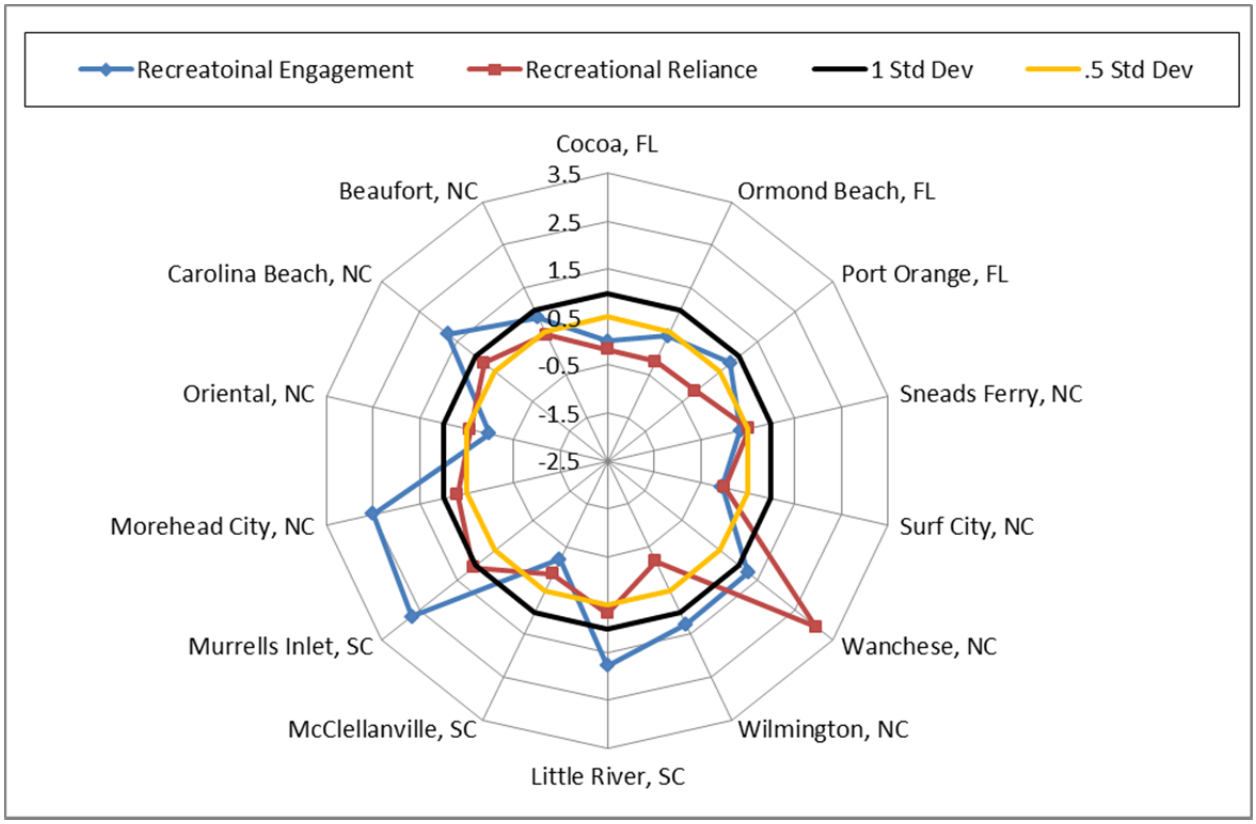


**Figure 3.4.3**. Recreational engagement and reliance for fourteen black sea bass fishing communities. Source: SERO Social Indicators Database 2013

In summary, the communities of Sneads Ferry, North Carolina; McClellanville, South Carolina; Murrells Inlet, South Carolina; Oriental, North Carolina; and Wanchese, North Carolina are all reliant and engaged in either commercial or recreational fishing and therefore would be communities that might be affected by significant changes in regulatory policy, whether positive or negative. Referring back to **Figure 4.3.1**, Port Orange, Florida also shows a

high level of commercial landings but while some individuals in the community may be affected by changes in regulations for black sea bass, the community overall would not be expected to experience impacts from proposed actions.

While we infer much of our discussion about social demographic change and other factors affecting the selected communities from previous amendments, recent demographic data has been analyzed and is included in the Environmental Justice discussion below.

### 3.4.4 Environmental Justice

Executive Order 12898 requires federal agencies conduct their programs, policies, and activities in a manner to ensure individuals or populations are not excluded from participation in, or denied the benefits of, or subjected to discrimination because of their race, color, or national origin. In addition, and specifically with respect to subsistence consumption of fish and wildlife, federal agencies are required to collect, maintain, and analyze information on the consumption patterns of populations who principally rely on fish and/or wildlife for subsistence. This executive order is generally referred to as environmental justice (EJ).

Information on the communities selected above was examined to identify the potential for EJ concern. Specifically, the rates of minority populations and the percentage of the population below the poverty line. The threshold for comparison is 1.2 times the state average such that, if the value for a community was greater than or equal to 1.2 times the state average, then the community was considered an area of potential EJ concern.

In order to identify the potential for EJ concern, the rates of minority populations (non-white, including Hispanic) and the percentage of the population that was below the poverty line were examined. The threshold for comparison that was used was 1.2 times the state average for minority population rate and percentage of the population below the poverty line. If the value for the community or county was greater than or equal to 1.2 times the state average, then the community or county was considered an area of potential EJ concern. Census data for the year 2000 were used. Estimates of the state minority and poverty rates, associated thresholds, and community rates are provided in **Table 3.4.14.**

Among the communities examined, based on available demographic information, there are no EJ concerns. As noted above, however, there may be additional communities beyond those profiled that could be affected by the actions in this proposed amendment. Because these communities have not been profiled, the absence of additional potential EJ concerns cannot be assumed and the total number of communities that exceed the thresholds is unknown.

**Table 3.4.14.** Environmental Justice thresholds (2010 U.S. Census data) for counties in the South Atlantic region. Only coastal counties (east coast for Florida) with minority and/or poverty rates that exceed the state threshold are listed.

| State | County | Minority Rate | Minority Threshold* | Poverty Rate | Poverty Threshold* |
|---|---|---|---|---|---|
| **Florida** | | **47.4** | **56.88** | **13.18** | **15.81** |
| | Broward | 52.0 | -4.6 | 11.7 | 4.11 |
| | Miami-Dade | 81.9 | -34.5 | 16.9 | -1.09 |
| | Orange County | 50.3 | -2.9 | 12.7 | 3.11 |
| | Osceola | 54.1 | -6.7 | 13.3 | 2.51 |
| **Georgia** | | **50.0** | **60.0** | **15.0** | **18.0** |
| | Liberty | 53.2 | -3.2 | 17.5 | 0.5 |
| **South Carolina** | | **41.9** | **50.28** | **15.82** | **18.98** |
| | Colleton | 44.4 | -2.5 | 21.4 | -2.42 |
| | Georgetown | 37.6 | 4.3 | 19.3 | -0.32 |
| | Hampton | 59.0 | -17.1 | 20.2 | -1.22 |
| | Jasper | 61.8 | -19.9 | 9.9 | -0.92 |
| **North Carolina** | | **39.1** | **46.92** | **15.07** | **18.08** |
| | Bertie | 64.6 | -25.50 | 22.5 | -4.42 |
| | Chowan | 39.2 | -0.1 | 18.6 | -0.52 |
| | Gates | 38.8 | 0.3 | 18.3 | -0.22 |
| | Hertford | 65.3 | -26.2 | 23.5 | -5.42 |
| | Hyde | 44.5 | -5.4 | 16.2 | 1.88 |
| | Martin | 48.4 | -9.3 | 23.9 | -5.82 |
| | Pasquotank | 43.4 | -4.3 | 16.3 | 1.78 |
| | Perquimans | 27.7 | 11.4 | 18.6 | -0.52 |
| | Tyrrell | 43.3 | -4.2 | 19.9 | -1.82 |
| | Washington | 54.7 | -15.6 | 25.8 | -7.72 |

*The county minority and poverty thresholds are calculated by comparing the county minority rate and poverty estimate to 1.2 times the state minority and poverty rates. A negative value for a county indicates that the threshold has been exceeded.

Another type of analysis uses a suite of indices created to examine the social vulnerability of coastal communities and is depicted in **Figure 3.4.4**. 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; more households with children under the age of 5; and disruptions like higher separation rates, higher crime rates, and unemployment all are signs of populations experiencing vulnerabilities. The data used to create these indices are from the 2005-2009 American Community Survey estimates at the U.S. Census Bureau. The thresholds of 1 and ½ standard deviation are the same for these standardized indices. Again, for those communities that exceed the threshold for all indices it would be expected that they would exhibit vulnerabilities to sudden changes or social disruption that might accrue from regulatory change. The only community that exceeds the thresholds for all three indices is Cocoa, Florida. Wanchese, Surf City, and Carolina Beach, North Carolina have one index at or close to the

threshold of 1 standard deviation. Morehead City and Wilmington, North Carolina have indices that exceed the first threshold of ½ standard deviation. The community of Townsend, Georgia is not included in the graph because there are no census data for the community under the present American Community Survey.

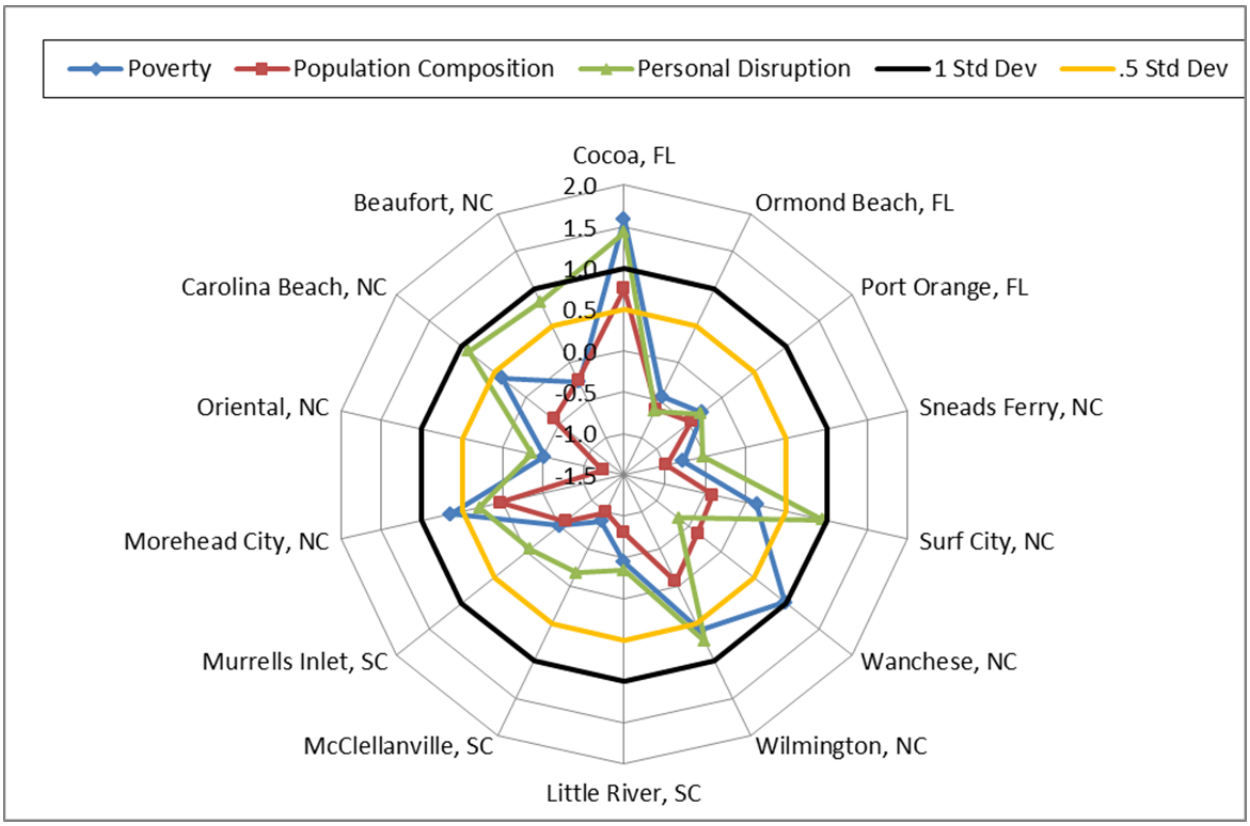


**Figure 3.4.4**. Social vulnerability indices for fourteen black sea bass fishing communities.
Source: SERO Social Indicators Database 2013

Although we have information concerning the community's overall status with regard to minorities and poverty, we do not have such information for fishermen themselves. Therefore, we can only place our fishing activity within the community as a proxy for understanding the role that minorities and poverty have in the vulnerability of those being affected by regulatory change. While subsistence fishing is also an activity that can be affected by regulatory change, we have very little, if any, data on this activity at this time. We assume that the effects to other sectors will be similar to those that affect subsistence fishermen who may rely on black sea bass. Because black sea bass is a reef species, and likely would require a vessel to fish, there may be few if any subsistence fishermen who rely on this species, however, crew and some recreational fishermen may use this species as a source of food and subsistence.

However, while some communities expected to be affected by this proposed amendment may have minority or economic profiles that exceed the EJ thresholds and, therefore, may constitute areas of concern, significant EJ issues are not expected to arise as a result of this proposed amendment. No adverse human health or environmental effects are expected to accrue to this proposed amendment, nor are these measures expected to result in increased risk of exposure of affected individuals to adverse health hazards. The proposed management measures would apply to all participants in the affected area, regardless of minority status or income level, and information is not available to suggest that minorities or lower income persons are, on average, more dependent on the affected species than non-minority or higher income persons.

Black sea bass is an important commercial and recreational fishery throughout the South Atlantic region. The actions in this proposed amendment are expected to incur social and economic benefits to users and communities by implementing management measures that would contribute to rebuilding the black sea bass stock and to maintaining the commercial and recreational sectors of the fishery. The overall long-term benefits of rebuilding the black sea bass stock is expected to contribute to the social and economic health of South Atlantic communities.

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. Specifically for the black sea bass fishery, public input has been considered.

## 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 Action 1: Revise the Annual Catch Limits, Recreational Annual Catch Target, and Optimum Yield for Black Sea Bass

Discussion

Commercial black sea bass landings exceeded the commercial ACL by 32% in 2010/11 and 19% in 2011/12 (**Table A**). In 2012/13, commercial landings were 4% below the commercial ACL (http://sero.nmfs.noaa.gov/).

**Table A.** Commercial landings (lbs gw) of black sea bass relative to quotas and ACLs for 2007/08 through 2012/13 fishing years using the NMFS quota monitoring system data.

| Species | Year | Fishing Season | Total Landings (gw) | ACL (gw) | Quota % | Closure Date |
|---|---|---|---|---|---|---|
| Black Sea Bass | 2012-2013 | July 1* - May 31 | 296,938 | 309,000 | 96.1 | 10/8/2012 |
| | 2011-2012 | June 1 - May 31 | 369,033 | 309,000 | 119.43 | 7/15/2011 |
| | 2010-2011 | | 409,326 | 309,000 | 132.47 | 10/7/2010 |
| | 2009-2010 | | 337,397 | 309,000 | 109.19 | 12/20/2009 |
| | 2008-2009 | | 395,387 | 309,000 | 127.96 | 5/15/2009 |
| | 2007-2008 | | 298,916 | 423,000 | 70.67 | |

Source: NMFS SERO website, 3/29/13.

With vastly improved commercial monitoring mechanisms recently implemented, it is unlikely that repeated commercial ACL overages would occur. The Commercial Landings Monitoring System (CLM) came online in June 2012 and is now being used to track commercial landings of federally managed fish species. This system is able to track individual dealer reports, track compliance with reporting requirements, project harvest closures using five different methods, and analyze why ACLs are exceeded. The CLM performs these tasks by taking into account: (1) spatial boundaries for each stock based on fishing area; (2) variable quota periods such as overlapping years or multiple quota periods in one year; and (3) overlapping species groups for single species as well as aggregated species. Data sources for the CLM system include the Standard Atlantic Fisheries Information System for Georgia and South Carolina, and the Bluefin Data file upload system for Florida and North Carolina. The CLM system is also able to track dealer reporting compliance with a direct link to the permits database in NMFS Southeast Regional Office (SERO). Until the dealer amendment is implemented sometime later this year, the following procedure is in place:

- Permitted dealers are currently required to submit their landings electronically twice each month.
- Permitted dealers currently are required to report landing made from the 1st through the 15th of each month by close of business on the 20th of each month. They are required to

report landings made on the 16th through the end of the month by close of business on the 5th of the following month. Some dealers submit landings throughout the reporting period and some submit after the end of the reporting period.

- Most dealers in the South Atlantic submit their landings electronically through Bluefin Data Inc and a small number of dealers submit their landings electronically through the Atlantic Coastal Cooperative Statistics Program's (ACCSP) web site. Bluefin Data Inc submits dealer reports to the Southeast Fisheries Science Center (SEFSC) on Mondays and Wednesdays. Because of Bluefin Data's schedule for data delivery, if the 5th or the 20th falls on a Sunday or a Tuesday then there would be a 1 day lag in SEFSC receiving all of the landings reports submitted on time. If the 5th or 20th fall on a Thursday then there would be a 4 day delay in the SEFSC receiving all of the landings reports submitted on time. Landings submitted through the ACCSP's web site are loaded nightly to the ACCSP data base. SEFSC loads data nightly from Bluefin Data and ACCSP. SEFSC generally transmits landings summaries to SERO two business days after the end of the reporting period, usually on the 7th and 22nd. If the end of the reporting period falls on a Thursday or Friday, SEFSC may send SERO preliminary summaries using the landings reports submitted in the middle of the reporting period and follow that with a more complete report two business days later.
- With the new dealer reporting regulations, dealers will be required to report on a Tuesday and SEFSC would generally submit landings summaries to SERO on Thursdays.
- Quota monitoring landings are posted to the SERO website the same day they are received from the SEFSC.

Additionally, the SEFSC is working with SERO, the Gulf of Mexico Fishery Management Council and South Atlantic Fishery Management Council (South Atlantic Council) to develop a Joint Dealer Reporting Amendment, which was recently approved by both Councils. The Joint Dealer Reporting Amendment would increase required reporting frequency for dealers to once per week, and require a single dealer permit for all finfish dealers the Southeast Region. The CLM and the new dealer reporting requirements constitute major improvements to how commercial fisheries are monitored, and go far beyond monitoring efforts that were in place when the National Standard 1 guidelines were developed. The new CLM quota monitoring system and actions in the Joint Generic Dealer Reporting amendment are expected to provide more timely and accurate data reporting and would thus reduce the incidence of quota overages.

Since the recreational ACL was implemented in 2010/11, recreational black sea bass landings have been above the recreational ACL (**Table B**) by 3% in 2010/11, 44% in 2011/12, and 5% in 2012/13 although the last year is not complete; however, the magnitude of any additional landings should be small since the recreational sector was closed on September 4, 2012. Harvest monitoring efforts in the recreational sector are also in the process of being improved. In early 2013, a new headboat electronic reporting system came online and headboats may report their landings electronically rather than through paper logbooks. Additionally, the Gulf of Mexico Fishery Management Council (Gulf of Mexico Council) and South Atlantic Council are developing generic amendments that would require all headboats to report their landings using the new electronic reporting system, and increase the reporting frequency. The SEFSC is also developing an electronic reporting system for charter boats operating in the Southeast Region. Once the charterboat reporting system is close to being finalized, the Gulf of

Mexico and South Atlantic Councils would develop a joint amendment that would require electronic reporting for charterboats with a set reporting frequency. These recreational harvest-monitoring efforts could substantially increase the accuracy and timeliness of in-season reporting and reduce the risk of recreational ACL overages, which would be biologically beneficial for the black sea bass stock. Therefore, there is a lower risk of exceeding the increased ACL and **Alternatives 2**, **3**, and **Preferred Alternative 4** can be used as part of a successful harvest management system for black sea bass with little risk of overfishing as long as the OFL is not exceeded.

The timing of closures of the vermilion snapper commercial fishing season could also affect when the black sea bass commercial ACL is met. The first vermilion snapper commercial season will be closed when commercial fishing for black sea bass with pots re-opens on June 1, 2013, and the second vermilion snapper season does not open until July 1, 2013. Regulatory Amendment 18 (SAFMC 2013b) proposes to increase the commercial ACL for vermilion snapper but it is possible the second season of 2013 will close before Regulatory Amendment 18 is implemented, resulting in more effort directed towards black sea bass. Vessels that targeted vermilion snapper last year may be more likely to target black sea bass during June 2013, until fishing for vermilion snapper opens on July 1, 2013. If the vermilion snapper commercial ACL is met in early fall 2013, it is likely that some fishermen would return to targeting black sea bass. It is expected that the vessels with black sea bass pot endorsements that did not fish last year will fish this year. Further, additional hook-and-line effort is expected prior to the vermilion snapper season opening.

Prior landings of black sea bass can be helpful in understanding what level of catch is sustainable. Landings (calendar year not fishing year) from Table 2 in the SEDAR 25 Update 2012 are shown in **Table C**. Commercial black sea bass landings ranged from 285,000 pounds whole weight (lbs ww) in 1978 to a high of 1.22 million lbs ww in 1981. Recreational black sea bass landings ranged from 532,000 lbs ww in 1978 to a high of 2.87 million lbs ww in 1988. Total black sea bass landings ranged from 817,000 lbs ww in 1978 to 3.65 million lbs ww in 1988.

**Table B.** Recreational landings (lbs gw) of black sea bass relative to quotas and ACLs for 2007/08 through 2012/13 fishing years.

| Year | Jun | Jul-Aug | Sept-Oct | Nov-Dec | Jan-Feb | Mar-Apr | May | Total Reported | 2012-2013 ACL/Quota | ACL % | Closure Date |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2012/13[2] | 241,096 | 166,076 | 13,722 | 8,014 | [3] | | | 428,908 | 409,000 | 105% | 9/4/2012 |
| 2011/12[1] | 161,375 | 230,045 | 72,429 | 1,213 | 12,580 | 12,990 | 91 | 490,723 | 341,747 | 144% | 10/17/2011 |
| 2010/11 | 99,360 | 123,839 | 144,972 | 54,799 | | | | 422,970 | 409,000 | 103% | 2/12/11 |

Source: NMFS SERO website, 3/29/13.

Note 1: The 201-12 recreational annual catch limit was adjusted to 341,747 lbs gw from 409,000 lbs gw to account for the recreational overage during the 2010-2011 fishing year.

Note 2: The following note is in Amendment 18A (SAFMC 2012a) and explains why the 2012/2013 ACL was not changed: "Note: For both the recreational and commercial sectors, ACL paybacks are not required when new projections are adopted that incorporate ACL overages and the ACLs are adjusted in accordance with those projections. Beyond the 2013/2014 fishing season (when the rebuilding strategy switches over to F rebuild) for years when there is no assessment, the ACL would not automatically increase if the ACL has been exceeded during the previous fishing year."

Note 3: The January/February 2013 wave catches are available from the MRIP website: 2,319 fish with a PSE of 73.7. We are waiting for the SEFSC to apply their conversion and other adjustments and provide an estimate of pounds landed.

**Table C.** Calendar year black sea bass landings (thousands lbs gw) from Table 2 in SEDAR 25 Update 2013.

| | COMMERCIAL | | | RECREATIONAL | | | TOTALS | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | H&L | Pots | Trawls | Headboat | MRIP | | COMM | REC | TOTAL |
| 1978 | 118.675 | 134.35 | 31.817 | 532.207 | | | 284.842 | 532.207 | 817.049 |
| 1979 | 140.539 | 676.696 | 27.327 | 571.238 | | | 844.562 | 571.238 | 1415.8 |
| 1980 | 107.927 | 888.174 | 25.393 | 617.798 | | | 1021.494 | 617.798 | 1639.292 |
| 1981 | 163.821 | 1028.197 | 32.221 | 678.256 | 714.13 | | 1224.239 | 1392.386 | 2616.625 |
| 1982 | 150.879 | 788.173 | 20.623 | 701.365 | 1558.43 | | 959.675 | 2259.795 | 3219.47 |
| 1983 | 145.746 | 484.284 | 8.527 | 690.327 | 986.299 | | 638.557 | 1676.626 | 2315.183 |
| 1984 | 194.532 | 410.419 | 17.778 | 661.07 | 1734.527 | | 622.729 | 2395.597 | 3018.326 |
| 1985 | 164.1 | 395.772 | 23.826 | 568.099 | 1258.872 | | 583.698 | 1826.971 | 2410.669 |
| 1986 | 163.256 | 502.508 | 22.346 | 536.798 | 529.963 | | 688.11 | 1066.761 | 1754.871 |
| 1987 | 149.297 | 403.407 | 7.474 | 616.517 | 889.549 | | 560.178 | 1506.066 | 2066.244 |
| 1988 | 236.629 | 513.731 | 21.177 | 635.222 | 2239.564 | | 771.537 | 2874.786 | 3646.323 |
| 1989 | 248.538 | 517.738 | 13.484 | 478.031 | 1055.298 | | 779.76 | 1533.329 | 2313.089 |
| 1990 | 258.736 | 684.587 | 13.576 | 379.573 | 595.99 | | 956.899 | 975.563 | 1932.462 |
| 1991 | 267.179 | 616.552 | | 286.24 | 849.645 | | 883.731 | 1135.885 | 2019.616 |
| 1992 | 226.57 | 546.323 | | 215.877 | 655.613 | | 772.893 | 871.49 | 1644.383 |
| 1993 | 188.927 | 508.023 | | 143.027 | 472.871 | | 696.95 | 615.898 | 1312.848 |
| 1994 | 213.869 | 531.041 | | 132.441 | 475.039 | | 744.91 | 607.48 | 1352.39 |
| 1995 | 141.466 | 413.274 | | 127.626 | 604.102 | | 554.74 | 731.728 | 1286.468 |
| 1996 | 128.008 | 511.79 | | 146.543 | 647.209 | | 639.798 | 793.752 | 1433.55 |
| 1997 | 162.325 | 540.959 | | 147.742 | 509.131 | | 703.284 | 656.873 | 1360.157 |
| 1998 | 221.095 | 450.85 | | 142.504 | 320.988 | | 671.945 | 463.492 | 1135.437 |
| 1999 | 187.538 | 501.35 | | 192.569 | 278.628 | | 688.888 | 471.197 | 1160.085 |
| 2000 | 92.849 | 407.65 | | 144.59 | 265.89 | | 500.499 | 410.48 | 910.979 |
| 2001 | 88.663 | 492.746 | | 172.025 | 499.781 | | 581.409 | 671.806 | 1253.215 |
| 2002 | 97.985 | 419.811 | | 123.275 | 292.178 | | 517.796 | 415.453 | 933.249 |
| 2003 | 91.588 | 484.243 | | 134.111 | 376.793 | | 575.831 | 510.904 | 1086.735 |
| 2004 | 107.121 | 626.498 | | 237.587 | 883.481 | | 733.619 | 1121.068 | 1854.687 |
| 2005 | 66.911 | 384.384 | | 179.66 | 643.775 | | 451.295 | 823.435 | 1274.73 |
| 2006 | 62.169 | 483.272 | | 174.067 | 536.678 | | 545.441 | 710.745 | 1256.186 |
| 2007 | 54.915 | 351.913 | | 162.07 | 545.064 | | 406.828 | 707.134 | 1113.962 |
| 2008 | 57.594 | 360.016 | | 99.311 | 362.109 | | 417.61 | 461.42 | 879.03 |
| 2009 | 87.707 | 564.614 | | 163.171 | 309.414 | | 652.321 | 472.585 | 1124.906 |
| 2010 | 71.207 | 408.269 | | 289.236 | 592.679 | | 479.476 | 881.915 | 1361.391 |
| 2011 | 44.184 | 343.771 | | 232.57 | 376.827 | | 387.955 | 609.397 | 997.352 |
| 2012 | 85.029 | 173.888 | | 222.234 | 410.362 | | 258.917 | 632.596 | 891.513 |

**Note:** Recreational landings for 2012 were not available and the average of 2009-11 landings was used.

## 4.1.1 Biological Effects

**Alternative 1 (No Action)** would maintain the current harvest limit (the total annual catch limit (ACL)), which would cap total harvest at 847,000 lbs ww until modified. Because **Alternative 1 (No Action)** would constrain harvest to a lower level than **Alternatives 2, 3,** and **Preferred Alternative 4**, the biological benefits under **Alternative 1 (No Action)** would be expected to be greater than under the other three alternatives. However, SEDAR 25 Update 2013 indicated black sea bass is no longer undergoing overfishing, nor is the stock overfished. Further, the spawning stock biomass is above the spawning stock biomass at maximum sustainable yield (MSY), therefore the stock is rebuilt. The South Atlantic Fishery Management Council's (South Atlantic Council) Scientific and Statistical Committee (SSC) has recommended an increase in the acceptable biological catch (ABC). Therefore, there is no biological need to constrain harvest to a level lower than that determined to be appropriate by the SSC.

**Alternative 2** would adopt the projections at the 40% P* level for 2013-2015 (**Table 4.1.1**) from the SEDAR 25 Update 2013 and use the OY=ABC=ACL formula adopted in Amendment 18A to the Snapper Grouper FMP (SAFMC 2012a). **Alternative 2** would retain the South Atlantic Council's current formula that sets the ACL/OY equal to the ABC. The National Standard 1 Guidelines indicate ACL may not exceed the ABC. This scenario is used for many other snapper grouper species but does not include a buffer to provide for management uncertainty.

### *South Atlantic Council's Intent*

In addition, it is the Council's intent for **Alternatives 2, 3,** and **Preferred Alternative 4** that:

1. All black sea bass pots must be removed from the water from November 1 through April 30.
2. Black sea bass pots may not be onboard a vessel in the South Atlantic EEZ from November 1 through April 30.

### *Alternatives*[1]

**1. No Action. Retain formulas and values.**
*ACL = ABC = OY* = 847,000 lbs whole weight (ww) = 718,000 lbs gutted weight (gw)
*Commercial ACL*=309,000 lbs gw
364,620 lbs ww
*Recreational ACL*=409,000 lbs gw
482,620 lbs ww
*Recreational ACT*=357,548 lbs gw
421,907 lbs ww

**2. Update values with current formulas, stock assessment results, and ABC recommendation.[2,3,4] The use of black sea bass pots is prohibited from November 1 through April 30.**
*ACL = ABC = OY*

| *Total ACL=* | *Commercial ACL=* |
|---|---|
| 2,133,000 (2013) | 917,190 (2013) |
| 1,992,000 (2014) | 856,560 (2014) |
| 1,814,000 (2015) | 780,020 (2015) |

| *Recreational ACL=* | *Recreational ACT=* |
|---|---|
| 1,215,810 (2013) | 1,062,861 (2013) |
| 1,135,440 (2014) | 992,602 (2014) |
| 1,033,980 (2015) | 903,905 (2015) |

**3. Update values with different ACL/OY formula, same stock assessment results, and same ABC recommendations .[2,4,5] The use of black sea bass pots is prohibited from November 1 through April 30.**
*ACL = OY = yield at 75%$F_{MSY}$* = 1,756,450
*Commercial ACL* = 755,274
*Recreational ACL* = 1,001,177
*Recreational ACT* = 875,229

**4. Preferred Alternative 4. Update values with different ACL/OY formula, same stock assessment results, and same ABC recommendations .[2,4,6] The use of black sea bass pots is prohibited from November 1 through April 30.**

- *2013-15 ACL = OY* = 1,814,000 lbs ww
*Commercial ACL* = 780,020
*Recreational ACL* = 1,033,980
*Recreational ACT* = 903,905

- *2016 onwards ACL = OY = yield at 75%$F_{MSY}$* = 1,756,450 lbs ww
*Commercial ACL* = 755,274
*Recreational ACL* = 1,001,177
*Recreational ACT* = 875,229

[1]See Chapter 2 for a more detailed description of the alternatives.
[2]Values are pounds whole weight.
[3]Values in 2015 remain until modified.
[4]Values are landings only.
[5]Values in 2013 remain until modified.
[6]Values in 2016 remain until modified.

However, scientific uncertainty has been considered when specifying ABC through the South Atlantic Council's ABC control rule. Creating a buffer between the ACL/OY and ABC would provide greater assurance that overfishing is prevented and the long-term average biomass is near or above $SSB_{MSY}$. The National Standard 1 Guidelines state that setting a buffer between the ACL and ABC would be appropriate in situations where there is uncertainty about whether management measures are constraining fishing mortality to target levels. However, the South Atlantic Council's SSC recommended ABC levels for 2013-2015 based on the approved ABC control rule using a P* of 0.40. The SSC did not specify ABC values after 2015, because the SEFSC did not provide projections beyond 2015 in the stock assessment update. **Alternative 2** would set the ACL equal to the SSC's recommendation for ABC in 2013-2015. In addition, the South Atlantic Council intends to prohibit the use of black sea bass pot gear during the November 1 through April 30 right whale calving season. Amendment 18A (SAFMC 2012a) implemented a prohibition on possession of black sea bass on a vessel with pot gear and required that all black sea bass pots be removed from the water once the commercial ACL was met or projected to be met.

**Table 4.1.1a.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update (2013) for **Alternative 2**. Values are based on landed catch.

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| 2013 | 2,258,000 | 2,133,000 | 2,133,000 | 917,190 | 1,215,810 | 1,062,861 |
| 2014 | 2,102,000 | 1,992,000 | 1,992,000 | 856,560 | 1,135,440 | 992,602 |
| 2015 | 1,921,000 | 1,814,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |

[1] Using ABC provided by SSC.
[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A.

**Alternative 2** could have long-term, adverse impacts to the black sea bass stock and associated species as it could result in fishing mortality levels higher than the yield at $F_{MSY}$ levels for 2016 and beyond, which could result in biomass levels of the black sea bass stock below $SSB_{MSY}$. The ACL in 2015 and beyond would be approximately 1.8 million lbs ww, which is higher than the MSY and would not be sustainable. **Alternative 2** would result in the highest potential negative impacts to the biological environment among the proposed alternatives. The SEDAR 25 Update 2013 indicated the presence of one or two good year classes that resulted in projected yields for 2013-2014 that are above MSY. The ABCs decline over time because fishing activity would be removing the "excess" biomass and "fishing the stock down" to the level that can produce MSY. The 2015 ABC, based on landings only, is 1.814 million lbs

***Whole Weight vs. Gutted Weight***

Black sea bass are landed whole, and landings are recorded in whole weight (ww). The quota is specified in gutted weight (gw). Because all fish landed and sold were at one time whole and landings are recorded in whole weight, whole weight will be used as the unit of weight measurement for black sea bass throughout this document. Where appropriate, gutted weight (gw) and whole weight (ww) values will be given. The conversion factor to convert black sea bass poundage from ww to gw or vice versa is 1.18 (ww = gw *1.18 and gw = ww/1.18). Current regulations specify ACLs for black sea bass in ww and gw.

ww and would be held constant beyond 2015 until modified. The 2015 ABC has a 43% probability that the spawning stock biomass would be above the spawning stock biomass at MSY (Table 19 in SEDAR 25 Update 2013; see Section 5.1.3 and **Appendix A**). If landings exceed the OFL of 1,857,000 lbs ww in 2015 (Table 20 in SEDAR 25 Update 2013; see Section 5.1.3 and **Appendix A**) overfishing would be occurring.

Although the assessment update indicates the black sea bass stock is rebuilt, the assessment discusses sources of uncertainty that should be taken into account when using the assessment results to set catch limits: "These status indicators may be in qualitative agreement with management goals, but should be interpreted with two notes of caution. First, the MCB analysis indicated much uncertainty in the estimate of stock status. Second, the increasing trend for biomass is dependent on high recent recruitment estimates which take a downturn in the last two years of the assessment, and is not well supported by the age composition data." (**Appendix A**, Executive Summary, page 7)

Confirmation of more good year classes entering the stock was provided during public hearings on Snapper Grouper Amendment 30. The SEFSC is involved in a red snapper research project using pinfish traps in nearshore waters in an attempt to develop a fishery independent index of recruitment. Large numbers of black sea bass juveniles were observed (Jimmy Hull, Hulls Seafood; personal communication). This was confirmed by the researcher at the SEFSC (Michael Burton, NMFS SEFSC; personal communication). This information may help to address one of the major concerns about uncertainty in the stock assessment.

**Alternative 3** uses the equilibrium estimate of yield at 75% of $F_{MSY}$ to set ACL and OY (1,756,450 lbs ww). **Alternative 3** would have a higher positive biological effect than **Alternative 2** because it would create a buffer between the ACL/OY and ABC that would account for management uncertainty. **Alternative 3** would result in the total ACL increasing from 847,000 lbs ww to 1,756,450 lbs ww in 2013/14 onwards. The ACLs proposed under **Alternative 2** for 2013-2016 are all higher --from about 58,000 up to 377,000 lbs ww higher -- than the level proposed under **Alternative 3.** Under **Alternative 2**, after an initial increase in 2013, managers would be faced with declining yield for the following two years.

Stocks fished at the equilibrium estimate of yield at 75% of $F_{MSY}$ are expected to vary around the target biomass levels, meaning that in some years, static yield would be more than the equilibrium level and in others, it would be less. Fishery managers could attempt to set ACLs based on the changing target biomass levels, but delays in data, analyses, and management action can make such a strategy impractical. Using estimated equilibrium values as a catch limit, as in **Alternative 3**, is a risk averse approach that sacrifices some yield over the short-term (376,550 lbs ww in 2013, 235,550 lbs ww in 2014, and 57,550 lbs ww in 2014 and future years) to gain a higher probability of stability over the long-term.

**Preferred Alternative 4** would implement an ACL and OY of 1,814,000 lbs ww in 2013, 2014, and 2015 (**Table 4.1.1b**). This value is equal to the projection at the 40% P* level for 2015 and is also the SSC's ABC recommendation for 2015. Beginning in 2016, the ACL would be reduced to 1,756,450 lbs ww and would remain in place beyond 2016 until modified. This value is equal to the yield at 75%$F_{MSY}$ when the stock is at equilibrium.

**Table 4.1.1b.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update (2013) for **Preferred Alternative 4**. Values are based on landed catch.

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| 2013 | 2,258,000 | 2,133,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2014 | 2,102,000 | 1,992,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2015 | 1,921,000 | 1,814,000 | 1,814,000 | 780,020 | 1,033,980 | 903,905 |
| 2016 | 1,921,000 | 1,814,000 | 1,756,450 | 755,274 | 1,001,177 | 875,228 |

[1] Using ABC provided by SSC.
[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A.

**Preferred Alternative 4** may be considered a hybrid of **Alternatives 2** and **3. Preferred Alternative 4** would establish the lowest ACL in the string of ACLs in **Alternative 2** and then switch to the ACL in **Alternative 3** beginning in 2016. In 2013 and 2014, the ACLs in **Preferred Alternative 4** are between the ACLs in **Alternatives 2** and **3**. As such, the biological impacts to the black sea bass stock in 2013 and 2014 are intermediate of the impacts outlined for **Alternatives 2** and **3**. The ACLs would be 319,000 lbs ww and 178,000 lbs ww less than the ABCs in 2013 and 2014, respectively.

In 2016 and beyond until modified, the biological effects of **Alternatives 3** and **Preferred Alternative 4** are identical as the ACLs are identical. **Preferred Alternative 4** would not be expected to have long-term, adverse impacts to the black sea bass stock and associated species as would be expected from **Alternative 2**. The ACL for 2016 and beyond would be set at the equilibrium estimate of yield at 75% of $F_{MSY}$ and would have a buffer between the ACL/OY and ABC to account for management uncertainty.

In terms of bycatch, raising the current ACLs under **Alternatives 2**, **3**, and **Preferred Alternative 4** have the potential to reduce bycatch of black sea bass as the commercial and recreational seasons will be extended compared to the recent past. Bycatch of co-occurring species could increase if directed fishing effort for black sea bass increases, the black sea bass seasons are longer compared to recent years, and fishing seasons for co-occurring species are closed. However, there is not much bycatch associated with black sea bass pots (SAFMC 2011a), which dominates the commercial harvest of the species. In the recreational sector, fishermen are more opportunistic and often do not target any particular species. Therefore, an increase in the length of the fishing seasons for commercial and recreational black sea bass may not have much effect on increasing bycatch of co-occurring species. Furthermore, the South Atlantic Council has approved Regulatory Amendment 18 to the Snapper Grouper FMP (SAFMC 2013b), which would increase commercial and recreational ACLs for vermilion snapper. The increase in the ACLs for vermilion snapper, which is one of the top co-occurring species with black sea bass, is expected to extend the fishing seasons of vermilion snapper. In addition, Regulatory Amendment 18 would remove a 5-month recreational closure for vermilion snapper, which could further reduce bycatch of vermilion snapper and black sea bass.

The new ACL proposed under **Alternatives 2, 3,** and **Preferred Alternative 4** for 2013/14 onwards would continue as part of the accountability measures (AMs) specified in Amendment 18A (SAFMC 2012a) and the most recent year's landings would be compared to the new ACL to determine if the recreational or commercial ACL has been exceeded. The South Atlantic Council is considering a re-evaluation of all snapper grouper AMs in an upcoming amendment.

**Alternative 1 (No Action)** is likely to be the most beneficial to ESA-listed species. Under the status quo ACL, the black sea bass pot season is anticipated to be open for less time, and would not be open during large whale migrations and right whale calving season (November 1-April 30). **Alternative 1 (No Action)** is also likely to have the highest biological benefit to sea turtles, smalltooth sawfish, and Atlantic sturgeon among the alternatives considered. While entanglements of these species in black sea bass pot gear has never been documented, the short season anticipated under this alternative, because of the lower ACL, would reduce the amount of time trap/pot gear is in the water, minimizing the potential for interactions with these species.

The SSC recommended a larger ABC for black sea bass than is currently in place, which allows for an increase in the commercial and recreational ACLs under **Alternatives 2**, **3**, and **Preferred Alternative 4**. 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 -- the South Atlantic Council is also proposing a prohibition on the use of black sea bass pot gear from November 1 through April 30 each year in **Alternatives 2**, **3,** and **Preferred Alternative 4**. Without the proposed prohibition on the use of black sea bass pots during the large whale migration and right whale calving season, a reinitiation of formal consultation for the snapper grouper fishery would be triggered under the ESA. The consultation would require the 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 could not be completed in time to allow the ACL increases to be implemented for the 2013-2014 fishing season, which begins on June 1. The proposed black sea bass pot prohibition is 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 potential entanglements with ESA-listed whales until a comprehensive biological impact analysis can be completed.

Like **Alternative 1 (No Action)**, **Alternatives 2**, **3**, and **Preferred Alternative 4** are unlikely to have any effect on large whales because **Alternatives 2**, **3**, and **Preferred Alternative 4** include a provision to close the black sea bass trap/pot sector during the time of year when large whales are anticipated in the South Atlantic. Under all three alternatives, black sea bass trap/pot fishing would still be subject to trap/pot gear requirements established under the Atlantic Large Whale Take Reduction Plan (ALWTRP), which include line marking, weak links, sinking ground lines, and no wet storage of gear[1](**Appendix I**). The restrictions mandated by the ALWTRP final rule (72 FR 57104) apply to black sea bass fishermen in the South Atlantic. The ALWTRP is a program to reduce the risk of serious injury to or mortality of large whales due to incidental entanglement in commercial fishing gear. ALWTRP regulations pertain to the universal regulations (no floating buoy lines, no wet storage of gear), gear marking requirements,

[1] Specific gear marking requirements for can be found 50 CFR 229.32(b) and the additional gear requirements can found at 50 CFR 229.32(c).

sinking ground-lines, floatation, and buoy lines with a weak link, etc. The black sea bass pot sector adheres to all regulations stipulated in the ALWTRP.

An increase in the commercial ACL, as proposed in **Alternatives 2**, **3**, and **Preferred Alternative 4** could extend the commercial fishing season into the large whale migration, and right whale calving season (November 1 through April 30). Since 2009, the commercial sector has been closed each year before the beginning of the large whale migration and right whale calving season because the commercial ACL had been reached. However, it is difficult to determine how long the 2013/14 commercial fishing season will last based on recent fishing data because the start date of the 2012/2013 fishing year was delayed from June 1 to July 1 to allow the black sea bass pot endorsement program to be effective. Additionally, the stock appears to have rebuilt ahead of previous projections further complicating the use of recent data to estimate when the new commercial ACL would be met.

The prohibition on the use of black bass pots November 1 through April 30 under **Alternatives 2**, **3**, and **Preferred Alternative 4** represents a precautionary action by the South Atlantic Council to prevent interactions between black sea bass pot gear and ESA-listed whales during large whale migrations and right whale calving season off the southeastern coast. As described in **Section 3.3** of this document, North Atlantic right whales are vulnerable to entanglement in fishing gear, and the black seas bass pot gear might be an entanglement risk to large whales if the commercial pot sector remained open November 1 through April 30. Fixed fishing gear, including sink gillnets, drift nets, and trap/pot gear are all known to entangle large whales, particularly right and humpback whales (Waring et al. 2013). It is important to note that entanglement with black sea bass pot gear deployed in the South Atlantic EEZ has not been documented.

Relative to **Alternative 1 (No Action)**, **Alternatives 2**, **3**, and **Preferred Alternative 4** are likely to be slightly less biologically beneficial to sea turtles, smalltooth sawfish, and Atlantic sturgeon. Based on the projected closure dates using the approaches in **Table 4.1.3a** and **Table 4.1.3b**, the three alternatives would allow black sea bass trap/pot gear to remain in the water slightly longer than **Alternative 1 (No Action)**. However, since interactions between black sea bass pot/gear and sea turtles, smalltooth sawfish, and Atlantic sturgeon are not anticipated, these alternatives would likely have very similar biological benefits for these species and may have only marginally less biological benefit than **Alternative 1 (No Action)**.

The South Atlantic Council, through Amendment 18A (SAFMC 2012a), implemented new regulations for the 2012/13 fishing year, which reduced potential interactions with protected species:

- Pot endorsement limited participation to 32 vessels
- Pot limit of 35 pots per vessel
- Pots must be brought back to shore after each trip
- Commercial trip limit of 1,000 lbs gw
- Increased commercial size limit from 10 inches (”) total length (TL) to 11” TL
- Increased recreational size limit from 12” to 13” TL

<u>Simple Model Approach</u>

For the 2012/13 commercial black sea bass fishing season, the start date of the fishing year was changed from June 1 to July 1 to allow the black sea bass pot endorsement program to be implemented. As a result, it is difficult to estimate when the increased commercial ACLs would be met based on commercial data from the 2012/2013 fishing year. Using the commercial catches from the 2012/13 fishing year (**Table A**), the catch per day was 3,504 lbs ww (based on data as of 3/29/13). A simple model can be used to estimate when the season would close based on an increased ACL (**Table 4.1.2)**. The public, and especially black sea bass pot fishermen, were asked to comment on these assumptions and provide their input on how much they think catches will change this year. Given that the fishing season has closed early each year, it is expected that catch rates will remain the same or increase.

- If one assumes the catch rate in 2013/14 and future years were the same as in 2012/13 (3,504 lbs ww/day), the commercial fishing season would extend to January.
- If one assumes the catch rate increases by 25%, the commercial fishing season would extend to December.
- If one assumes the catch rate increases by 50%, the commercial fishing season would extend to late October.
- If one assumes the catch rate increases by 75%, the commercial fishing season would extend to the beginning of October.
- If one assumes the catch rate increases by 100%, the commercial fishing season would extend to mid September.

The scenarios assuming a 25% or lower increase in catch rate could affect large whales if pots were fished during November 1 through April 30. However, **Alternatives 2**, **3**, and **Preferred Alternative 4** would not allow pots to be in the water or on vessels from November 1 through April 30. The stock assessment shows an increased abundance of black sea bass, which could reflect a higher catch per unit effort (CPUE) in the commercial sector. If there was a 50% or greater increase in catch rate due to higher CPUE, the commercial season would close sometime in late October or earlier, and prior to the large whale migration and right whale calving season.

Under **Alternatives 2** and **Preferred Alternative 4**, the commercial ACL would be higher and the seasons would extend longer than those shown in **Table 4.1.2**.

**Table 4.1.2.** Projected closure dates of the commercial sector, including black sea bass pots, under the commercial ACL proposed under **Alternative 3** using catch per day rates from the 2012/2013 fishing season.

| Catch Rates | Comm ACL | Catch/day | #Days | Close |
|---|---|---|---|---|
| Last season | 755,274 | 3,504 | 216 | 01/02/14 |
| Last + 25% | 755,274 | 4,380 | 172 | 12/19/13 |
| Last + 50% | 755,274 | 5,256 | 144 | 10/22/13 |
| Last + 75% | 755,274 | 6,132 | 123 | 10/01/13 |
| Last + 100% | 755,274 | 7,008 | 108 | 09/16/13 |

Advanced Projection Model Approach

For the 2012/13 commercial black sea bass fishing season, the start date of the fishing year was delayed from June 1 to July 1 to allow the black sea bass pot endorsement program to be implemented. Additionally, the stock has rebuilt ahead of previous projections. An increase in exploitable population abundance, due to population recovery, might also lead to an increase in catch rate, resulting in the quota being caught more quickly. A plateau in exploitable population biomass might lead to a stabilized catch rate. Coupled with an increased ACL, this could result in a longer season. As a result, it is difficult to estimate when the increased commercial ACLs would be met based on commercial data from the 2012/2013 fishing year.

Projected dates for the closure of the commercial sector were estimated using four methodologies (**Table 4.1.3a**). All projection methods accounted for the delayed start date of the 2012/2013 fishing year. The first projection method used only 2012/2013 fishing season data reported to the SEFSC Commercial Logbook (accessed February 2013). The second projection method used 2011/2012 fishing season data, excluding non-qualified participants, reducing the trap number to 35, and computing catches for endorsement-holders using trip-specific trap catch-rates. The third projection method used a Seasonal Autoregressive Integrated Moving Average (SARIMA) Model. The SARIMA model was seeded with historical (2006/2007-2012/2013) monthly trap landings (modified to exclude non-endorsed vessels and apply the 35-trap limit). A total of 160 permutations of the SARIMA model were evaluated, and the best fitting model was selected based on Akaike Information Criterion (AIC; Akaike 1974), goodness-of-fit, and significance of parameter estimates. The SARIMA modeling approach captured seasonal trends in black sea bass catch rates and considered projected changes in exploitable abundance in the projection of future monthly landings. Exploitable abundance was a significant predictor variable in the best SARIMA run. A SARIMA(0,0,1)(0,1,1)x12-month lag model explained 68% of the variance in monthly catch rates (**Figure 4.1.1A**). The model predicts high winter catch rates, which may be an artifact of historical seasonal fishing dynamics; current derby fishery conditions in June-August may depress late season catch rates through localized depletion. The fourth projection method applied a simple exponential regression to in-season catch rates (modified to exclude non-endorsed vessels and apply the 35-trap limit) from 2007/2008-2012/2013. This model explained 81% of the variance in annual catch rates, but underestimated the catch rate for the past two seasons (**Figure 4.1.1B**).

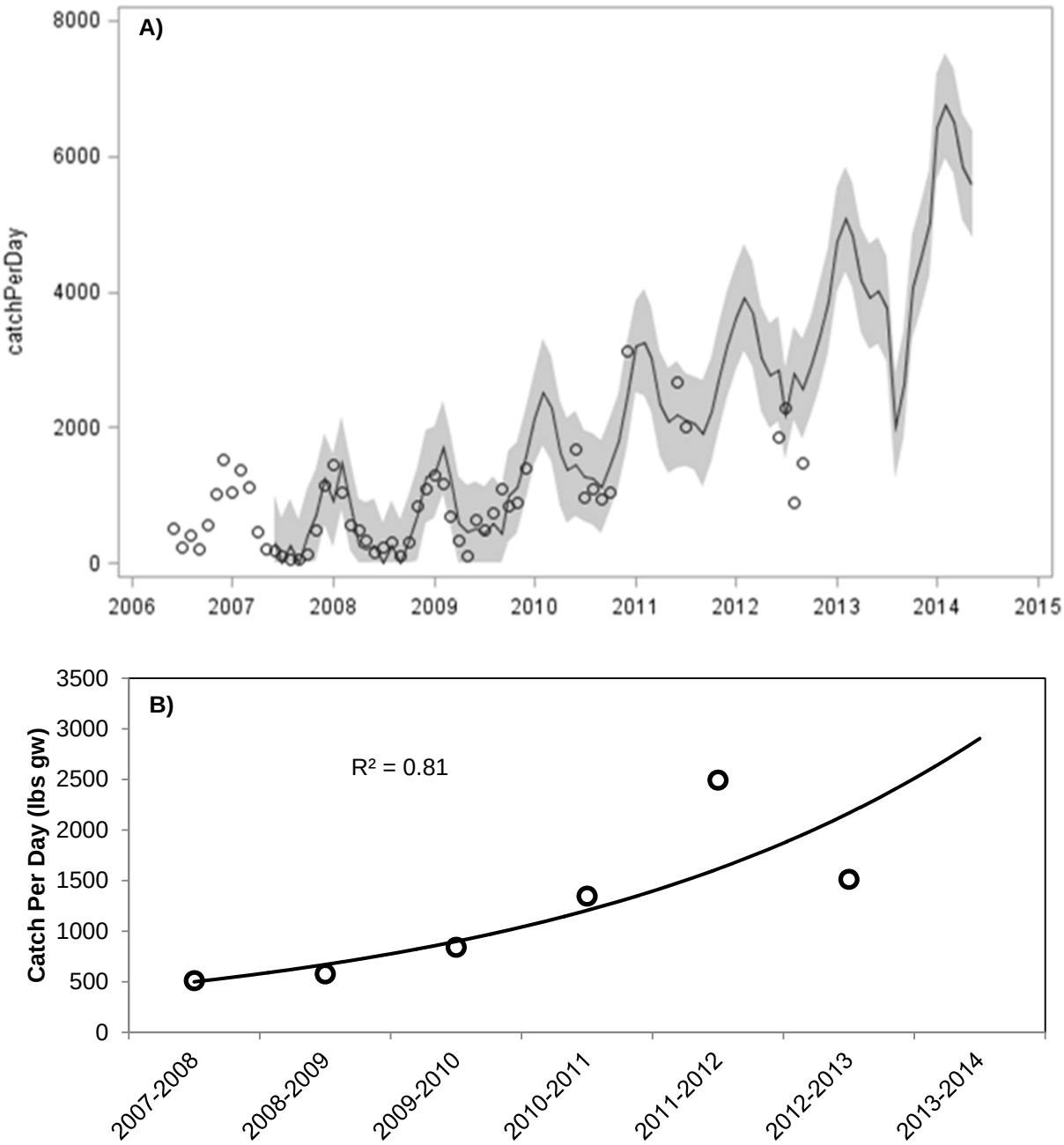


**Figure 4.1.1.** Forecasts of 2013-2014 season commercial South Atlantic black sea bass pot catch rates using (A) seasonal autoregressive integrated moving average model fit to monthly catch rates and (B) exponential model fit to fishing season catch rates.
Note historical catch rates have been adjusted to exclude non-endorsed pot fishermen and to account for the current 35-trap limit. Gray bands denote 95% confidence limits, open circles denote observed catch rates. Note Model (A) shows a poor fit to late season 2012/2013 catch rates, which leads to a lower 2013/2014 late season catch rate projection.

A recent assessment (SEDAR-25 Update 2013) has indicated that a good year class has recently recruited to the stock; thus, the 2011/2012 catch rate model may be the most accurate. In 2012, anecdotal info suggests the remaining pot-endorsed fishermen communicated with each other to some extent, which helped stretch out their season by reducing their fishing pressure. Additional anecdotal info suggests that their catch rates suffered from some localized depletion. If these trends continue in 2013/2014, the 2012/2013 catch rate model may be the best predictor of the 2013/2014 harvest rate. If catch rates continue to increase as the black sea bass stock recovers, the SARIMA model run maybe the best estimator of the 2013/2014 harvest rate. If the overall harvest rate falls somewhere between the 2011/2012 and 2012/2013 season harvest rates, the in-season exponential regression may be the best predictor of the 2013/2014 harvest rate. Because each modeling approach had strengths and weaknesses, all models were used to describe the uncertainty in the possible season length for 2013/2014. All modeling approaches considered the increase in vertical line landings between the 2011/2012 and 2012/2013 season (likely due to the transition of non-endorsed fishermen to vertical line gear), and accounted for differences between logbook-reported landings and total Accumulated Landings System harvest estimates, due to landings from state-licensed commercial vessels. Twenty-four potential seasonal closure dates were estimated across the four projection methodologies; 18 indicated the commercial fishing season would extend into the large whale migration and right whale calving season (November 1-April 30), 6 indicated it would close prior to that period. The potential for entanglement of large whales would exist if the commercial pot fishery remained open November 1-April 30. However, **Alternatives 2**, **3**, and **Preferred Alternative 4** would not allow pots to be in the water from November 1 through April 30. Most model runs suggested the commercial fleet, as an aggregate, would still be able to catch their ACL prior to the end of the season under these alternatives.

**Table 4.1.3a.** Predicted closure dates of commercial black sea bass with an increase in ACL and without a November 1 through April 30 closure of the black sea bass pots.

| Projected Closure Dates | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | Using 2012 Catch | Using 2011 Catch | Using In-Season Projection | SARIMA Projection | | |
| | | Com ACL (lbs ww) | | | | L95% | Mean | U95% |
| Alternative 2 | 2013 | 917,190 | 03/22/14 | 01/22/14 | 11/30/13 | 12/22/13 | 11/23/13 | 10/30/13 |
| | 2014[1] | 856,560 | 03/02/14 | 01/06/14 | 11/18/13 | 12/12/13 | 11/13/13 | 10/21/13 |
| | 2015[1] and beyond | 780,020 | 02/04/14 | 12/16/13 | 11/02/13 | 11/30/13 | 11/01/13 | 10/10/13 |
| Alternative 3 | 2013[1] and beyond | 755,274 | 01/26/14 | 12/09/13 | 10/28/13 | 11/25/13 | 10/28/13 | 10/06/13 |
| Alternative 4 (Preferred) | 2013-2015 | 780,020 | 02/04/14 | 12/16/13 | 11/02/13 | 11/30/13 | 11/01/13 | 10/10/13 |
| | 2016[1] and beyond | 755,274 | 01/26/14 | 12/09/13 | 10/28/13 | 11/25/13 | 10/28/13 | 10/06/13 |

Source: NMFS SERO (LAPP/DM Branch), 2013.
Note 1: The advanced projection model approach was not configured to provide estimates beyond the 2013 fishing year. Projection of future season lengths will be accomplished after incorporating data from the 2013/2014 fishing season. For this Amendment, the crude assumption was made that the catch rates will stabilize at the projected 2013 level.

The 2012/13 recreational black sea bass fishing season opened on June 1, 2012 and was closed on September 4, 2012. Projecting the 2013/2014 season length is complicated primarily due to two factors: (1) rebuilding status of the population and (2) persistence (or not) of increasing catch rates. Given that the black sea bass stock is rebuilt, a plateau in exploitable population biomass may lead to a stabilized catch rate. Coupled with an increased recreational ACL, this could result in a longer season. A recent assessment (SEDAR-25 Update 2013) has indicated that a strong year class is moving through the stock; thus, an increase in exploitable population abundance might lead to an increase in catch rate, resulting in the recreational ACL being caught more quickly. If the increased recreational ACLs reduce derby fishing conditions that have led to increasingly compressed recreational fishing seasons in recent years, the recreational ACL may be caught more slowly. Due to uncertainty in these dynamics, a variety of projection methods were used to explore possible closure dates for the South Atlantic recreational black sea bass sector. Over 50 different models were developed, with 3 selected as the most useful for management. The best-fitting of the numerous SARIMA models evaluated predicted an extremely high catch rate for 2013 (**Figure 4.1.2A**). This model explained 51% of the variability in catch rate by wave between 1999/2000-2012/2013. Exploitable population abundance was not a significant predictor of catch rate. This SARIMA waves model represented a "continuity run" of the model used to predict the quota closure date for the 2012/2013 season (**SERO-LAPP-2012-04**). This high predicted catch rate is likely due to the increases in catch rate observed between the 2010/2011-2012/2013 recreational seasons. Assuming the stock is recovered, as indicated by the recent assessment, then the increasing catch rates observed in 2011/2012 and 2012/2013 may plateau somewhat. Additionally, the large increase in quota, such as that anticipated, may result in relaxation of recreational fishing effort and associated high daily recreational catch rates. Finally, the model predicts high recreational catch per day in the later months (September on), which may not be possible in the South Atlantic, as fishing pressure may be reduced in fall and winter due to school schedules, deteriorating weather conditions, etc.

The second model developed used the observed catch rates from the 2012/2013 for June-August 2013, and assumed catch rates have plateaued with stock recovery. This model then used the SARIMA 2013 forecast catch rates for September on. If the stock continues to grow, this model may underestimate early season catch rates. If localized depletion occurs, this model may overestimate late season catch rates.

The third model evaluated ignores the seasonal trend, and simply projects the in-season mean annual harvest rates using a generalized linear model (GLM) with a log-linked negative binomial error distribution (**Figure 4.1.2B**). By ignoring the seasonal trend, this simple GLM forecast may underestimate early season peak harvest rates, but may do a better job of predicting the average annual harvest rate likely to occur as the fishery stays open longer. The majority of models estimated that a quota closure would be necessary in December 2013 (**Table 4.1.3b**). If the catch rates have not plateaued and continue to increase, the recreational sector could close as early as September. However, this would require catch rates to more than double between the 2012/13 and 2013/14 fishing seasons, which is unlikely. If catch rates have plateaued, and the increased ACL spreads out fishing effort and landings, the recreational sector may remain open as late as early March.

**Table 4.1.3b.** Predicted 2013/2014 closure dates of the recreational black sea bass sector with an increase in ACL.

| | Rec ACL (lbs ww) | SARIMA Forecast 2013 | | | Actual 2012 (Jun-Aug), SARIMA (Sept-May) | | | Mean Catch-per-Day (Annual) GLM Forecast | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Mean | L95% | U95% | Mean | L95% | U95% | Mean | L95% | U95% |
| Alternative 2 | 1,215,810 | 10/12/13 | 11/25/13 | 09/15/13 | 01/27/14 | 04/13/14 | 12/19/13 | 01/14/14 | 04/28/14 | 11/04/13 |
| Alternative 3 | 1,001,177 | 09/16/13 | 10/22/13 | 08/26/13 | 12/17/13 | 02/16/14 | 11/21/13 | 12/05/13 | 02/28/14 | 10/07/13 |
| Alternative 4 | 1,033,980 | 09/20/13 | 10/28/13 | 08/29/13 | 12/23/13 | 02/27/14 | 11/25/13 | 12/11/13 | 03/09/14 | 10/12/13 |

Source: NMFS SERO (LAPP/DM Branch), 2013.

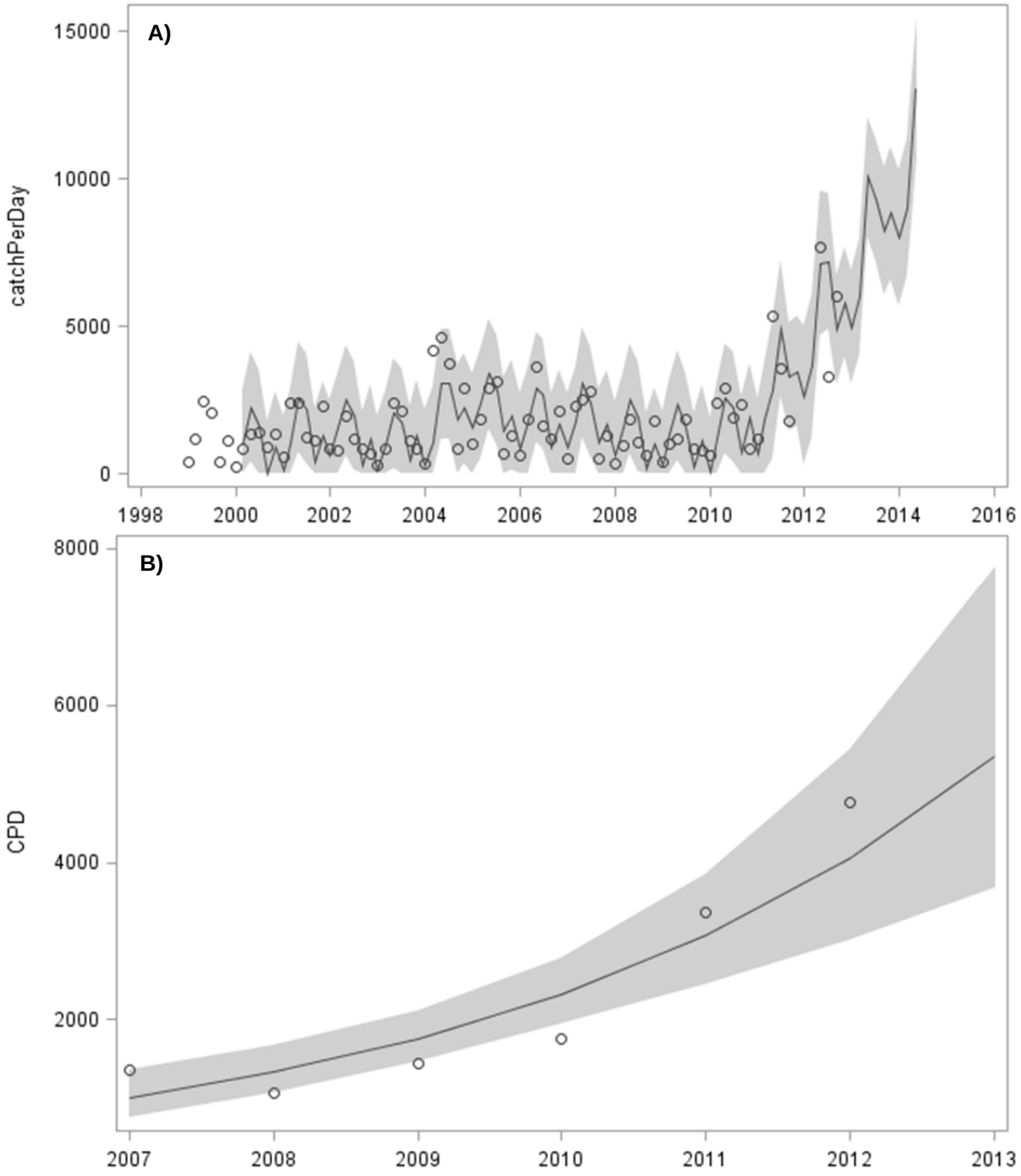


**Figure 4.1.2.** Forecasts of 2013-2014 season recreational South Atlantic black sea bass fishery daily catch rates ('CPD' or 'catchPerDay') using (A) seasonal autoregressive integrated moving average model fit to bimonthly ('wave') catch rates and (B) generalized linear model fit to fishing season catch rates. Gray bands denote 95% confidence limits, open circles denote observed catch rates. Note the model fits for the final two years of Model (A) are rather poor, and these trends are perpetuated in the projections.

## 4.1.2 Economic Effects

Commercial

Under **Alternative 1**, the commercial sector is allocated 364,620 pounds ww (309,000 pounds gw). In 2011, ex-vessel revenues totaled $973,333 based on trip ticket data. However, the fishery experienced an overage in that year. Under **Alternative 1**, the commercial sector is not expected to experience any change in economic benefits.

**Alternative 2** indicates an increase in the commercial sector ACL in 2013 and then decreasing amounts for 2014-2015. In 2013, 917,190 lbs ww (777,280 lbs gw) would be allocated to the commercial sector. In 2014, 856,560 lbs ww (725,898 lbs gw) would be allocated and 780,020 pounds ww (661,034 pounds gw) would be allocated in 2015 (see **Table 4.1.4**). The result is an increase in the commercial sector ACL of 552,570 pounds ww in 2013, 491,940 pounds ww in 2014, and 415,400 pounds ww in 2015 compared to **Alternative 1**. This calculates to a real ex-vessel revenue increase of over $1.2 million in 2013, over $1.1 million in 2014, and over $900,000 in 2015 using average 2007-2011 ex-vessel prices in 2011 dollars adjusted for inflation (see **Table 4.1.4**). These ex-vessel revenue increases are large compared to the fact that an average ex-vessel revenue of $1,000,000 is recorded each year (2007-2011) based on all species taken on trips landing at least one pound of black sea bass.

Under **Alternative 2**, black sea bass pot gear users would be subject to a closure from November 1 through April 30 each year. Black sea bass pots typically take about 80% of the commercial landings in the black sea bass fishery while hook-and-line gear users take the remaining 20% (**Table C**; average from 1991-2012 = 21% hook-and-line and 79% pots). Projections indicate that for all years 2013-2015, if the closure had not been imposed, the season would last until a little after the first of November for 2013 and 2014. With the pot closure, the black sea bass season (using hook-and-line gear) is expected to last until the beginning of April in 2014. Likewise, in 2014, the season is expected to continue until the end of January 2015. In addition, in 2015, the season would continue until the beginning of November 2015 (see **Table 4.1.4**). **Alternative 2** benefits hook-and-line gear users.

**Table 4.1.4.** Economic effects of commercial sector allocation 2013-2015 under **Alternative 2**, **Alternative 3** and **Preferred Alternative 4**.

| Year | Commercial sector ACL (ww) | Increase over current allocation (ww) | Ex-vessel revenue increase over current allocation (2011 dollars) | Season end projection if closure were not imposed | Season end for vertical line with closure for pots |
|---|---|---|---|---|---|
| **Alternative 2** | | | | | |
| 2013 | 917,190 | 552,570 | $1,248,808 | 11/23/13 | 4/6/14 |
| 2014 | 856,560 | 491,940 | $1,111,784 | 11/13/14 | 1/31/15 |
| 2015 | 780,020 | 415,400 | $938,804 | 11/1/15 | 11/7/15 |
| **Alternative 3** | | | | | |
| All | 755,274 | 390,654 | $882,878 | 10/28/13 | 10/28/13 |
| **Preferred Alternative 4** | | | | | |
| 2013-2015 | 780,020 | 415,400 | $938,804 | 11/1/15 | 11/7/15 |
| 2016 | 755,274 | 390,654 | $882,878 | 10/28/13 | 10/28/13 |

**Note 1:** The average 2007-2011 ex-vessel price was adjusted for inflation to 2011 dollars resulting in a real ex-vessel price of $2.26 (**Table 3.4.1**).

While the potential economic benefits under **Alternative 2** are relatively large compared to the benefits under the current commercial sector allocation, it is somewhat unknown at this time if the poundage increase over the current allocation will all be landed. Implementation of Amendment 18A (2012) decreased the number of participants and pots able to be used in the black sea bass pot fishery. These decreases in effort could result in decreased landings compared to the current commercial sector ACL. Without the November 1 – April 30 prohibition on use of pots, the fishery is expected to close at various times in November of each year anyway. With the November 1 – April 30 closure, the hook-and-line season is expected to extend for some months in 2013 and 2014 and for an additional week in 2015 (see **Table 4.1.4**). These predictions account for the potential for decreased effort due to Amendment 18A.

As stated above under the biological section (**Section 4.1.1**), an increase in catch per unit effort (CPUE) is possible and may make up for any decreased effort that might occur as a result of Amendment 18A. An increase in hook-and-line gear participation by fishermen from other fisheries throughout the black sea bass season and by black sea bass pot endorsement holders after November 1 is also possible and may boost landings as well. These two occurrences would likely result in increased landings and revenues for the fishery over **Alternative 1**, however, the magnitude of the increase is somewhat unknown. Columns 3 and 4 in **Table 4.1.4** show the potential increase in revenues that are possible. In general, **Alternative 2** offers greater economic benefits than **Alternative 1** with the fixed gear sector benefitting most from the November 1 to April 30 closure, especially in 2013 and 2014.

**Alternative 3** indicates a commercial sector ACL of 755,274 pounds ww (640,063 pounds gw). The result is an increase in the commercial sector ACL of 390,654 pounds ww (see **Table 4.1.4**). Under **Alternative 3**, the black sea bass pot fishery would be subject to a closure from November 1 through April 30 each year. Projections indicate that whether the closure for pots is imposed or not, the season would close at the end of October. Compared to the scenario under **Alternative 1 (No Action)**, an additional 390,654 lbs ww would be available, potentially amounting to an approximate increase in real ex-vessel revenue of a little under $900,000 (using average ex-vessel prices 2007-2011 in 2011 dollars adjusted for inflation). This does not account for additional species landed during those same trips.

Under **Alternative 3**, the commercial fishery has the potential to land the entire commercial ACL, even without the November 1 to April 30 closure. However, as stated above under **Alternative 2** discussions, the decrease in participation as a result of Amendment 18A (2012) may prohibit the fishery from landing the entire commercial ACL. However, this factor has been calculated into the closure projections. An increase in the CPUE and hook-and-line participation could make up for some of the possible decrease in effort in the black sea bass pot fishery.

Under **Preferred Alternative 4**, the commercial sector would be able to harvest their ACL for 2015 from **Alternative 2** for the fishing seasons beginning in 2013 through 2015, 780,020 lbs ww (661,034 lbs gw). Beginning in 2016, the commercial sector would be allowed to harvest their ACL from **Alternative 3**, 755,274 lbs ww (640,062 lbs gw). The economic effects of **Preferred Alternative 4** fall between those of **Alternative 2** and **Alternative 3**. **Preferred Alternative 4** would impose the same prohibition on the use of black sea bass pots from

November 1 through April 30. For the fishing years starting in 2013 through 2015, if the pot sector was not closed, the commercial season for black sea bass is expected to end November 1st. With the pot sector closure, the vertical line season is expected to close on November 7th. Beginning with the 2016 season, regardless of the status of the pot season closure, it is estimated the commercial black sea bass sector would close on October 28th. Like **Alternative 3**, the commercial fishery has the potential to land the entire commercial ACL, even without the November 1 to April 30 closure.

**Alternatives 2, 3** and **Preferred Alternative 4** provide potential economic benefits over **Alternative 1 (No Action)** with **Alternative 2** providing the greatest economic benefits. The hook-and-line sector would benefit more that the black sea bass pot fishery under **Alternative 2** due to an extended season. The magnitude of the economic benefits for each sector under **Alternative 2** would depend on how much of the commercial ACLs indicated can be landed given the expected decrease in black sea bass pot gear effort. **Preferred Alternative 4** would provide fewer direct positive economic effects than **Alternative 2**. However, **Preferred Alternative 4** would provide greater direct positive economic effects than **Alternative 3.**

There are differences in the long-term effects of the four alternatives on the status of the stock. The discussion on the biological effects of the three non-status quo alternatives states that **Alternative 2** could have long-term, adverse impacts to the black sea bass stock and associated species as it could result in fishing mortality levels higher than the yield at 75%FMSY levels for 2015 and beyond, which could result in biomass levels of the black sea bass stock below SSBMSY. It is understood that, if in the future the stock is impaired, the South Atlantic Council and NMFS could intervene to address the issue. This type of intervention would likely result in more stringent regulatory actions that would have negative consequences on the stream of economic benefits derivable from the black sea bass resource. If this were to occur, the long-term economic effects of **Alternative 2** would be less than those of **Alternative 3**. **Preferred Alternative 4** decreases the probability that the stock status would be impaired compared to **Alternative 2**, however it is a slightly higher chance of future stock impairment from **Preferred Alternative 4** when compared to **Alternative 3.**

Beyond the possibilities discussed above, there is the general issue as to which alternative would likely result in more restrictive fishing regulations over the long-term. As may be inferred from the biological effects discussion, the risk of overfishing the stock may be more likely with **Alternative 2** than with **Preferred Alternative 4**, which is more likely than **Alternative 3**. Thus, more stringent regulations, possibly in the form of ACL reductions, would be more likely under **Alternative 2** than **Alternative 3** or **Preferred Alternative 4**.

Recreational

The procedure for calculating the economic effects of the alternatives for the ACL changes on the recreational sector involves estimating the expected changes in consumer surplus (CS) to anglers and net operating revenues (NOR) to for-hire vessels. CS is the amount of money that an angler would be willing-to-pay for a fishing trip over and above the cost of the trip. In the present case, CS changes could come from changes in expected recreational catches. NOR is total revenue less operating costs such as fuel, ice, bait, and other supplies. In the present analysis, NOR changes arise only when changes in angler trips occur. This general methodology is the same approach used in evaluating the economic effects of regulatory actions on the recreational sector as in previous amendments (see for example Amendment 17A (SAFMC 2010a), Regulatory Amendment 9 (SAFMC 2011a), and Regulatory Amendment 18 (SAFMC 2013b)).

The key parameters used in estimating CS changes are the number of fish under each ACL alternative, including the No Action alternative, and CS per fish. The pounds of fish under each ACL alternative was converted to number of fish using average weight per fish. The 2007-2012 average weight of black sea bass is 1.36 pounds per fish, based on SEDAR 25 Update 2013. Although there have been variations in weight of black sea bass caught by headboats and other recreational fishing modes, the average weight for 2007-2012 turned out to be identical for all fishing modes. The CS per fish used, after adjusting for inflation, is $32 (2011 dollars) based on a study by Haab et al. (2009).

The alternatives considered for the recreational ACL changes would increase the number of fish that could be caught by recreational anglers. Since the recreational ACL was implemented in 2010/11, the recreational sector has experienced fishing closures that resulted in shorter seasons every year (**Table B**). It is expected that any of the alternatives to increase the recreational ACL would still result in fishing closures. Therefore, for purposes of estimating CS changes, all recreationally available fish under each alternative ACL are assumed to be caught, with CS assigned to each fish. A closely related assumption made for the current analysis is that no recreational overages would occur given that monitoring and projecting of recreational harvest has improved over the years.

This procedure in estimating the CS changes relies on several assumptions in addition to the ones already pointed out above. The CS used, based on Haab et al. (2009), pertains to the net benefit (willingness to pay) an angler derives from an addition snapper caught and kept on a fishing trip. The study did not have an estimate of willingness to pay specific to black sea bass, but the estimate for snapper in general is deemed to be the nearest approximation for black sea bass. There is a good possibility that, on average, black sea bass may be valued higher than some snapper grouper species and lower than others. In addition, this CS value is assumed to be uniform across all fishing sectors, areas, and harvest levels. However, this may not necessarily be the case. Headboat anglers may value a species differently, on average, than private and charter boat anglers. The direction and magnitude of such differences are unknown, though the higher cost of fishing to charter boat anglers suggests the CS to headboat anglers would be less than that to charter boat anglers. It is also possible that CS values vary across geographic areas. No adjustments for these possibilities are introduced in the current analysis. It is noted that using an average recreational value per fish would not take into account diminishing marginal utility

exhibited in most recreational activities when the volume of the activity increases. This could lead to overestimation of CS effects. The recreational ACL under each alternative is distributed among the various fishing modes based on the average proportion of black sea bass harvest by each fishing mode for fishing years 2007/08 through 2011/2012. Given that the CS per fish is assumed constant across fishing modes, this distribution of harvest would mainly provide some insights into the potential distribution of the economic effects of each ACL alternative. For each alternative, the change in CS is calculated using the recreational ACL under the No Action alternative as the baseline.

Changes in CS under each recreational ACL alternatives for black sea bass are calculated relative to the recreational ACL of the **Alternative 1 (No Action)**. **Alternative 2** would set ACLs for 2013, 2014, and 2015, with the 2015 ACL maintained until replaced from a new stock assessment. **Alternative 3** would set the same ACL for 2013 and years thereafter until replaced from a new stock assessment. **Preferred Alternative 4** would also set the same ACL for 2013 and years thereafter but at a higher level than **Alternative 3**. The recreational ACLs set in these three alternatives are higher than the ACL under **Alternative 1 (No Action)**. For purposes of quantifying the economic effects, only the first three years are considered.

As expected, harvests and CS under **Alternatives 2** through **Preferred Alternative 4** would be higher than those in **Alternative 1 (No Action)**. Depending on the discount rate, the net present value of CS changes over three years would range from about $40 million to $43 million with **Alternative 2**, $32 million to $35 million with **Alternative 3**, and $34 million to $37 million with **Preferred Alternative 4** (**Table 4.1.5**). Under **Alternative 2** or **Alternative 3 or Preferred Alternative 4**, private/rental anglers would be expected to gain more CS than the combined CS of the other fishing mode anglers. Headboat anglers would receive the second highest CS increase, followed by the charter and shore anglers. This distribution of CS increases is solely driven by the relative landings of each fishing mode. CS increases under **Alternative 2** would be substantially higher than those under **Alternative 3**, mainly because **Alternative 2** would provide for higher recreational ACLs than **Alternative 3** over the three-year period. **Preferred Alternative 4** would provide CS increases lower than **Alternative 2** but higher than **Alternative 3**.

Anglers in Florida would receive the largest CS increases under **Alternative 2, Alternative 3,** or **Preferred Alternative 4** (**Table 4.1.6**). This is followed by anglers in South Carolina, North Carolina, and Georgia. As with the CS effects by fishing mode, the distribution of CS increases by state is solely a result of the relative harvest of black sea bass in each state.

The key parameters used in estimating NOR changes are the number of for-hire vessel angler trips taken under each ACL alternative, including the No Action alternative, and NOR per trip. Although it is expected that even with ACL increases the recreational sector would still experience fishing closures, the fishing season would be longer. This would allow extra trips to be taken by for-hire vessel anglers. A model developed at Southeast Regional Office (SERO) (**Table 4.1.3**) provides recreational closure dates under each ACL alternative. The closure date for the 2012/2013 fishing season is taken as the baseline closure date so that for-hire angler trips estimated to be taken after that date would be considered additional trips due to each ACL alternative. The baseline charter angler trips are assumed to be the 2007-2011 average target

trips for black sea bass by charter anglers. When referring to for-hire angler trips affected by fishing regulations, the customary choice has been target trips as they are more closely related to angler demand for trips than the other types of angler trips, such as catch trips or directed trips. Generally, there are more catch or directed trips than target trips. There are no corresponding target trips in the headboat sector, so target trips for this sector are assumed to be a percentage of the 2007-2011 average headboat angler days. This percentage is calculated as the proportion of total black sea bass landings to total snapper grouper landings in the headboat sector. Before averaging the charter target trips and headboat angler days, trips or angler days during the closed months in 2009-10, 2010-11, and 2011-12 were dropped, thus giving more weight to the open months of the previous years.

**Table 4.1.5.** Harvest and net present value of changes in CS under **Alternative 2**, **Alternative 3**, and **Preferred Alternative 4** relative to Alternative 1 (No Action) over 2013, 2014, and 2015, by fishing mode.

| Fishing Mode | Three-year Sum of Harvest (1,000) | | Net Present Value of CS Over Three Years ($1,000 in 2011 dollars) | | |
|---|---|---|---|---|---|
| | Pounds WW | Fish | 7% | 5% | 3% |
| | | **Alternative 2** | | | |
| Charter | 497 | 365 | $5,892 | $6,103 | $6,328 |
| Headboat | 947 | 696 | $11,228 | $11,631 | $12,059 |
| Private/rental | 1,923 | 1,414 | $22,800 | $23,618 | $24,488 |
| Shore | 18 | 13 | $210 | $218 | $226 |
| TOTAL | 3,385 | 2,489 | $40,129 | $41,569 | $43,100 |
| | | **Alternative 3** | | | |
| Charter | 441 | 324 | $4,701 | $4,878 | $5,067 |
| Headboat | 840 | 618 | $8,959 | $9,297 | $9,656 |
| Private/rental | 1,706 | 1,255 | $18,192 | $18,878 | $19,609 |
| Shore | 16 | 12 | $168 | $174 | $181 |
| TOTAL | 3,004 | 2,208 | $32,020 | $33,227 | $34,513 |
| **Preferred Alternative 4** | | | | | |
| Charter | 455 | 335 | $4,998 | $5,187 | $5,388 |
| Headboat | 868 | 638 | $9,526 | $9,885 | $10,267 |
| Private/rental | 1,762 | 1,296 | $19,343 | $20,072 | $20,849 |
| Shore | 16 | 12 | $178 | $185 | $192 |
| TOTAL | 3,102 | 2,281 | $34,046 | $35,329 | $36,696 |

**Table 4.1.6.** Harvest and net present value of changes in CS under **Alternative 2, Alternative 3,** and **Alternative 4** (**Preferred**) relative to **Alternative 1 (No Action)** over 2013, 2014, and 2015, by state.

| Fishing Mode | Three-year Sum of Harvest (1,000) | | Net Present Value of CS Over Three Years ($1,000 in 2011 dollars) | | |
|---|---|---|---|---|---|
| | Pounds WW | Fish | 7% | 5% | 3% |
| **Alternative 2** | | | | | |
| Florida East | 1,294 | 951 | $15,339 | $15,890 | $16,475 |
| Georgia | 312 | 229 | $3,694 | $3,826 | $3,967 |
| N. Carolina | 750 | 551 | $8,887 | $9,206 | $9,545 |
| S. Carolina | 1,030 | 757 | $12,210 | $12,648 | $13,114 |
| TOTAL | 3,385 | 2,489 | $40,129 | $41,569 | $43,100 |
| **Alternative 3** | | | | | |
| Florida East | 1,148 | 844 | $12,701 | $12,701 | $13,192 |
| Georgia | 276 | 203 | $3,058 | $3,058 | $3,177 |
| N. Carolina | 665 | 489 | $7,358 | $7,358 | $7,643 |
| S. Carolina | 914 | 672 | $10,110 | $10,110 | $10,501 |
| TOTAL | 3,004 | 2,208 | $33,227 | $33,227 | $34,513 |
| **Preferred Alternative 4** | | | | | |
| Florida East | 1,186 | 872 | $13,014 | $13,504 | $14,027 |
| Georgia | 286 | 210 | $3,134 | $3,252 | $3,378 |
| N. Carolina | 687 | 505 | $7,540 | $7,824 | $8,126 |
| S. Carolina | 944 | 694 | $10,359 | $10,749 | $11,165 |
| TOTAL | 3,102 | 2,281 | $34,046 | $35,329 | $36,696 |

The NOR values used in the present analysis, after adjusting for inflation, are $157.27 (2011 dollars) per angler trip for charter boats and $70.25 (2011 dollars) per angler trip for headboats (David Carter, NMFS SEFSC, personal communication, 2009). The NOR values used in the current analysis are based on a study of the North Carolina recreational fishery (Dumas et al. 2009). Although North Carolina is a major participant in the recreational harvest of black sea bass, Florida and South Carolina landed more black sea bass in 2007/08-2011/12. NOR values could very well vary among states, but no adjustments are made here in the absence of relevant information. Another possibility for which no adjustment could be introduced is that NOR values could vary among vessels of different sizes or passenger capacity or level of dependence on black sea bass.

By substantially increasing the recreational ACL, **Alternatives 2** through **Preferred Alternative 4** may be expected to extend the season, thus allowing for-hire vessels to take extra trips and generate additional NOR. For the current analysis, four "closure" scenarios are considered. **Table 4.1.7** presents the various closure scenarios, with one scenario assuming a full season. The other three scenarios are based on model projections although only the closing months, or close approximations thereof, are considered. Because of setting the closure dates to the nearest months, the closure dates for **Preferred Alternative 4** would be the same as those for **Alternative 3**. It should be noted, however, that **Preferred Alternative 4** would have higher economic effects than **Alternative 3** as it would provide for higher ACLs. The closure dates vary widely, with the Early Closure and No Closure probably having the lowest probability of occurrence. The closing dates for **Alternative 2** vary over the years because of varying ACLs whereas those for **Alternatives 3** and **Preferred Alternative 4** remain the same for the three years considered. An apparent assumption here is that fishing activities would remain about the

same for the three-year period so that the variation in closing dates, or lack thereof, is mainly conditioned by the ACLs.

Trips and NOR changes due to **Alternatives 2, 3,** and **Preferred Alternative 4** relative to **Alternative 1 (No Action)** are shown in **Table 4.1.8a**. Trips and NOR are totals over 2013, 2014, and 2015. Focusing only on the Mean Closure scenario and the 7% discount rate, the ACLs under **Alternative 2** would result in NOR increases (present value) of $1.14 million over three years. NOR increases under **Alternative 3** and **Preferred Alternative 4** would be about $930,000 over three years.

**Table 4.1.7.** Four scenarios for black sea bass recreational fishing closure.

| | **Early Closure** | | | **Mean Closure** | | | **Late Closure** | | | **No Closure** |
|---|---|---|---|---|---|---|---|---|---|---|
| | **Alt. 2** | **Alt. 3** | **Pref. Alt. 4** | **Alt. 2** | **Alt. 3** | **Pref. Alt. 4** | **Alt. 2** | **Alt. 3** | **Pref. Alt. 4** | Alts. 2, 3, and **Pref. Alt. 4** |
| 2013 | OCT | SEP | SEP | FEB | DEC | DEC | APR | MAR | MAR | OPEN |
| 2014 | SEP | SEP | SEP | JAN | DEC | DEC | APR | MAR | MAR | OPEN |
| 2015 | SEP | SEP | SEP | DEC | DEC | DEC | MAR | MAR | MAR | OPEN |

**Table 4.1.8a.** Changes in for-hire angler trips and net present values under **Alternative 2, Alternative 3,** and **Preferred Alternative 4** relative to **Alternative 1 (No Action)** over 2013, 2014, and 2015.

| | **Alternative 2** | | | **Alternative 3** | | | **Preferred Alternative 4** | | |
|---|---|---|---|---|---|---|---|---|---|
| | **Extra Trips** | **Net Present Value** | | **Extra Trips** | **Net Present Value** | | **Extra Trips** | **Net Present Value** | |
| | | **7%** | **3%** | | **7%** | **3%** | | **7%** | **3%** |
| Early Closure | | | | | | | | | |
| Charter | 369 | $54 | $56 | 0 | $0 | $0 | 0 | $0 | $0 |
| Headboat | 1,393 | $91 | $95 | 0 | $0 | $0 | 0 | $0 | $0 |
| TOTAL | 1,762 | $146 | $151 | 0 | $0 | $0 | 0 | $0 | $0 |
| Mean Closure | | | | | | | | | |
| Charter | 2,376 | $327 | $353 | 2,295 | $316 | $340 | 2,295 | $316 | $340 |
| Headboat | 13,130 | $815 | $874 | 9,995 | $614 | $662 | 9,995 | $614 | $662 |
| TOTAL | 15,506 | $1,142 | $1,226 | 12,290 | $930 | $1,002 | 12,290 | $930 | $1,002 |
| Late Closure | | | | | | | | | |
| Charter | 2,855 | $394 | $424 | 2,619 | $360 | $388 | 2,619 | $360 | $388 |
| Headboat | 20,480 | $1,265 | $1,360 | 17,411 | $1,070 | $1,153 | 17,411 | $1,070 | $1,153 |
| TOTAL | 23,336 | $1,659 | $1,783 | 20,029 | $1,430 | $1,542 | 20,029 | $1,430 | $1,542 |
| No Closure | | | | | | | | | |
| Charter | 2,901 | $399 | $430 | 2,901 | $399 | $430 | 2,901 | $399 | $430 |
| Headboat | 33,725 | $2,072 | $2,234 | 33,725 | $2,072 | $2,234 | 33,725 | $2,072 | $2,234 |
| TOTAL | 36,626 | $2,472 | $2,664 | 36,626 | $2,472 | $2,664 | 36,626 | $2,472 | $2,664 |

Notes: Net present values are in thousand 2011 dollars. In actuality, **Preferred Alternative 4** should have higher effects than **Alternative 3**, but because the closure dates are expressed in months, the two alternatives are shown to have the same effects.

Total Economic Effects

**Table 4.1.8b** summarizes the three-year economic effects of **Alternative 2, Alternative 3,** and **Preferred Alternative 4** relative to **Alternative 1 (No Action)**. The values for the commercial sector are in total revenues whereas those of the recreational sector are in CS and PS, so the values for the two sectors cannot be added to arrive at the total economic effects of each alternative. Nevertheless, the estimated effects can be used to compare the three alternatives. The following discussion focuses more on the comparative economic effects of **Alternative 2, Alternative 3,** and **Preferred Alternative 4.**

**Table 4.1.8b.** Three-year economic effects of **Alternative 2** and **Alternative 3** relative to **Alternative 1 (No Action)**.

| | Commercial Sector | Private Recreational | For-Hire |
|---|---|---|---|
| Alternative 2 | $2,905 | $40,129 | $1,142 |
| Alternative 3 | $2,317 | $32,020 | $930 |
| **Preferred Alternative 4** | $2,464 | $34,046 | $930 |
| **Difference** | | | |
| Alt 2 minus Alt3 | $588 | $8,109 | $212 |
| Alt 2 minus **Pref Alt 4** | $441 | $6,083 | $212 |
| Alt 3 minus **Pref Alt 4** | -$147 | -$2,026 | $0 |

Note: Dollar values for the commercial sector are total revenues, those for the private recreational sector are in CS, and those for the for-hire sector are in PS. Dollar values, in thousand 2011 dollars, are net present values over 2013-2015 using a 7% discount rate.

Over the years 2013-2015, **Alternative 2** would provide for a higher ACL than either **Alternative 3** or **Preferred Alternative 4**, and this would translate to higher positive economic effects for **Alternative 2** over the other two alternatives. Relative to **Alternative 3**, **Alternative 2** would allow the commercial sector to be better off by about $600,000, the private recreational sector by about $8 million, and the for-hire sector by about $200,000 (**Table 4.1.8b**). Another way of looking at these figures is that over 20% of economic benefits would be forgone by the commercial and recreational resource users if **Alternative 3** rather than **Alternative 2** were implemented. A similar case would happen when contrasting **Alternative 2** with **Preferred Alternative 4**, only this time the values would be lower. Resource users would be better off under **Preferred Alternative 4** than under **Alternative 3**.

It is worth noting that these values are short-term or medium-term economic effects. An important consideration for the long-term economic effects is whether the ACLs beyond 2015 are sustainable. If the ACLs under each alternative were sustainable beyond 2015, then clearly the long-term economic effects would be in favor of **Alternative 2,** followed by **Preferred Alternative 4,** and **Alternative 3**.

However, there apparently are differences in the long-term effects of the three alternatives on the status of the stock. The discussion on the biological effects of the three alternatives states that **Alternative 2** could have long-term, adverse impacts to the black sea bass stock and associated species as it could result in fishing mortality levels higher than the yield at 75%$F_{MSY}$ levels for 2016 and beyond, which could result in biomass levels of the black sea bass stock below $SSB_{MSY}$. It is understood that, if in the future the stock is impaired, the South Atlantic Council and NMFS could intervene to address the issue. This type of intervention would likely

result in more stringent regulatory actions that would have negative consequences on the stream of economic benefits derivable from the black sea bass resource. If this were to occur, the long-term economic effects of **Alternative 2** would be less than those of either **Alternative 3** or **Preferred Alternative 4**. If, on the other hand, the concern expressed in the cited biological effects discussion did not materialize, selecting **Alternative 3** or **Preferred Alternative 4** would result in forgone economic benefits to the resource users.

Beyond the possibilities discussed above, there is the general issue as to which alternative would likely result in more restrictive fishing regulations over the long-term. As may be inferred from the biological effects discussion, the risk of overfishing the stock may be more likely with **Alternative 2** than with **Alternative 3** or **Preferred Alternative 4**. Thus, more stringent regulations, possibly in the form of ACL reductions, would be more likely under **Alternative 2** than with the other two alternatives. In effect, **Alternative 3** or **Preferred Alternative 4** would more likely provide better economic prospects in the future than **Alternative 2,** and as discussed above, resource users would be better off under **Preferred Alternative 4** than under **Alternative 3**. Moreover, there is an expectation that some knowledge about future stringent regulations would prompt commercial and recreational resource users to adopt strategic behavior for their current operations/activities. This strategy would more likely involve taking advantage of current fishing opportunities before stringent regulations are imposed. In a sense, this strategic behavior could exacerbate the emergent derby attitude that presently appears to characterize the commercial and recreational sectors. The adverse economic effects of a derby attitude are now well known.

Another note worth making is that, although **Alternative 3** or **Preferred Alternative 4** would yield less economic benefits in the short-term than **Alternative 2**, these effects are rather substantial relative to **Alternative 1 (No Action)**. In addition, **Preferred Alternative 4** would provide for higher economic benefits than **Alternative 3** both in the short term and the long term.

### 4.1.3 Social Effects

The social effects of modifications to the black sea bass ACL are associated with three main factors: updated catch limits based on the most recent information from the stock assessment update, increased access to the resource, and potential right whale interaction due to a potentially longer season. **Figures 3-1** and **3-2** in **Section 3.4.3** shows the communities that would likely benefit from an increase in the black sea bass commercial ACL under **Alternatives 2** and **3**, and **Preferred Alternative 4**. The primary communities with commercial black sea bass landings include Sneads Ferry and Wanchese in North Carolina, and Port Orange FL. However, the communities of McClellanville (SC), Wanchese, and Sneads Ferry have the highest level of engagement and reliance on the commercial black sea bass fishery. Changes in catch limits are more likely to affect these areas at the community level than Port Orange, because black sea bass is one of several economically important species landed in Port Orange. **Figure 3-3** in **Section 3.4.3** provides information on communities with high levels of engagement and reliance on recreational black sea bass fishing. An increase in the recreational black sea bass ACL under

**Alternatives 2** and **3**, and **Preferred Alternative 4** would be expected to benefit the communities of Little River, SC; Murrells Inlet, SC; Morehead City, NC; Carolina Beach, NC, and Wanchese, NC.

Because the ACL would not be adjusted to reflect new information and outcomes from the recent stock assessment update, **Alternative 1 (No Action)** would not result in any social benefits expected from incorporating more accurate and up-to-date information into setting catch limits. **Alternatives 2** and **3**, and **Preferred Alternative 4** would be expected to be more beneficial to the fleet, private anglers, and other resource users because the new information better reflects current conditions with the black sea bass stock.

Changes in the ACL for any stock will not directly affect resource users unless the ACL is met or exceeded, in which case AMs that restrict or close harvest could negatively impact the commercial fleet, for-hire fleet, and private anglers. In general, the higher the ACL, the greater the social and economic benefits that would be expected to accrue, assuming long-term recovery and rebuilding goals are met. Adhering to stock recovery and rebuilding goals is assumed to result in net long-term positive social and economic benefits. Additionally, adjustments in an ACL based on updated information from a stock assessment would be the most beneficial in the long term to fishermen and communities because catch limits would be based on the current conditions.

In recent years the black sea bass commercial sector exists under derby conditions, in which the quota is met and sometimes exceeded in just a few weeks. In addition to concerns about safety at sea that arise from the race to fish, the derby periods result in a large amount of black sea bass on the market in a very short period. This may cause reduced market value and lower product quality, and the bust-and-boom nature of the commercial black sea bass component of the snapper grouper fishery may hinder business stability and steady job opportunities for captain and crew. A similar situation exists in the black sea bass recreational sector in which recreational harvest is allowed for a few months during the summer before the recreational ACL is met or exceeded and harvest is prohibited. Under **Alternative 1 (No Action)**, it would be expected that the conditions for both the commercial and recreational sectors will continue and possibly intensify as the biomass of black sea bass continues to increase and the ACLs are met in fewer weeks. An increase in the black sea bass ACL under **Alternatives 2** and **3**, and **Preferred Alternative 4** may help extend the fishing seasons for both sectors.

However, if the increased commercial ACL under **Alternatives 2** and **3**, and **Preferred Alternative 4** is not met before November 1 (start date of the provision for a closure of the black sea bass pot fishery to protect right whales), the black sea bass pot fishermen and associated businesses and communities will not realize the maximum benefits of the higher catch limit. This potential reduction in participation for the black sea bass pot fishermen will be in addition to new regulations and the endorsement program established in Amendment 18A (SAFMC 2011), under which participation in the black sea bass pot fishery is currently capped at a maximum of 32 endorsement holders who may only use 35 traps.

There are trade-offs between the social and economic benefits of an increased ACL and the biological benefits of providing a buffer to reduce the risk of overfishing. Black sea bass is one

of the most social and economically important species in the South Atlantic region for both the recreational and commercial sectors. Setting the highest ACL possible would result in social benefits associated with economic gains and increased recreational fishing opportunities, but also could increase the risk of returning to an overfishing status for black sea bass. The restrictions of recent years through the rebuilding plan for black sea bass resulted in negative impacts on the commercial and for-hire fleets, and for private anglers. Providing a buffer would reduce the chance of long-term negative impacts by lowering the risk of overfishing. **Alternative 2** would not provide a buffer and could result in positive impacts on fishermen in the present and near future, but negative impacts in the long term. The buffer under **Alternative 3** would likely result in short-term social benefits but at a lower level than **Alternative 2**, but also reduce the risk of negative impacts in the future due to overfishing. The combination of no buffer over the next few years but a buffer in later years under **Preferred Alternative 4** provides a mechanism that would most likely allow short-term benefits to be realized but establish a buffer to reduce the risk of long-term negative impacts occurring due to overfishing.

### 4.1.4 Administrative Effects

Administrative impacts of this action are likely to be minimal. **Alternative 1 (No Action)** may result in slightly higher indirect administrative impacts because the lower ACLs are more likely to cause AMs to be triggered in-season, which would require development of outreach materials and internal agency documents to close the commercial sector and assess whether or not the recreational ACL has been exceeded. **Alternatives 2, 3** or **Preferred Alternative 4** would not result in significant administrative cost or time burdens other than notifying fishery participants of the increase in the sector ACLs and continued monitoring of the sector ACLs. The burden on law enforcement would not change under these alternatives since commercial quota closures implemented when the commercial ACLs are projected to be met are currently enforced.

# Chapter 5. Council's Choice for the Preferred Alternative

## 5.1 Revise the Annual Catch Limits (ACLs), Recreational Annual Catch Target (ACT), and Optimum Yield (OY) for Black Sea Bass

### 5.1.1 Snapper Grouper Advisory Panel Comments and Recommendations

The Snapper Grouper Advisory Panel (AP) met April 23-25, 2013, in North Charleston, South Carolina. South Atlantic Fishery Management Council (South Atlantic Council) staff briefed the AP on discussions relevant to the black sea bass assessment held during the April 8-11, 2013, meeting of the Scientific and Statistical Committee (SSC). The SSC provided input on the recently completed black sea bass assessment update and recommended an acceptable biological catch (ABC) level and an overfishing level (OFL). The black sea bass stock is neither overfished nor experiencing overfishing, and is rebuilt.

The AP also received a presentation on Regulatory Amendment 19. The AP recommended that the Council choose **Alternative 3** as preferred. All but two AP members were in favor of **Alternative 3** and stated as their reasoning that the alternative offered a more stable and risk-averse ACL. AP members were concerned that **Alternative 2** presented the potential of overfishing and the fishermen would again have to face strict regulations down the line.

### 5.1.2 Law Enforcement Advisory Panel Comments and Recommendations

The analyses were provided to the Law Enforcement Advisory Panel (AP) and their comments were requested by May 10, 2013. The LEAP did not express any concerns or provide recommendations.

### 5.1.3 Scientific and Statistical Committee Comments and Recommendations

The SSC reviewed the black sea bass assessment update at their April 9-11, 2013 meeting in North Charleston, South Carolina. The SSC recommendations are as follows:

"The SSC accepts this assessment update as representing the best available scientific information on the current status of black sea bass in South Atlantic waters and considers it appropriate for SAFMC management decisions.

Results suggest that spawning stock has decreased and rebounded throughout the full assessment period (1978–2012). The terminal (2012) estimate of spawning stock is one of the highest values of the time series, above $SSB_{MSY}$ ($SSB_{2012}/SSB_{MSY}$=1.03), and well above MSST ($SSB_{2012}$/MSST =1.66), using the Council's definition of MSST as (1 - M) $SSB_{MSY}$. The estimated fishing rate has exceeded the MFMT (represented by $F_{MSY}$) throughout the time series, but has recently dropped below $F_{MSY}$. The terminal estimate is well below $F_{MSY}$ ($F_{2011-2012}/F_{MSY}$ = 0.66). Thus, point estimates from this update assessment indicate that the stock has recovered and is not experiencing overfishing.

Since this assessment falls under Tier 1 of our ABC control rule, ABC was obtained according to a P-star value. A summary of results from applying the ABC control rule is presented below:

| | |
|---|---|
| Assessment Information: | Tier 1 (0%) |
| Uncertainty Characterization: | Tier 2 (2.5%) |
| Stock Status: | Tier 2 (2.5%) |
| Risk Analysis: | Tier 2 (5%) |
| Total adjustment | 10% |
| P-star value: | 40% |

The SSC recommends using 3-year projections at P*=50% for OFL and at P*=40% for ABC (see Tables 19 and 20 from the assessment report below).

*Table 19. Acceptable biological catch (ABC) in units of 1000 lb whole weight, based on the annual probability of overfishing $P^{\star} = 0.4$. F = fishing mortality rate (per yr), SSB = mid-year spawning stock (1E10 eggs), Pr(SSB > $SSB_{MSY}$) = proportion of replicates rebuilt (i.e., SSB above the base-run point estimate of 256), R = recruits (1000 age-0 fish), D = discard mortalities (1000 lb whole weight), and L = landings (1000 lb whole weight). ABC (1000 lb whole weight) includes landings and discard mortalities. Annual ABCs are a single quantity while other values presented are medians.*

| Year | F | $P^{\star}$ | SSB | Pr(SSB > $SSB_{MSY}$) | R | D(1000 lb) | L(1000 lb) | ABC(1000 lb) |
|---|---|---|---|---|---|---|---|---|
| 2013 | 0.65 | 0.4 | 289.7 | 0.80 | 33230 | 125.6 | 2133 | 2258 |
| 2014 | 0.64 | 0.4 | 253.0 | 0.47 | 31913 | 111.0 | 1992 | 2102 |
| 2015 | 0.64 | 0.4 | 246.2 | 0.43 | 31519 | 107.3 | 1814 | 1921 |

*Table 20. Acceptable biological catch (ABC) in units of 1000 lb whole weight, based on the annual probability of overfishing $P^{\star} = 0.5$. F = fishing mortality rate (per yr), SSB = mid-year spawning stock (1E10 eggs), Pr(SSB > $SSB_{MSY}$) = proportion of replicates rebuilt (i.e., SSB above the base-run point estimate of 256), R = recruits (1000 age-0 fish), D = discard mortalities (1000 lb whole weight), and L = landings (1000 lb whole weight). ABC (1000 lb whole weight) includes landings and discard mortalities. Annual ABCs are a single quantity while other values presented are medians.*

| Year | F | $P^{\star}$ | SSB | Pr(SSB > $SSB_{MSY}$) | R | D(1000 lb) | L(1000 lb) | ABC(1000 lb) |
|---|---|---|---|---|---|---|---|---|
| 2013 | 0.71 | 0.5 | 289.9 | 0.80 | 33295 | 136.4 | 2296 | 2433 |
| 2014 | 0.71 | 0.5 | 247.8 | 0.43 | 31685 | 119.5 | 2074 | 2194 |
| 2015 | 0.71 | 0.5 | 239.0 | 0.39 | 31147 | 115.5 | 1857 | 1973 |

The SSC also discussed how to proceed given that projection results indicate an ABC that is higher than the MSY estimated by the assessment. This discrepancy is caused by the fact that the first year of the projections (2013) coincided with the year when the large 2010 class of recruits became available to the fishery as three-year-olds. In other words, the MSY values estimated during the projection period (i.e., yield at P*=50%) are higher than the point estimate generated with data through 2012 and the ABC values obtained at P*=40% also reflect this higher biomass productivity.

After much discussion the Committee reached consensus on accepting stock status determination based on the deterministic results summarized on Table 17 of the assessment report (shown below for your reference) but provides catch level recommendations based on the probabilistic estimates obtained through the P* analysis. The probabilistic stock status results provide the Council with a better idea of the uncertainty associated with the point estimates. Note that the SSC's ABC recommendations below include landings PLUS discards.

One of the key uncertainties with the assessment and projections is the strength of the 2010 year class. The update assessment shows a strong year class in 2010 yet these fish had not recruited to the fishery in the last two years of the assessment (2011 and 2012; recruit at age-3 in 2013). The estimated high 2010 year class is based on fishery-independent monitoring data. The projected ABCs are highly-dependent on the estimate of 2010 year class strength AND this estimate has high uncertainty because it is predominantly informed by one source of information (fishery-independent monitoring)."

| Quantity | Units | Estimate | SE |
|---|---|---|---|
| $F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.610 | 0.381 |
| $85\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.518 | 0.324 |
| $75\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.457 | 0.285 |
| $65\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.396 | 0.247 |
| $F_{30\%}$ | $\mathrm{y}^{-1}$ | NA | NA |
| $F_{40\%}$ | $\mathrm{y}^{-1}$ | NA | NA |
| $F_{50\%}$ | $\mathrm{y}^{-1}$ | 1.89 | 0.643 |
| $B_{\mathrm{MSY}}$ | mt | 5617 | 716.7 |
| $\mathrm{SSB}_{\mathrm{MSY}}$ | 1E10 eggs | 256 | 32.8 |
| MSST | 1E10 eggs | 159 | 25.2 |
| MSY | 1000 lb | 1780 | 105.63 |
| $D_{\mathrm{MSY}}$ | 1000 fish | 288 | 91.48 |
| $R_{\mathrm{MSY}}$ | 1000 age-0 fish | 35843 | 1165 |
| Y at $85\%F_{\mathrm{MSY}}$ | 1000 lb | 1772.56 | 96.44 |
| Y at $75\%F_{\mathrm{MSY}}$ | 1000 lb | 1756.45 | 101.31 |
| Y at $65\%F_{\mathrm{MSY}}$ | 1000 lb | 1726.76 | 104.2 |
| $F_{2011-2012}/F_{\mathrm{MSY}}$ | — | 0.659 | 0.24 |
| $\mathrm{SSB}_{2012}/\mathrm{MSST}$ | — | 1.66 | 0.51 |
| $\mathrm{SSB}_{2012}/\mathrm{SSB}_{\mathrm{MSY}}$ | — | 1.03 | 0.23 |

**Black Sea Bass Status and Fishing Level Recommendations**

| **Criteria** | **Deterministic** | **Probabilistic** |
|---|---|---|
| Overfished evaluation | No (SSB/SSBmsy=1.03) | 68% MCB runs above SSBmsy |
| Overfishing evaluation | No (F/Fmsy=0.66) | 93% MCB runs below Fmsy |
| MFMT | 0.61 | 0.71 (median) |
| SSBmsy (1E10 eggs) | 256 | 241.277 (median) |
| MSST (1E10 eggs) | 159 | 149.085 (median) |
| MSY (1000 lb) | 1,780 | |
| Y at 75% Fmsy (1000 lb) | 1,756.45 | |
| ABC Control Rule Adjustment | 10% | |
| P-Star | 40% | |
| OFL (1000 lb) | 1,780 (MSY) | 2,433 (2013 L+D)<br>2,194 (2014 L+D)<br>1,973 (2015 L+D) |
| ABC Recommendation<br>(list by year if appropriate)<br>(1000 lb) | | 2,258 (2013 L+D)<br>2,102 (2014 L+D)<br>1,921 (2015 L+D) |

### 5.1.4 Public Comments and Recommendations

The South Atlantic Fishery Management Council (South Atlantic Council) provided an opportunity for public comments during their meeting on May 13, 2013, and prior to that meeting (comment period began on 4/26/13 and ended at 5 pm on 5/10/13). Draft analyses were provided to the public and the South Atlantic Council on April 26, 2013. In addition, South Atlantic Council staff prepared slide and video presentations of the action and analyses, and these were posted on the South Atlantic Council's website and distributed on May 2, 2013. The South Atlantic Council considered all public comments during their meeting on May 13, 2013.

Written comments were received from 54 individuals/groups with 24 directly supporting **Alternative 2** and 4 supporting **Alternative 3** (**Appendix H**). The rest of the comments did not explicitly support either alternative. During the webinar meeting 4 individuals commented with 2 supporting **Alternative 2** and 2 supporting **Alternative 3**.

### 5.1.5 South Atlantic Council Choice for Preferred Alternative

The South Atlantic Council selected **Alternative 4** as Preferred for Action 1. **Preferred Alternative 4** would specify the following for black sea bass in the South Atlantic until modified:

**Preferred Alternative 4.** For black sea bass, revise the total ACL, sector ACLs, recreational ACT, and OY values based on results from the new stock assessment (SEDAR 25 Update 2013). Change the ACL formula to

1. 2013-2015 ACL = OY = 1,814,000 lbs ww
2. 2016 onwards ACL = OY = 1,756,450 lbs ww (yield at 75%$F_{MSY}$ when the stock is at equilibrium).

Retention, possession, and fishing for black sea bass is prohibited using black sea bass pot gear, annually, from November 1 through April 30.

**Table 2.2.** Revised ABC, total ACL, sector ACLs, recreational ACT, and OY values based on SEDAR 25 Update 2013 and Alternative 4. Values in pounds whole weight (ww).

| Fishing Year | ABC[1] (landings + discards) | ABC[1] (landings only) | Total ACL (landings only) | Comm ACL (43%) | Rec ACL (57%) | Rec ACT[2] |
|---|---|---|---|---|---|---|
| **2013** | **2,258,000** | **2,133,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2014** | **2,102,000** | **1,992,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2015** | **1,921,000** | **1,814,000** | **1,814,000** | **780,020** | **1,033,980** | **903,905** |
| **2016** | **1,921,000** | **1,814,000** | **1,756,450** | **755,274** | **1,001,177** | **875,228** |

[1] Using values provided by the SSC.

[2] Using 2005-2009 Average PSE = 12.58 from Amendment 18A (SAFMC 2012a).

In addition, it is the South Atlantic Council's intent for **Alternatives 2, 3,** and **4 (Preferred)** that:

1. All black sea bass pots must be removed from the water from November 1 through April 30.
2. Black sea bass pots may not be onboard a vessel in the South Atlantic EEZ from November 1 through April 30.

The Comprehensive ACL Amendment (SAFMC 2011c) established an ABC control rule for assessed snapper grouper species. In accordance with National Standard 1 Guidelines, the control rule takes into account scientific and data uncertainties that may exist when specifying ABC for species managed within the snapper grouper fishery management unit. The ACL selected in **Preferred Alternative 4** is consistent with the ABC control rule and how the South Atlantic Council has specified ACL for other snapper grouper species. The SEDAR 25 Update 2013 indicates the black sea bass stock in the South Atlantic is rebuilt, overfishing is not occurring, and the stock is no longer overfished. **Alternative 4 (Preferred)** would implement an ACL and OY of 1,814,000 lbs ww in 2013, 2014, and 2015. This value is equal to the projection at the 40% P* level for 2015 and is also the ABC recommendation for 2015 resulting from the South Atlantic Council's approved ABC control rule as developed with the SSC. Beginning in 2016, the ACL and OY would be reduced to 1,756,450 lbs ww and would remain in place beyond 2016 until modified. This value is equal to the yield at 75%$F_{MSY}$ when the stock is at equilibrium.

The South Atlantic Council recognized the dire economic condition in the recreational and commercial sectors in the South Atlantic associated with rebuilding the stock, and balanced the desire to give the most fish to fishermen in the short-term with the risk of overfishing. **Alternative 2** is consistent with the approved ABC control rule, maintains the formula ACL = ABC during 2013-2015, would implement the highest ACL of all the alternatives in the short-term, and would result in the greatest short-term socio-economic benefits to fishermen and fishing communities who depend on the black sea bass portion of the snapper grouper fishery. However, **Alternative 2** carries a higher risk of overfishing than **Alternatives 3** and **4 (Preferred)**. In 2013, **Alternative 2** would have an 80% probability of the stock being above the spawning stock biomass at maximum sustainable yield but this would drop to 47% in 2014 and to 43% in 2015. In addition, the separation between the ACL and OFL declines each year from 163,000 lbs ww in 2013, to 82,000 lbs ww in 2014, and to 43,000 lbs ww in 2015. Projection results were not available for **Alternative 3,** but the risk levels, in terms of the probability of the stock being above the spawning stock biomass at maximum sustainable yield, can be estimated at >80% in 2013, and >50% each year thereafter. **Alternative 4 (Preferred)** was developed during the May 13, 2013, Webinar South Atlantic Council meeting and would establish the lowest ACL in the string of ACLs in **Alternative 2** and then switch to the ACL in **Alternative 3** beginning in 2016, with a resulting risk level intermediate between **Alternatives 2** and **3**. The South Atlantic Council recognizes **Preferred Alternative 4** allows for fewer black sea bass to be harvested than **Alternative 2** but concluded the risk of overfishing associated with **Alternative 2** outweighed the short-term economic and social benefits. The South Atlantic Council expects to receive a new stock assessment or new projections prior to 2016 that should include more recent recruitment estimates, which, based on public input, could be higher than the terminal year of the stock assessment update. The South Atlantic Council indicated they would increase the ACL more at that time, if supported by the new stock assessment, but concluded the proposed increase from the current total ACL of 847,000 lbs ww to 1,814,000 lbs ww addresses the economic/social needs without incurring excessive risk of overfishing.

Quota monitoring of the commercial sector has improved considerably in the past year. Assuming the dealer reporting is implemented in 2014, mandatory weekly reporting would be required and the quota monitoring system developed by the Southeast Fisheries Science Center

(SEFSC) would increase the likelihood that commercial landings remain below the commercial sector ACL each year. However, recreational landings have a higher risk of exceeding the recreational ACL. The SEFSC has required weekly electronic reporting for the headboat sector beginning in January 2013, and assuming the headboat reporting amendment is implemented later this year, electronic reporting would become mandatory. Recreational landings from the headboat sector should now be available in a timely manner. The South Atlantic Council considered tracking the recreational ACL using numbers of fish rather than pounds to reduce the delays in obtaining recreational catch data but decided to defer the action to Regulatory Amendment 14 to the Snapper Grouper FMP.

In addition to the ACL changes, the South Atlantic Council proposes to prohibit fishing with black sea bass pot gear from November 1 through April 30 each year. This action would prevent interactions between black sea bass pot gear and whales listed under the Endangered Species Act (ESA) during large whale migrations and right whale calving season off the southeastern coast. Amendment 18A (SAFMC 2012a) implemented a prohibition on possession of black sea bass on a vessel with pot gear and required that all black sea bass pots be removed from the water once the commercial ACL was met or projected to be met, and since 2010, the commercial sector's ACL was harvested prior to November 1.

The South Atlantic Council acknowledges that the commercial ACL might not be harvested prior to the proposed November 1 through April 30 black sea bass pot prohibition and may adversely impact fishermen with endorsements. However, the South Atlantic Council also acknowledges that the November 1 through April 30 seasonal prohibition of the use of black sea bass pot gear may not be needed or may be modified in the future. Regulatory Amendment 14, currently under development, contains actions to both modify the June 1 commercial fishing year start date and the proposed black sea bass pot prohibition. A start date earlier in the calendar year may reduce the likelihood that the season is projected extend past November 1. If this is true, the South Atlantic Council may decide to re-evaluate the need for the prohibition.

In addition, any modification to the prohibition may trigger a reintiation of formal consultation for the snapper grouper fishery under the ESA to evaluate the effects of black sea bass pot gear on ESA listed species. In turn, a reinitiation would require the development of a biological opinion. The biological opinion would prescribe management measures necessary and appropriate to minimize the impacts of incidental take. Some of these measures might support the modification of the annual black sea bass pot prohibition.

The South Atlantic Council concluded **Preferred Alternative 4** best meets the purpose of revising the black sea bass OY, ABC, ACLs, and recreational ACT in the South Atlantic Council's area of authority, addresses the need to ensure the black sea bass ACLs are based upon the best available science and overfishing does not occur, and addresses the need to prevent interactions between black sea bass pot gear and ESA-listed whales during large whale migrations and right whale calving season. Further, the ACL increase in **Preferred Alternative 4** enhances socio-economic benefits to fishermen and fishing communities that utilize the black sea bass resource while ensuring overfishing does not occur. **Preferred Alternative 4** also best meets the objectives of the Snapper Grouper FMP, as amended.

# 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.

Establishing a timeframe for the CEA is important when the past, present, and reasonably foreseeable future actions are discussed. It would be advantageous to go back to a time when there was a natural, or some modified (but ecologically sustainable) condition. However, data collection for many fisheries began when species were already fully exploited. Therefore, the timeframe for analyses should be initiated when data collection began for the various fisheries. In determining how far into the future to analyze cumulative effects, the length of the effects will depend on the species and the alternatives chosen. Long-term evaluation is needed to determine if management measures have the intended effect of improving stock status.

## 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.

### 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.

At their March 2012 meeting, the South Atlantic Council requested development of Regulatory Amendment 13 to the Snapper Grouper FMP to allow for adjustment of allocations and ACLs based on the new landings information from the Marine Recreational Information Program. Regulatory Amendment 13 was approved by the South Atlantic Council at their December 2012 meeting. A proposed rule published in the *Federal Register* on March 21, 2013 (78 Fed. Reg. 17336), and the comment period ended on April 21, 2013.

At their September 2012 meeting, the South Atlantic Council requested development of Regulatory Amendment 15 to the Snapper Grouper FMP to: Adjust the yellowtail snapper ABC and ACL based on results from a recent assessment and remove the provision that the commercial harvest of all shallow water grouper species is prohibited when the gag quota is met. The South Atlantic Council approved Regulatory Amendment 15 at their December 2012. Additionally, at the South Atlantic Council's request while they were developing Regulatory Amendment 15, NMFS implemented an emergency rule under the Magnuson-Stevens Act to increase the commercial sector's ACL based upon the new stock assessment (77 Fed. Reg. 66744, November 7, 2012).

Amendment 18B (SAFMC 2012b) to the Snapper Grouper FMP was approved by the South Atlantic Council at their June 2012 meeting and addressed golden tilefish. The amendment established initial eligibility requirements for a golden tilefish longline endorsement program, allocated golden tilefish quota between gear groups, and specified commercial trip limits for those who did not qualify for the longline endorsement. Amendment 18B was approved by the Secretary of Commerce on January 25, 2013, and the final rule published in the *Federal Register* on April 23, 2013 (78 Fed. Reg. 23858) with an effective date of May 23, 2013.

Amendment 28 to the Snapper Grouper FMP includes a process for specifying the ACL for red snapper each fishing year. The South Atlantic Council approved Amendment 28 for review by the Secretary of Commerce at their December 2012 meeting. The notice of availability for public comment on the amendment was published on March 12, 2013 (78 Fed. Reg. 15672), and the comment period will end on May 13, 2013.

The Joint Dealer Reporting Amendment has been approved for Secretarial Review by the Gulf of Mexico Fishery Management Council and the South Atlantic Council. 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 Generic For-Hire Reporting Amendment would increase the frequency with which headboats must report landings information, and would also require that all headboats report landings data electronically. This amendment would improve the timeliness and accuracy of landings data that is used to monitor recreational harvest sector in-season for the purpose of maintaining catches below the recreational ACLs.

### C. Reasonably Foreseeable Future

Regulatory Amendment 14 contains many actions to modify current management measures for various snapper grouper species such as black sea bass, hogfish, and gray triggerfish. Regulatory Amendment 14 also contains actions to modify the system of AMs currently in place for vermillion snapper, which would help control harvest of the species and promote sustainable harvest levels.

The Joint Commercial Logbook Reporting Amendment would be similar to the Generic For-Hire Reporting Amendments for the Gulf of Mexico and South Atlantic regions. This 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 be similar to the Generic For-Hire Reporting Amendment by requiring 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.

Amendment 30 to the Snapper Grouper FMP currently contains an action to require all vessels with a South Atlantic Unlimited or 225 lbs Snapper Grouper Permit to have a vessel monitoring system onboard.

Amendment 20B to the Snapper Grouper FMP is currently under development. The amendment will include a formal review of the current wreckfish individual transferable quota (ITQ) program, and will update/modify that program according to recommendations gleaned from the review.

At their June 2012 meeting, the South Atlantic 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 South Atlantic 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.

At their September 2012 meeting, the South Atlantic Council requested development of Regulatory Amendment 16 to the Snapper Grouper FMP to adjust management measures for the longline sector of the commercial golden tilefish fishery. A scoping document was reviewed by the South Atlantic Council in March 2013.

At their September 2012 meeting, the South Atlantic Council requested development of Regulatory Amendment 17 to the Snapper Grouper FMP to consider marine protected areas to provide additional protection for speckled hind and warsaw grouper. This action was previously considered in Comprehensive Ecosystem-Based Amendment (CE-BA) 3. The South Atlantic Council will discuss the regulatory amendment in September 2013.

Regulatory Amendment 18 to the Snapper Grouper is being developed by the South Atlantic Council to adjust ACLs for vermilion snapper and red porgy based on the results of recent stock assessment updates. Regulatory Amendment 18 was approved by the South Atlantic Council at their March 2013 meeting.

At their September 2012 meeting, the South Atlantic 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. Amendment 27 was approved by the South Atlantic Council at their March 2013 meeting.

## 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 that 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.

The snapper grouper ecosystem includes many species, which occupy the same habitat at the same time. For example, red snapper co-occur with vermilion snapper, tomtate, scup, red porgy, white grunt, black sea bass, red grouper, scamp, gag, and others. Therefore, black seas bass are likely to be caught and suffer some mortality even though no retention is allowed since they will be incidentally caught when fishermen target other co-occurring species. Other natural events such as spawning seasons and aggregations of fish in spawning condition can make some species especially vulnerable to targeted fishing pressure. Such natural behaviors are discussed in further detail in **Chapter 3** of this document, which is hereby incorporated by reference.

How global climate changes will affect the snapper grouper fishery is unclear. Climate change can impact marine ecosystems through ocean warming by increased thermal stratification, reduced upwelling, sea level rise, increases in wave height and frequency, loss of sea ice, and increased risk of diseases in marine biota. Decreases in surface ocean pH due to absorption of anthropogenic $CO_2$ 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 did not likely to pose a threat to the South Atlantic snapper grouper species.

### 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 19 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 6.1.1.**

**Table 6.1.1.** 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 (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.<br>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 (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 OECA; 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. |
| February 24, 1999 | All S-G without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners. Vessels with longline gear aboard may only possess snowy, Warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish. | |
| Effective October 23, 2006 | Snapper grouper FMP Amendment 13C (SAFMC 2006) | Commercial vermilion snapper quota set at 1.1 million lbs gw; recreational vermilion snapper size limit increased to 12" TL to prevent vermilion snapper overfishing. |
| Effective February 12, 2009 | Snapper grouper FMP Amendment 14 (SAFMC 2007) | Use marine protected areas (MPAs) as a management tool to promote the optimum size, age, and genetic structure of slow growing, long-lived |

| Time period/dates | Cause | Observed and/or Expected Effects |
|---|---|---|
| | | deepwater 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 | 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. | 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 | 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 31, 2011 | 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 July 15, 2011 | Regulatory Amendment 9 (SAFMC 2011a) | Harvest management measures for black sea bass; commercial trip limits for gag, vermilion and greater amberjack. |
| Effective Date April 16, 2012 | 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 1, 2012 | Amendment 18A (SAFMC 2012a) | Established an endorsement program for black sea bass commercial fishery; 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 |
|---|---|---|
| Target 2013 | Amendment 18B (SAFMC 2012b) | Establish endorsement program for golden tilefish commercial longline sector; allocate 75% of commercial ACL to longline sector and 25% to hook-and-line sector; eliminate 300 lb gw trip limit when 75% of commercial ACL is met; and establish a 500 lb gw trip limit for snapper grouper commercial permit holders who do not qualify for a longline endorsement. |
| Target 2013 | Snapper Grouper Amendment 27 (Approved by South Atlantic Council) | Establish the SAFMC as the managing entity for Nassau grouper in the Southeast U.S.; modify the SG framework; modify management measures for blue runner; reevaluate captain and crew possession prohibition for vermilion snapper, groupers, and tilefish; and increase crew size limit for dual-permitted vessels. |
| Target 2014 | Snapper Grouper Amendment 29 (under development) | Update ABCs, ACLs, and ACTs for snapper grouper species based on recommendations from SSC. |
| Target 2013 | Regulatory Amendment 18 (Approved by South Atlantic Council) | Adjust ACLs and management measure for vermilion snapper and red porgy based on results from new update assessment. |
| Target 2013 | Regulatory Amendment 13 (Approved by South Atlantic Council) | Adjust ACLs and allocations for unassessed snapper grouper species with MRIP recreational estimates. |
| Target 2013 | Generic For-Hire Reporting Amendment | Require all federally-permitted headboats in the South Atlantic to report landings information electronically and on a weekly basis. |
| Target 2013 | Snapper Grouper Amendment 28 (Approved by South Atlantic Council) | Modify red snapper management measures, including the establishment of a process to determine future annual catch limits and fishing seasons. |
| Target 2013 | Amendment 30 | VMS for commercial sector of snapper grouper fishery. |
| Target 2013 | Joint For-Hire Headboat Amendment for the South Atlantic (Approved by South Atlantic Council) | Require headboats report landings through electronic means every week. |
| Target 2014 | Joint Commercial Logbook Reporting Amendment | Require all federally-permitted commercial fin fish fishermen in the southeast to report electronically. |
| 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.

The proposed management action, as summarized in **Chapter 2** of this document, would increase the black sea bass ACLs and implement a closure to the black sea bass pot fishery. Detailed discussions of the magnitude and significance of the impacts of the preferred alternatives on the human environment appear in **Chapter 4** of this document. None of the impacts have been determined to be significant.

## 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, there are programs that monitor the large whales in the Southeast that could opportunistically capture information on a large whale entanglement in black sea bass pot gear. 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). However, these programs could, in theory, detect a large whale entanglement in black sea bass pot gear.

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 Cumulative Impacts

The decision to increase the annual catch limit for black sea bass in South Atlantic waters is likely to have primarily positive social and economic effects, as the early closures in recent years have been highly controversial. A streamlined management action to update the black sea bass ACL based on the assessment update results and ABC recommendations from the SSC is always more acceptable to stakeholders and would likely be seen as responsive to stakeholder concerns. The increased ACL is expected to lengthen the commercial and recreational seasons for black sea bass. It would be expected that commercial and recreational fishermen may be able to keep more black sea bass that might be discarded otherwise, and increased commerce for for-hire fishers and associated businesses would be expected to improve. An increase in the ACL for black sea bass, which is currently one of the most economically and socially important species, can provide opportunities for commercial and recreational fishermen if access to another target species becomes limited through regulatory or environmental changes.

Some negative social and economic effects could result from the proposed changes in the black sea bass ACL. If the ACL is increased but derby fishing continues (which shortens the season and contributes to an increase in regulatory discards), then the perceived social benefits would not accrue and could be negative in contrast. An increase in the ACL of this popular fish may also result in an effort shift from other fisheries and this could reduce the likelihood of the expected lengthened seasons by continuing the derby conditions.

Additionally, a longer commercial season for black sea bass will coincide with right whale calving season. This is significant for the black sea bass pot fishery, which would close down under the proposed period of November 1- April 30. If the commercial ACL is not met before November 1 (as expected under projections), the pot sector of the commercial black sea bass fishery would forfeit some of the economic benefits of the extended season. In addition, the black sea bass pot sector is already limited by the endorsement program (32 permits), a limit on pots used per vessel (35), and a requirement to bring pots in after each trip, which are regulations established in Amendment 18A (SAFMC 2012a). One purpose of these management measures for the pot fishery was to contribute to protection of right whales migrating through the area, and were put in place in addition to existing gear requirements under the Atlantic Large Whale Take Reduction Plan that also apply to the black sea bass pot fishery. The additional seasonal closure may have negative impacts on the pot fishermen. Contrastingly, the hook and line portion of the commercial sector would benefit from reduced competition from the pot fishermen if the commercial ACL is not met before the harvest with pots is closed.

# Chapter 7. List of Preparers

**Table 7.1.1.** List of Regulatory Amendment 19 preparers.

| Name | Agency/Division | Area of Amendment Responsibility |
|---|---|---|
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| Brian Cheuvront | SAFMC | Economist |
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NMFS = National Marine Fisheries Service, SAFMC = South Atlantic Fishery Management Council, SF = Sustainable Fisheries Division, PR = Protected Resources Division, SERO = Southeast Regional Office, HC = Habitat Conservation Division, GC = General Counsel, Eco=Economics

**Table 7.1.2.** List of Regulatory Amendment 19 interdisciplinary plan team members.

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| Name | Organization | Title |
|---|---|---|
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| Rick DeVictor | NMFS/SF | Fishery Biologist |
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| Tony Lamberte | NMFS/SF | Economist |

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. Agencies and Persons Consulted

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List of Agencies, Organizations, and Persons Consulted

SAFMC Law Enforcement Advisory Panel
SAFMC Snapper Grouper Advisory Panel
SAFMC Scientific and Statistical Committee
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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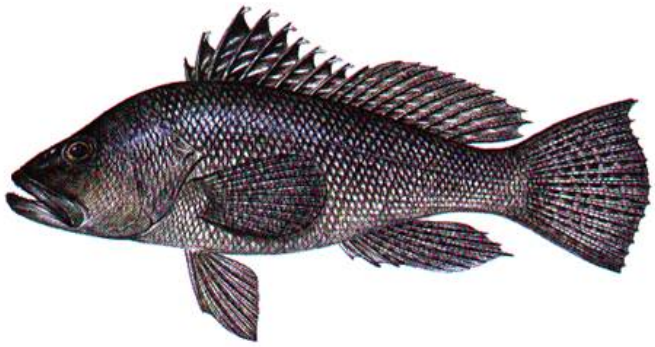
# Stock Assessment of Black Sea Bass off the Southeastern United States

## SEDAR Update Assessment



Southeast Fisheries Science Center

National Marine Fisheries Service

Report issued: March 2013

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# 1 Executive Summary

This update assessment evaluated the stock of black sea bass *Centropristis striata* off the southeastern United States[1]. The primary objectives of this assessment were to update the 2011 SEDAR-25 benchmark assessment of black sea bass including stock projections. Data compilation and assessment methods were guided by methods used in SEDAR-25. The benchmark assessment included data through 2010, updated here through 2012. Details about data updates are provided in Section 2.2. The only change made to the model is described in Section 3.3. This assessment was conducted by the Southeast Fisheries Science Center in cooperation with regional data providers.

Available data on this stock included indices of abundance, landings, discards, and samples of annual length and age compositions from fishery dependent and fishery independent sources. Five indices of abundance were fitted by the model: one from the Southeast Region Headboat Survey (SRHS), one from headboat discards, one from commercial logbooks (handline), and two fishery-independent indices from MARMAP/SEFIS data. Landings and discard data were available from five fleets: commercial lines (primarily handlines), commercial pots, commercial trawls, recreational headboats, and general recreational boats.

The primary model used in SEDAR-25—and updated here—was the Beaufort Assessment Model (BAM), a statistical catch-age formulation. A base run of BAM was configured to provide estimates of key management quantities, such as stock and fishery status. Uncertainty in estimates from the base run was evaluated through a mixed Monte Carlo/Bootstrap (MCB) procedure.

Results suggest that spawning stock has decreased and rebounded throughout the full assessment period (1978–2012). The terminal (2012) estimate of spawning stock is one of the highest values of the time series, above $\mathrm{SSB_{MSY}}$ ($\mathrm{SSB_{2012}/SSB_{MSY}}$ =1.03), and well above $\mathrm{MSST}$ ($\mathrm{SSB_{2012}/MSST}$ =1.66), using the Council's definition of $\mathrm{MSST}$ as $(1-M)\mathrm{SSB_{MSY}}$. The estimated fishing rate has exceeded the $\mathrm{MFMT}$ (represented by $F_{\mathrm{MSY}}$) throughout the time series, but has recently dropped below $F_{\mathrm{MSY}}$. The terminal estimate is well below $F_{\mathrm{MSY}}$ ($F_{2011--2012}/F_{\mathrm{MSY}} = 0.659$). Thus, point estimates from this update assessment indicate that the stock has recovered and is not experiencing overfishing.

These status indicators may be in qualitative agreement with management goals, but should be interpreted with two notes of caution. First, the MCB analysis indicated much uncertainty in the estimate of stock status. Second, the increasing trend for biomass is dependent on high recent recruitment estimates which take a downturn in the last two years of the assessment, and is not well supported by the age composition data.

The status of this update assessment differs from the SEDAR-25 benchmark mostly due to the decrease in $F$ caused by regulations and the increasing trend in both the MARMAP/SEFIS chevron trap index and headboat discard index in recent years.

[1] Abbreviations and acronyms used in this report are defined in Appendix A

# 2 Data Review and Update

In the SEDAR-25 benchmark assessment, the assessment period was 1978–2010. In this update, the terminal year was extended to 2012. For most data sources, the data were simply updated with the additional two years, using the same methods as in the benchmark assessment (SEDAR 2011). However, for some sources, it was necessary to update data prior to 2010 as well. There were also instances, due to regulation or data availability, that the data were unavailable or not updated. The input data for this assessment are described below, with focus on the data that were omitted or those that required modification beyond just the addition of years.

## 2.1 Data Review

In this update assessment, the Beaufort assessment model (BAM) was fitted to the same data sources as in SEDAR-25.

- Landings: Commercial handline; Commercial trawl, Commercial pots, Headboat, General recreational
- Discards: Commercial (handline and pots), Headboat, General recreational
- Indices of abundance: MARMAP blackfish/snapper trap, MARMAP/SEFIS chevron trap, Commercial handline, Headboat, Headboat at-sea discards, General recreational
- Length compositions of surveys or landings: MARMAP blackfish/snapper trap, Commercial handline, Commercial pots, Headboat, General recreational
- Length compositions of discards: Headboat
- Age compositions of surveys or landings: MARMAP blackfish/snapper trap, MARMAP/SEFIS chevron trap, Commercial handline, Commercial pots, Headboat, General recreational

In addition to data fitted by the model, SEDAR-25 utilized life-history information that was treated as input. Such inputs remained the same for this assessment, including natural mortality, fecundity at age, female maturity at age, sex ratio by age, and somatic growth. Discard mortality rates were also unchanged for this assessment.

## 2.2 Data Update

In several cases, SEDAR-25 data did not require updating. For example, landings from commercial trawl (1978–1990) were unchanged. MARMAP blackfish/snapper data (1981–1987) were also unchanged.

In most cases where updates were warranted, data were updated simply by adding the two additional years (2011–2012) at the end of the time series. The exceptions are described below in more detail.

The landings and discards from the general recreational fleet were estimated in SEDAR-25 using MRFSS. Here, estimates from MRIP were available for 2004–2011. Thus, for this assessment, estimates from MRIP were used for 2004–2011 and MRFSS values prior to 2004 were adjusted using the MRIP calibration factor. A geometric mean of the MRIP values from 2009–2011 was used for 2012 because 2012 data were not available in time for this assessment.

The MARMAP/SEFIS chevron trap index of abundance was updated with data through the terminal year (2012) using methods of computation that were the same as in SEDAR-25. The headboat at-sea discard index was updated through 2011 as the data for 2012 for discards were unavailable. Because annual values of these indices are model-based (e.g., from delta-GLMs), years prior to 2010 were updated as well as any additional years.

The other fishery-dependent indices were considered in light of new management measures effected since the last assessment. In February of 2011, the recreational season was closed until June, 2011, and then closed again in October. In 2012, the recreational fishery was closed until June and the bag limit was reduced from 15 fish to five fish per day in 2011. The change in closures and the bag limit in the last two years of the update clearly affects catch per effort, and it likely invalidates catch per effort as a meaningful index of abundance. Thus, the headboat index was not updated with the SEDAR–25 methodology. Similarly, the commercial fishery has become subject to new regulations. The commercial fisheries were closed in July of 2011 until June of 2012, and then again from October, 2012 until the fishing season starts in 2013. In addition, a commercial trip limit of 1000 lb gutted weighted was implemented for the 2012/2013 fishing year. These new regulations make CPUE from fishery-dependent sources a questionable measure of relative abundance, and thus the commercial handline index of abundance was not updated. The fishery-independent data from MARMAP/SEFIS are not subject to fishery regulations; therefore the MARMAP/SEFIS chevron trap index extends to the terminal year of 2012.

The following is a summarization of the data differences between this update and the SEDAR–25 benchmark.

- The requested data deadline for this update was January 11, 2013 for data through 2012, but ultimately data were not provided completely until January 24, 2013. Also, the early deadline caused several data sources to be either unavailable or incomplete.
- Landings: MRIP landings are used for 2004-2011, and the geometric mean of 2009-2011 was used as an approximation for 2012 recreational landings. The 2012 MRIP estimates were not available by the data deadline for this update. Other commercial fishery landings, with the exception of the trawl fleet, were updated through 2012. Headboat landings were updated through 2011 and the geometric mean of 2009-2011 was used as an estimate for 2012 data. Again, 2012 data were too preliminary to be used as provided.
- Discards: Commercial handline and pot discards for both open and closed seasons were updated through 2012. Headboat and recreational discards were update through 2011, but the geometric mean of 2009-2011 had to be used in place of 2012 data. The estimates for commercial discards are model-based, but only the last two years of the new estimates were used. The stricter regulations in more recent years resulted in back-predicted rates of discarding to be higher throughout the time series, and that is not likely to be accurate for earlier years.
- Indices of abundance: The MARMAP/SEFIS chevron trap index was updated through 2012, but it was the only index to be complete through the terminal year of the assessment. The MARMAP data were combined with SEFIS data beginning in 2010 for the analysis. Because of changing regulations in the last two years of the update, the commercial handline and headboat indices were not updated. The headboat at-sea discards index was updated through 2011; 2012 data were not yet available.
- Size/age compositions of surveys or landings: MARMAP/SEFIS chevron trap age compositions were both updated through 2012 and corrected for previous years. More than 4000 ages were omitted from the previous assessment due to query errors that have been subsequently corrected. Headboat age compositions were updated and some data for 2010 were also added due to the query errors in the previous assessment. Commercial handline, commercial pots, and general recreational composition data were updated through the terminal year of the assessment. All of the updated composition data are subject to the same minimum sample size used in SEDAR–25 (n=30 trips).
- The iterative reweighting method used in SEDAR–25 was applied and resulted in slightly different weights. The same 2.5 scalar was applied to the 4 most correlated indices, which is consistent with SEDAR–25.

Data available for this update assessment are summarized in Tables 1–4.

# 3 Stock Assessment Methods

This assessment updates the primary model applied during SEDAR-25 to South Atlantic black sea bass. The methods are reviewed below, and any changes since SEDAR-25 are flagged.

## 3.1 Overview

The primary model in this assessment was the Beaufort assessment model (BAM), which applies a statistical catch-age formulation. The model was implemented with the AD Model Builder software (Fournier et al. 2012). In essence, the model simulates a population forward in time while including fishing processes (Quinn and Deriso 1999; Shertzer et al. 2008*a*). Quantities to be estimated are systematically varied until characteristics of the simulated populations match available data on the real population. Statistical catch-age models share many attributes with ADAPT-style tuned and untuned VPAs.

The method of forward projection has a long history in fishery models. It was introduced by Pella and Tomlinson (1969) for fitting production models and then, among many applications, used by Fournier and Archibald (1982), by Deriso et al. (1985) in their CAGEAN model, and by Methot (1989; 2009) in his Stock Synthesis model. The catch-age model of this assessment is similar in structure to the CAGEAN and Stock Synthesis models. Versions of this assessment model have been used in previous SEDAR assessments of reef fishes and coastal pelagics in the U.S. South Atlantic, such as red porgy, black sea bass, tilefish, snowy grouper, cobia, gag grouper, greater amberjack, Spanish mackerel, red grouper, and red snapper, as well as in previous SEDAR assessments of black sea bass (SEDAR 2011).

## 3.2 Data Sources

The catch-age model included data from fishery independent surveys and from five fleets that caught black sea bass in southeast U.S. waters: commercial lines (primarily handlines), commercial pots, commercial trawls, recreational headboats, and general recreational boats. The model was fitted to data on annual landings (in units of 1000 lb whole weight), annual discard mortalities (in units of 1000 fish), annual length compositions of landings, annual age compositions of landings, annual length compositions of discards, two fishery independent indices of abundance (MARMAP blackfish/snapper traps and chevron traps), and three fishery dependent indices (commercial lines, headboat, and headboat discards). Not all of the above data sources were available for all fleets in all years.

The general recreational fleet has been sampled since 1981 by the MRFSS. Unlike in SEDAR-25, the more recent (2004–2012) general recreational estimates are from MRIP. Starting with the headboat survey in 1978, headboat landings were separated from the general recreational fleet.

## 3.3 Model Configuration and Equations

Model structure and equations of the BAM are detailed in SEDAR25-RW03, along with AD Model Builder code for implementation. The assessment time period was 1978–2012. A general description of the assessment model follows.

**Stock dynamics** In the assessment model, new biomass was acquired through growth and recruitment, while abundance of existing cohorts experienced exponential decay from fishing and natural mortality. The population was assumed closed to immigration and emigration. The model included age classes $0 - 11^+$, where the oldest age class $11^+$ allowed for the accumulation of fish (i.e., plus group).

**Initialization** Initial (1978) abundance at age was estimated in the model as follows. First, the equilibrium age structure was computed for ages 1–11 based on natural and fishing mortality ($F$), where $F$ was set equal to the geometric mean fishing mortality from the first three assessment years (1978-1980) scaled by an estimated multiplier (called $F_{\mathrm{init.ratio}}$). Second, lognormal deviations around that equilibrium age structure were estimated. The deviations were lightly penalized, such that the initial abundance of each age could vary from equilibrium if suggested by early composition data, but remain estimable if data were uninformative. Given the initial abundance of ages 1–11, initial (1978) abundance of age-0 fish was computed using the same methods as for recruits in other years (described below).

**Natural mortality rate** The natural mortality rate ($M$) was assumed constant over time, but decreasing with age. The form of $M$ as a function of age was based on Lorenzen (1996). The Lorenzen (1996) approach inversely relates the natural mortality at age to mean weight at age $\mathrm{W}_a$ by the power function $\mathrm{M}_a{=}\alpha W_a^{\beta}$, where $\alpha$ is a scale parameter and $\beta$ is a shape parameter. Lorenzen (1996) provided point estimates of $\alpha$ and $\beta$ for oceanic fishes, which were used for this assessment. As in previous SEDAR assessments, the Lorenzen estimates of $M_a$ were rescaled to provide the same fraction of fish surviving from age-1 through the oldest observed age (11 yr) as would occur with constant $M = 0.38$ from the SEDAR–25 DW. This approach using cumulative mortality allows that fraction at the oldest age to be consistent with the findings of Hoenig (1983) and Hewitt and Hoenig (2005).

**Growth** Mean size at age of the population (total length, TL) was modeled with the von Bertalanffy equation, and weight at age (whole weight, WW) was modeled as a function of total length (Figure 1). Parameters of growth and conversions (TL-WW) were estimated by the DW and were treated as input to the assessment model. The von Bertalanffy parameter estimates from the DW were $L_\infty = 495.9$, $K = 0.177$, and $t_0 = -0.92$. For fitting length composition data, the distribution of size at age was assumed normal with coefficient of variation (CV) estimated by the assessment model. A constant CV, rather than constant standard deviation, was suggested by the size at age data.

**Sex transition** Black sea bass is a protogynous hermaphrodite. Proportion female at age was modeled with a logistic function, estimated by the SEDAR–25 DW. The age at 50% transition to male was estimated to be 3.83 years.

**Female maturity and fecundity** Female maturity was modeled with a logistic function; the age at 50% female maturity was estimated to be $\sim 1$ year. Annual egg production by mature females was computed as eggs spawned per batch, a function of body weight, multiplied by the number of batches per year. Maturity and fecundity parameters were provided by the SEDAR–25 DW and treated as input to the assessment model.

**Spawning stock** Spawning stock was modeled as population fecundity of mature females (i.e., total annual egg production) measured at the time of peak spawning. For black sea bass, peak spawning was considered to occur at the end of March.

**Recruitment** Expected recruitment of age-0 fish was predicted from spawning stock using the Beverton–Holt spawner-recruit model. Annual variation in recruitment was assumed to occur with lognormal deviations.

**Landings** The model included time series of landings from five fleets: commercial lines, commercial pots, commercial trawls, headboat, and general recreational. The commercial trawl time series was extended through 1990 (trawling was banned in January, 1989 within federal waters of the SAFMC's jurisdiction).

Landings were modeled with the Baranov catch equation (Baranov 1918) and were fitted in units of weight (1000 lb whole weight). Observed landings were provided back to the first assessment year (1978) for each fleet except general recreational, because the MRFSS started in 1981. Thus for years 1978–1980, general recreational landings were predicted in the assessment model (but not fitted to data), by applying the geometric mean recreational $F$ from the years 1981–1983.

**Discards** As with landings, discard mortalities (in units of 1000 fish) were modeled with the Baranov catch equation (Baranov 1918), which required estimates of discard selectivities and release mortality probabilities. Discards were assumed to have gear-specific mortality probabilities, as suggested by the DW for SEDAR–25 (lines, 0.07; pots with 1.5-inch panels, 0.05; and pots with 2-inch panels, 0.01). Annual discard mortalities, as fitted by the model, were computed by multiplying total discards by the gear-specific release mortality probability.

For the commercial fleets, discards from handline and pot gears were combined, and were modeled starting in 1984 with implementation of the 8-inch size limit. Commercial discards prior to 1984 were considered negligible and not modeled. Data on commercial discards were available starting in 1993. Thus for years 1984–1992, commercial discards were predicted in the assessment model (but not fitted to data), by applying the geometric mean commercial discard $F$ from the years 1993–1998 (the 10-inch limit began in 1999).

For headboat and general recreational fleets, discard time series were assumed to begin in 1978, as observations from MRFSS indicated the occurrence of recreational discards prior to implementation of the 8-inch size limit. Headboat discard estimates were separated from MRFSS beginning in 1986, and were combined for 1978–1985. Because MRFSS began in 1981, the 1978–1980 general recreational (plus headboat) discards were predicted in the assessment model (but not fitted to data), by applying the geometric mean recreational discard $F$ from the years 1981–1983.

For fishery discard length composition data collected under a size limit regulation, the normal distribution of size at age was truncated at the size limit, such that length compositions of discards would include only fish of sublegal size. Mean length at age of discards were computed from these truncated distributions, and thus average weight at age of discards would differ from those in the population at large. Commercial discards in 2009–2012 included a portion of fish that were of legal size as a result of the closed seasons in each year.

**Fishing** For each time series of landings and discard mortalities, the assessment model estimated a separate full fishing mortality rate ($F$). Age-specific rates were then computed as the product of full $F$ and selectivity at age. Apical $F$ was computed as the maximum of $F$ at age summed across fleets.

**Selectivities** Selectivity curves applied to landings and MARMAP/SEFIS survey gears were estimated using a parametric approach. This approach applies plausible structure on the shape of the selectivity curves, and achieves greater parsimony than occurs with unique parameters for each age. Selectivities of landings from all fleets were modeled as flat-topped, using a two-parameter logistic function, as were selectivities of MARMAP/SEFIS (fishery independent) trap gears. Although selectivities of trap gear are often considered dome-shaped, the AW of SEDAR–25 believed them to be flat-topped for this stock, because 1) the traps are physically able to catch the largest (oldest) fish, 2) analysis of age-depth data suggested no strong relationship for the ages that would be represented by the descending limb of a dome-shaped curve (thus, older fish are available to the gear), and 3) catch curve analysis did not generally indicate higher Z estimates for trap gears than for handline gears. Selectivities of fishery dependent indices were the same as those of the relevant fleet.

Selectivity of each fleet was fixed within each block of size-limit regulations, but was permitted to vary among blocks where possible or reasonable. Commercial fisheries experienced three blocks of size-limit regulations: no limit prior to 1983, 8-inch limit during 1983–1999, and 10-inch limit during 1999–2012. An 11-inch size limit was in place for the 2012/2013 fishing year, but according to the black sea bass growth curve, there was not a full year's age difference between 10- and 11-inch fish. Therefore, the 10-inch size limit was carried through the calculations for this update. Recreational fisheries experience four blocks of size-limit regulations, which were the same as those of the commercial fisheries but with a 12-inch size limit implemented in 2007. A 13-inch size limit went into effect in 2012, and similar to the commercial size limit change, there is not a discernable difference in age for the new size limit. Therefore, the 12-inch size limit calculations were maintained for this update assessment.

Age and length composition data are critical for estimating selectivity parameters, and ideally, a model would have sufficient composition data from each fleet over time to estimate distinct selectivities in each period of regulations. That was not the case here, and thus additional assumptions were applied to define selectivities, as follows. Because no age and very few length composition data were available from commercial trawls, selectivity of this fleet was assumed equal to that of the commercial pots. With no composition data from commercial fleets prior to regulations, commercial line selectivities in the first and second regulatory blocks were set equal, as were commercial pot selectivities, consistent with the DW recommendation that the 8-inch size limit had little effect on commercial fishing. Length composition data from MRFSS were quite noisy, and thus selectivities of recreational headboat and general recreational fleets were set equal.

Selectivities of commercial discards were assumed to be dome-shaped. They were partially estimated, assuming that discards consisted primarily of undersized fish, as implied by observed length compositions of discards. The general approach taken was that age-specific values for ages 0–2 were estimated, age 3 was assumed to have full selection, and selectivity for each age $4^+$ was set equal to the age-specific probability of being below the size limit, given the estimated normal distribution of size at age. In this way, the descending limb of discard selectivities would change with modification in the size limit. The exception to the above approach was in years 2009–2012, when a commercial quota was in place. For those years, commercial discard selectivity included fish larger than the size limit that would have been released during the closed season. The commercial discard selectivity for these years was computed as the combined selectivities of sublegal-sized fish and landed fish from commercial lines and pots, weighted by the geometric mean (2009-2012) of fleet-specific observed discards or landings.

Similarly, selectivities of recreational discards were assumed to be dome-shaped. They were partially estimated, assuming that discards consisted primarily of undersized fish, as implied by observed length compositions of discards. The general approach taken was that age-specific values for ages 0–2 were estimated, age 3 was assumed to have full selection, and selectivity for each age $4^+$ was set equal to the age-specific probability of being below the size limit, given the estimated normal distribution of size at age. In this way, the descending limb of discard selectivities would change with modification in the size limit. The exception to the above approach was in years 2011–2012, when there were closed seasons. For those years, recreational discard selectivity included fish larger than the size limit that would have been released during the closed season. The discard selectivity for these years was computed as the combined selectivities of sublegal-sized fish and legal-sized fish from the recreational fisheries, weighted by the fraction of years 2011–2012 that each selectivity was relevant. This accounts for undersized fish being released in both closed and open seasons, but legal-sized fish being released only during closed seasons.

**Indices of abundance** The model was fit to two fishery-independent indices of relative abundance (MARMAP blackfish/snapper traps 1981–1987; and MARMAP/SEFIS chevron traps 1990–2012) and three fishery-dependent indices (headboat 1979–2010; headboat discards 2005–2011; and commercial lines 1993–2010). Predicted indices were conditional on selectivity of the corresponding fleet or survey and were computed from abundance or biomass (as appropriate) at the midpoint of the year. The headboat discard index, although relatively short in duration, tracks young fish and was included as a measure of recruitment strength at the end of the assessment period. All indices were positively correlated, and in most cases, significantly.

**Catchability** In the BAM, catchability scales indices of relative abundance to estimated population abundance at large. Several options for time-varying catchability were implemented in the BAM following recommendations of the 2009 SEDAR procedural workshop on catchability (SEDAR Procedural Guidance 2009). In particular, the BAM allows for density dependence, linear trends, and random walk, as well as time-invariant catchability. Parameters for these models could be estimated or fixed based on *a priori* considerations. For the base model in SEDAR–25, the AW assumed time-invariant catchability, following SEDAR-02. For this update, the time-invariant catchability was also assumed.

**Biological reference points** Biological reference points (benchmarks) were calculated based on maximum sustainable yield ($\mathrm{MSY}$) estimates from the Beverton–Holt spawner-recruit model with bias correction (expected values in arithmetic space). Computed benchmarks included $\mathrm{MSY}$, fishing mortality rate at $\mathrm{MSY}$ ($F_{\mathrm{MSY}}$), and spawning stock at $\mathrm{MSY}$ ($\mathrm{SSB}_{\mathrm{MSY}}$). In this assessment, spawning stock measures population fecundity of mature females. These benchmarks are conditional on the estimated selectivity functions and the relative contributions of each fleet's fishing mortality. The selectivity pattern used here was the effort-weighted selectivities at age, with effort from each fishery (including discard mortalities) estimated as the full $F$ averaged over the last two years of the assessment. The last two years (SEDAR custom), was applied because of the implementation of commercial seasonal closures.

**Fitting criterion** The fitting criterion was a penalized likelihood approach in which observed landings and discards were fit closely, and observed composition data and abundance indices were fit to the degree that they were compatible. Landings,

discards, and index data were fitted using lognormal likelihoods. Length and age composition data were fitted using multinomial likelihoods.

The model includes the capability for each component of the likelihood to be weighted by user-supplied values (for instance, to give more influence to stronger data sources). For data components, these weights were applied by either adjusting CVs (lognormal components) or adjusting effective sample sizes (multinomial components). In this application to black sea bass, CVs of landings and discards (in arithmetic space) were assumed equal to 0.05 to achieve a close fit to these data while allowing some imprecision. In practice, the small CVs are a matter of computational convenience, as they help achieve the desired result of close fits to the landings, while avoiding having to solve the Baranov equation iteratively (which is complex when there are multiple fisheries). Weights on other data components (indices, age/length compositions) were adjusted iteratively, starting from initial weights as follows. The CVs of indices were set equal to one as was done in SEDAR–25. Effective sample sizes of the multinomial components were assumed equal to the number of trips sampled annually, rather than the number of fish measured, reflecting the belief that the basic sampling unit occurs at the level of trip. These initial weights were then adjusted until standard deviations of normalized residuals (SDNRs) were near 1.0 (SEDAR24-RW03, SEDAR25-RW05). Weights on four indices (all but the headboat discard index) were then adjusted upward to a value of 2.5, consistent with SEDAR–25(SEDAR25-RW05), in accordance with the principle that abundance data should be given primacy (Francis 2011).

In addition, a lognormal likelihood was applied to the spawner-recruit relationship. The compound objective function also included several penalties or prior distributions, applied to CV of growth (based on the empirical estimate), $F_{\mathrm{init.ratio}}$ (prior of 1.0), selectivity parameters, and spawner-recruit parameters [recruitment standard deviation based on Beddington and Cooke (1983) and Mertz and Myers (1996)]. Penalties or priors were applied to maintain parameter estimates near reasonable values, and to prevent the optimization routine from drifting into parameter space with negligible gradient in the likelihood.

**Configuration of base run** The base run was configured as described above with data provided by the same data providers for the SEDAR–25 DW. Consistent with SEDAR–25, this configuration was not considered to represent all uncertainty. A Monte Carlo bootstrap analysis was conducted to better characterize the uncertainty in the point estimates provided by the base model.

**Sensitivity analyses** SEDAR-25 included many sensitivity runs, and none were recommended in particular for further investigation. The model behavior is known from SEDAR–25, and the uncertainty in the model is represented in the MCB analysis rather than any sensitivity analyses.

### 3.4 Parameters Estimated

3.4.0.1 **Parameters Estimated** The model estimated annual fishing mortality rates of each fishery, selectivity parameters, catchability coefficients associated with indices, parameters of the spawner-recruit model, annual recruitment deviations, and CV of size at age. Estimated parameters are described mathematically in the document, SEDAR-25-Update 25-RW03.

### 3.5 Benchmark/Reference Point Methods

In this assessment of black sea bass, the quantities $F_{\mathrm{MSY}}$, $\mathrm{SSB}_{\mathrm{MSY}}$, $B_{\mathrm{MSY}}$, and $\mathrm{MSY}$ were estimated by the method of Shepherd (1982). In that method, the point of maximum yield is identified from the spawner-recruit curve and parameters describing growth, natural mortality, maturity, and selectivity. The value of $F_{\mathrm{MSY}}$ is the $F$ that maximizes equilibrium landings.

On average, expected recruitment is higher than that estimated directly from the spawner-recruit curve, because of lognormal deviation in recruitment. Thus, in this assessment, the method of benchmark estimation accounted for lognormal deviation by including a bias correction in equilibrium recruitment. The bias correction ($\varsigma$) was computed from the variance ($\sigma_R^2$) of recruitment deviation in log space: $\varsigma = \exp(\sigma_R^2/2)$. Then, equilibrium recruitment ($R_{eq}$) associated with any $F$ is,

$$R_{eq} = \frac{R_0\left[\varsigma 0.8h\Phi_F - 0.2(1-h)\right]}{(h-0.2)\Phi_F} \tag{1}$$

where $R_0$ is virgin recruitment, $h$ is steepness, and $\Phi_F = \phi_F/\phi_0$ is spawning potential ratio given growth, maturity, and total mortality at age (including natural, fishing, and discard mortality rates). The $R_{eq}$ and mortality schedule imply an equilibrium age structure and an average sustainable yield (ASY). The estimate of $F_{\mathrm{MSY}}$ is the $F$ giving the highest ASY (excluding discards), and the estimate of $\mathrm{MSY}$ is that ASY. The estimate of $\mathrm{SSB}_{\mathrm{MSY}}$ follows from the corresponding equilibrium age structure, as does the estimate of discard mortalities ($D_{\mathrm{MSY}}$), here separated from ASY (and consequently, $\mathrm{MSY}$).

Estimates of $\mathrm{MSY}$ and related benchmarks are conditional on selectivity pattern. The selectivity pattern used here was an average of terminal-year selectivities from each fleet, where each fleet-specific selectivity was weighted in proportion to its corresponding estimate of $F$ averaged over the last two years (2011–2012). If the selectivities or relative fishing mortalities among fleets were to change, so would the estimates of $\mathrm{MSY}$ and related benchmarks.

The maximum fishing mortality threshold ($\mathrm{MFMT}$) is defined by the SAFMC as $F_{\mathrm{MSY}}$, and the minimum stock size threshold ($\mathrm{MSST}$) as $\mathrm{MSST} = (1-M)\mathrm{SSB}_{\mathrm{MSY}}$ (Restrepo et al. 1998), with constant M here equated to 0.38. Overfishing is defined as $F > \mathrm{MFMT}$ and overfished as $\mathrm{SSB} < \mathrm{MSST}$. However, because this stock of black sea bass has already been declared overfished and is now under a rebuilding plan, this report focuses more on the ratio $\mathrm{SSB}$:$\mathrm{SSB}_{\mathrm{MSY}}$ than on $\mathrm{SSB}$:$\mathrm{MSST}$, because reaching $\mathrm{SSB}_{\mathrm{MSY}}$ is the criterion for rebuilding. Current status of the stock is represented by $\mathrm{SSB}$ in the latest assessment year (2012), and current status of the fishery is represented by the geometric mean of $F$ from the latest two years (2011–2012).

In addition to the MSY-related benchmarks, the assessment considered proxies based on per recruit analyses (e.g., $F_{40\%}$). The values of $F_{X\%}$ are defined as those $F$s corresponding to X% spawning potential ratio, i.e., spawners (population fecundity) per recruit relative to that at the unfished level. These quantities may serve as proxies for $F_{\mathrm{MSY}}$, if the spawner-recruit relationship cannot be estimated reliably. Mace (1994) recommended $F_{40\%}$ as a proxy; however, later studies have found that $F_{40\%}$ is too high of a fishing rate across many life-history strategies (Williams and Shertzer 2003; Brooks et al. 2009) and can lead to undesirably low levels of biomass and recruitment (Clark 2002).

### 3.6 Uncertainty and Measures of Precision

For the base run of the catch-age model (BAM), uncertainty in results and precision of estimates was computed more thoroughly through a mixed Monte Carlo and bootstrap (MCB) approach. Monte Carlo and bootstrap methods (Efron and Tibshirani 1993; Manly 1997) are often used to characterize uncertainty in ecological studies, and the mixed approach has been applied successfully in stock assessment (Restrepo et al. 1992; Legault et al. 2001; SEDAR 2004; 2009; 2010). The approach is among those recommended for use in SEDAR assessments (SEDAR Procedural Guidance 2010).

The approach translates uncertainty in model input into uncertainty in model output, by fitting the model many times with different values of "observed" data and key input parameters. A chief advantage of the approach is that the results describe a range of possible outcomes, so that uncertainty is characterized more thoroughly than it could be by any single fit or handful of sensitivity runs. A minor disadvantage of the approach is that computational demands are relatively high.

In this assessment, the BAM was successively re-fit in $n = 3500$ trials that differed from the original inputs by bootstrapping on data sources, and by Monte Carlo sampling of several key input parameters. The value of $n = 3500$ was chosen because at least $3000$ runs were desired, and it was anticipated that not all runs would be valid. Of the 3500 trials, approximately 0.4% were discarded, because the model did not properly converge. This left $n = 3489$ trials used to characterize uncertainty, which was sufficient for convergence of standard errors in management quantities.

The MCB analysis should be interpreted as providing an approximation to the uncertainty associated with each output. The results are approximate for two related reasons. First, not all combinations of Monte Carlo parameter inputs are equally likely, as biological parameters might be correlated. Second, all runs are given equal weight in the results, yet some might provide better fits to data than others.

### 3.6.1 Bootstrap of observed data

To include uncertainty in time series of observed landings, discards, and indices of abundance, multiplicative lognormal errors were applied through a parametric bootstrap. To implement this approach in the MCB trials, random variables ($x_{s,y}$) were drawn for each year $y$ of time series $s$ from a normal distribution with mean 0 and variance $\sigma^2_{s,y}$ [that is, $x_{s,y} \sim N(0, \sigma^2_{s,y})$]. Annual observations were then perturbed from their original values ($\hat{O}_{s,y}$),

$$O_{s,y} = \hat{O}_{s,y}[\exp(x_{s,y} - \sigma^2_{s,y}/2)] \tag{2}$$

The term $\sigma^2_{s,y}/2$ is a bias correction that centers the multiplicative error on the value of 1.0. Standard deviations in log space were computed from CVs in arithmetic space, $\sigma_{s,y} = \sqrt{\log(1.0 + CV^2_{s,y})}$. As used for fitting the base run, CVs of landings and discards were assumed to be 0.05, and CVs of indices of abundance were those provided by, or modified from, the SEDAR–25 DW and the updated data provided (Table 3).

Uncertainty in age and length compositions were included by drawing new distributions for each year of each data source, following a multinomial sampling process. Ages (or lengths) of individual fish were drawn at random with replacement using the cell probabilities of the original data. For each year of each data source, the number of individuals sampled was the same as in the original data (number of fish), and the effective sample sizes used for fitting (number of trips) was unmodified.

3.6.1.0.1 **Monte Carlo sampling** In each successive fit of the model, several parameters were fixed (i.e., not estimated) at values drawn at random from distributions described below.

**Natural mortality** Point estimates of natural mortality ($M = 0.38$) were provided by the SEDAR–25 DW, but with some uncertainty. To carry forward this source of uncertainty, Monte Carlo sampling was used to generate deviations from the point estimate. A new M value was drawn for each MCB trial from a truncated normal distribution (DW range [0.27, 0.53]) with mean equal to the point estimate ($M = 0.38$) and standard deviation set to provide a lower 95% confidence limit at 0.27 (the low end of the DW range). Each realized value of M was used to scale the age-specific Lorenzen M, as in the base run.

**Discard mortalities** Similarly, discard mortalities $\delta$ were subjected to Monte Carlo variation as follows. A new value for lines discard mortality was drawn for each MCB trial from a truncated normal distribution (DW range [0.04, 0.15]) with mean equal to the point estimate ($\delta = 0.07$) and standard deviation set to provide a lower 95% confidence limit at 0.04 (the low end of the DW range). The discard mortalities from commercial pots were then computed from the lines value by applying the ratio of pot:lines discard mortality point estimates: 0.05:0.07 (i.e., 5:7) ratio for 1.5-inch panel pots, and 0.01:0.07 (i.e., 1:7) ratio for 2-inch panel pots. This approach preserved the accepted relationship among discard mortality rates that the highest values were from lines and the lowest values were from pots with 2-inch panels.

**Weighting of indices** In the base run, external weights applied to four indices (commercial, headboat, MARMAP blackfish/snapper and chevron traps) were adjusted upward to a value of $\omega = 2.5$. In MCB trials, that weight was drawn from a uniform distribution with bounds at $\pm 25\%$ of 2.5.

**Geometric means of the terminal years of landings and discards** The data used for 2012 MRIP discards and the 2012 headboat landings and discards are geometric means of 2009-2011 of each data source respectively. It was necessary to compensate for missing data in this way in order to provide the model with landings and discards that were missing due to the early data deadline. In order to better capture the uncertainty in this assumption, the terminal year of headboat landings and discards and MRIP discards were varied in the MCB runs. A new value for each is drawn for each MCB trial from a truncated normal distribution with mean equal to the geometric mean. Standard deviation were derived by examining the time series of each data series to determine how well the geometric mean of the previous three years predicted the value in the current year. The standard deviations were 54, 32, and 481 for headboat landings (1000 lb), headboat discards (1000 fish), and MRIP discards (1000 fish). Only 1995-2011 values were used to derive the standard deviations, because there were substantial regulatory changes to the snapper/grouper fisheries in 1992 (1995 estimate relies on 1992–1994 values). The 5% and 95% confidence intervals were used to calculate the lower and upper bound for each distribution.

### 3.7 Projections—Probabilistic Analysis

Acceptable biological catch (ABC) will be computed using the sequential PASCL approach of Shertzer et al. (2010), a refinement of the probability-based approach described in Shertzer et al. (2008*b*). In short, this approach solves for annual levels of projected landings that are consistent with a preset, acceptable probability of overfishing ($P^\star$) in each year. The method considers uncertainty in $F_{\mathrm{MSY}}$, computed through the MCB analysis (§3.6), and described by the probability density function, $\phi_{F_{\mathrm{MSY}}}$. It also considers uncertainty in annual fishing mortality, computed by stochastic projection, and described by the probability density function, $\phi_{F_t}$. Given the distributions $\phi_{F_{\mathrm{MSY}}}$ and $\phi_{F_t}$, the probability of overfishing associated with catch $C$ can be computed as,

$$\Pr(F_t > F_{\mathrm{MSY}}) = \int_0^\infty \left[ \int_F^\infty \phi_{F_t}(\theta) d\theta \right] \phi_{F_{\mathrm{MSY}}}(F) dF \tag{3}$$

where $\theta$ is a dummy integration variable. The value of $C$ is then adjusted until the distribution of $F_t$ is positioned to achieve $\Pr(F_t > F_{\mathrm{MSY}}) = P^\star$. This value of $C$ is that year's ABC.

No implementation uncertainty is included, and annual catch targets will be considered to be centered on the ABC. Two values of $P^\star$ will be considered: $P^\star = 0.5$ and $P^\star = 0.4$. These values were recommended after the base run of the assessment was complete and showed that the stock was no longer overfished or experiencing overfishing.

In this application, projections will be run for three years past the end of the assessment. The structure of the projection model is described in SEDAR (2011). Two modifications in this update were the initialization of projections (in 2013) and the characterization of projection uncertainty, both described in more detail below.

#### 3.7.1 Initialization of projections

In $P^\star$ projections, the first year of new management is assumed to be 2013, which is the earliest year management could react to this assessment. Because the fishery was closed between January 1st and the time of peak spawning, initial (2013) spawning stock will be discounted only by natural mortality and release mortality, but no mortality related to landings.

#### 3.7.2 Uncertainty of projections

To characterize uncertainty in future stock dynamics, stochasticity will be included in replicate projections, each an extension of a single MCB assessment model fit. Thus, projections will carry forward uncertainties in steepness, natural mortality, and discard mortality, as well as in estimated quantities such as remaining spawner-recruit parameters, selectivity curves, and in initial (start of 2013) abundance at age.

Initial and subsequent recruitment values will be generated with stochasticity using a Monte Carlo procedure, in which the estimated Beverton–Holt model of each MCB fit is used to compute mean annual recruitment values ($\bar{R}_y$). Variability is added to the mean values by choosing multiplicative deviations at random from a lognormal distribution,

$$R_y = \bar{R}_y \exp(\epsilon_y). \tag{4}$$

Here $\epsilon_y$ is drawn from a normal distribution with mean 0 and standard deviation $\sigma_R$, where $\sigma_R$ is the standard deviation from the relevant MCB fit.

The procedure will generate many (e.g. 5,000) replicate projections of MCB model fits drawn at random (with replacement) from the MCB runs. In cases where the same MCB run was drawn, projections would still differ as a result of stochasticity in projected recruitment streams. The projections will be available at the assessment review.

# 4 Stock Assessment Results

## 4.1 Measures of Overall Model Fit

The Beaufort assessment model (BAM) fit well to the available data. In general, the fits were quite similar to those from SEDAR-25.

Predicted length compositions from each fishery were reasonably close to observed data in most years, as were predicted age compositions (Figure 2). The model was configured to fit observed commercial and recreational landings closely (Figures 3–7), as well as observed discards (Figures 8–10). Fits to indices of abundance generally captured the observed trends but not all annual fluctuations (Figures 11–15).

## 4.2 Parameter Estimates

Estimates of all parameters from the catch-age model are shown in Appendix B. Estimates of management quantities and some key parameters, such as those of the spawner-recruit model, are reported in sections below.

## 4.3 Stock Abundance and Recruitment

In general, estimated abundance at age showed truncation of the older ages through the mid-1990s, and more stable or increasing values since (Figure 16; Table 5). Total estimated abundance at the end of the assessment period showed some general increase from a low in 1999. Annual number of recruits is shown in Table 5 (age-0 column) and in Figure 17. 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.

### 4.4 Total and Spawning Biomass

Estimated biomass at age followed a similar pattern as abundance at age (Figure 18; Table 6). 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 19; Table 7).

### 4.5 Selectivity

Estimated selectivities of the two MARMAP/SEFIS trap gears were similar (Figure 20). Selectivities of landings from commercial and recreational fleets are shown in Figures 21–23. In general, selectivities shift toward older ages with increased size limits. In the most recent years, full selection occurred near age-4 for most gears, age-5 for commercial lines.

Selectivity of discard mortalities from commercial fleets was mostly on age-2 and age-3 fish, with relatively low selection of age-1 and age-4 fish (Figure 24). In 2009–2012, discard selectivities included more older fish (fish of legal size), accounting for black sea bass caught during closed seasons, mostly from handlines. Selectivity of discard mortalities from the headboat and general recreational fleets was mostly of age-2 and age-3 fish; since 2007, it included more older fish with the increased size limits (Figure 25). In 2011 and 2012, the selectivity shows a pattern consistent with the discarding of some legal-sized fish during the closed seasons in both years.

Average selectivities of landings and of discard mortalities were computed from $F$-weighted selectivities in the most recent period of regulations (Figure 26). These average selectivities were used to compute benchmarks. All selectivities from the most recent period, including average selectivities, are tabulated in Table 8.

### 4.6 Fishing Mortality, Landings, and Discards

The estimated fishing mortality rates ($F$) increased through the mid-1990s, and since then have been quite variable (Figure 27). The general recreational fleet has been the largest contributor to total F (Table 9).

Estimates of total $F$ at age are shown in Table 10. In any given year, the maximum $F$ at age (i.e., apical F) may be less than that year's sum of fully selected $F$s across fleets. This inequality is due to the combination of two features of estimated selectivities: full selection occurs at different ages among gears and several sources of mortality have dome-shaped selectivity.

Table 11 shows total landings at age in numbers, and Table 12 in weight. In general, the majority of estimated landings were from the recreational sector, i.e., headboat and general recreational fleets (Figures 28, 29; Tables 13, 14). Estimated discard mortalities occurred on a smaller scale than landings (Figure 30; Tables 15, 16)

### 4.7 Spawner-Recruitment Parameters

The estimated Beverton–Holt spawner-recruit curve is shown in Figure 31, along with the effect of density dependence on recruitment, depicted graphically by recruits per spawner as a function of spawners (population fecundity). Values of recruitment-related parameters were as follows: steepness $\hat{h} = 0.48$, unfished age-0 recruitment $\widehat{R_0} = 38,738,130$, and standard deviation of recruitment residuals in log space $\widehat{\sigma_R} = 0.41$. Uncertainty in these quantities was estimated through the Monte Carlo/bootstrap (MCB) analysis (Figure 31).

### 4.8 Benchmarks / Reference Points

As described in §3.5, biological reference points (benchmarks) were derived analytically assuming equilibrium dynamics, corresponding to the expected spawner-recruit curve (Figure32). Reference points estimated were $F_{\mathrm{MSY}}$, $\mathrm{MSY}$, $B_{\mathrm{MSY}}$ and $\mathrm{SSB}_{\mathrm{MSY}}$. Based on $F_{\mathrm{MSY}}$, three possible values of $F$ at optimum yield (OY) were considered—$F_{\mathrm{OY}} = 65\% F_{\mathrm{MSY}}$, $F_{\mathrm{OY}} = 75\% F_{\mathrm{MSY}}$, and $F_{\mathrm{OY}} = 85\% F_{\mathrm{MSY}}$—and for each, the corresponding yield was computed. The $F$ that provides 50% SPR is $F_{50\%} = 1.89$, but $F_{30\%}$ and $F_{40\%}$ were not defined over the range of $F$ examined (0.0, 3.0). Standard errors of benchmarks were approximated as those from Monte Carlo/bootstrap analysis (§3.6).

Estimates of benchmarks are summarized in Table 17. Point estimates of MSY-related quantities were $F_{\mathrm{MSY}} = 0.610$ ( $\mathrm{y}^{-1}$), $\mathrm{MSY} = 1780$ (klb), $B_{\mathrm{MSY}} = 5617$ (mt), and $\mathrm{SSB}_{\mathrm{MSY}} = 256$ (1E10 eggs). Distributions of these benchmarks from the MCB analysis are shown in Figure 36.

4.8.0.1 **Status of the Stock and Fishery** Estimated time series of stock status ($\mathrm{SSB}/\mathrm{MSST}$ and $\mathrm{SSB}/\mathrm{SSB}_{\mathrm{MSY}}$) showed general decline until the mid-1990s and some increase since (Figure 37, Table 7). The increase in stock status appears to have been initiated by a strong year class in both 2001 and 2010 and perhaps reinforced by management regulations. Base-run estimates of spawning biomass have remained near $\mathrm{MSST}$ and below $\mathrm{SSB}_{\mathrm{MSY}}$ since the early 1990s, but have increased substantially in the last three years. Current stock status was estimated in the base run to be $\mathrm{SSB}_{2012}/\mathrm{MSST} = 1.66$ and $\mathrm{SSB}_{2012}/\mathrm{SSB}_{\mathrm{MSY}} = 1.03$ (Table 17), indicating that the stock is not overfished and has recovered to the Uncertainty from the MCB analysis suggested that the estimate of $\mathrm{SSB}$ relative to $\mathrm{MSST}$ is robust, but that the status relative to $\mathrm{SSB}_{\mathrm{MSY}}$ is less certain (Figures 38, 39). More specifically, 32% of the MCB runs indicated the stock had not yet rebuilt in the terminal year of the update, while the remainder of the runs indicated a rebuilt stock. Age structure estimated by the base run showed fewer older fish in the last decade than the (equilibrium) age structure expected at $\mathrm{MSY}$ (Figure 40), however with improvement in the terminal year (2012), particularly for ages younger than six.

The estimated time series of $F/F_{\mathrm{MSY}}$ suggests that overfishing has been occurring throughout most of the assessment period (Table 7), but with much uncertainty demonstrated by the MCB analysis (Figure 37). Current fishery status in the terminal year, with current $F$ represented by the geometric mean from 2011–2012, was estimated by the base run to be $F_{2011-2012}/F_{\mathrm{MSY}} = 0.659$ (Table 17), and only 7% indicated that overfishing is still occurring (Figures 38, 39).

#### 4.8.1 Comparison to previous assessment

When estimates from this update are compared to estimates from the SEDAR–25 assessment for black sea bass, a notable difference is an increase in the estimated recruitment from 2008–2012. In the SEDAR–25 benchmark, the recruitment estimates from 2008–2010 were flat and at a similar level as those estimated for the 2006–2007 years. In this update, the 2008–2012 recruitment estimates indicate a marked increase, with an especially large estimate in 2010. This pattern of recruitment is not necessarily unrealistic for this species, but some precaution should be taken with the observed data that supports such an increase. In this update, the primary data source supporting this increased recruitment comes from the MARMAP/SEFIS chevron trap survey index. However, the age composition data from the same survey does not necessarily support this increase in recruitment. Cohorts produced near the end of the assessment period are tracked by only a few years of age composition data, and therefore, the corresponding recruitment estimates are typically more uncertain than those of earlier years. Examination of the overall model fit to the MARMAP/SEFIS chevron trap data reveals that earlier high points are not fit as well, likely due to the influence of other data sources (e.g. age and length composition data), suggesting the high peaks in the index could be biased.

# 5 Discussion

## 5.1 Comments on the Assessment

The timing of this assessment affected the data available for use. The Terms of Reference requested data through 2012, but in order to complete the assessment in time for an SSC review, the data needed to be compiled by January 11th, 2013. For many data sources, that was too early for 2012 data to be complete. Also, many data providers were overwhelmed with requests from other assessments occurring simultaneously.

The base run of the BAM indicated that the stock is not overfished ($\mathrm{SSB}_{2012}/\mathrm{MSST} = 1.66$), has recovered ($\mathrm{SSB}_{2012}/\mathrm{SSB}_{\mathrm{MSY}}$ =1.03), and that overfishing is not occurring ($F_{2011-2012}/F_{\mathrm{MSY}} = 0.659$). MCB analyses indicated some uncertainty in the recovery status. Approximately 32% of the MCB runs indicate that the stock has not yet rebuilt, while 7% indicate that the stock is experiencing overfishing. Only 1% of the MCB runs indicate an overfished stock status in the terminal year.

The increasing trend for biomass is dependent on a strong recruitment event in 2010. However, estimated recruitment declines in the last two years of the update. In fact, whether the stock is considered to be recovered in 2012 depends critically on this relatively uncertain estimate of 2010 recruitment. The fish do not appear in the age composition data until approximately age 2, and the age data sources do not agree well with respect to the strength of this year class. However, there is support for the increased abundance in the most recent years from the MARMAP/SEFIS and headboat discard indices. The weighting of the indices was carried out using the same methodology as in for SEDAR–25. However, it should be noted that the additional weight applied to the four most correlated indices (an additional weight of 2.5 consistent with SEDAR–25) has a significant impact on the status of this stock. Different weights would potentially result in a different determination of whether the stock has recovered.

In addition to more years of data, this update assessment included several modifications to previous data. First, MRIP (instead of MRFSS) was used starting in 2004 and previous data were calibrated using the MRIP calibration factor (1981–2003). Next, the MARMAP/SEFIS chevron trap index was re-evaluated using delta-GLM modeling. Finally, corrections were made to two data sources (MARMAP/SEFIS chevron trap age compositions and headboat age comps from the previous assessment). The age compositions for the MARMAP/SEFIS chevron trap survey were mis-queried for the last assessment and more than 4,000 ages that were not used in the benchmark were included for this update. The headboat age compositions were updated with additional data from the state of South Carolina that were unintentionally omitted from the last data workshop (approximately 1,000 records).

In general, fishery dependent indices of abundance may not track actual abundance well, because of factors such as hyperdepletion or hyperstability. Furthermore, this issue can be exacerbated by management measures. In this assessment, fishery dependent indices were not extended beyond 2010, because of the implementation of restrictive bag, trip, or size limits, along with seasonal closures. As such management measures become more common in the southeast U.S., the continued utility of fishery dependent indices in SEDAR stock assessments will be questionable. This situation amplifies the importance of fishery independent sampling.

Rebuilding projections were outlined in the Terms of Reference. However, since the stock is no longer overfished or experiencing overfishing, a different set of projections incorporating $P^{\star}$ values requested by the SSC will be provided during the assessment review.

### 5.2 Comments on the Projections

As usual, projections to be provided should be interpreted in light of the model assumptions and key aspects of the data. Some major considerations are the following:

- In general, projections of fish stocks are highly uncertain, particularly in the long term (e.g., beyond 3–5 years).
- Although projections included many major sources of uncertainty, they did not include structural (model) uncertainty. That is, projection results are conditional on one set of functional forms used to describe population dynamics, selectivity, recruitment, etc.
- Fisheries were assumed to continue fishing at their estimated current proportions of total effort, using the estimated current selectivity patterns. New management regulations that alter those proportions or selectivities would likely affect projection results.
- The projections assumed that the estimated spawner-recruit relationship applies in the future and that past residuals represent future uncertainty in recruitment. If future recruitment is characterized by runs of large or small year classes, possibly due to environmental or ecological conditions, stock trajectories may be affected.
- Projections apply the Baranov catch equation to relate $F$ and landings using a one-year time step, as in the assessment. The catch equation implicitly assumes that mortality occurs throughout the year. This assumption is violated when seasonal closures are in effect, introducing additional and unquantified uncertainty into the projection results.

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# 7 Tables

*Table 1. Life-history characteristics at age, including average body length and weight (mid-year, TL is total length, and WW is whole weight), annual fecundity per mature female (number batches X eggs per batch), proportion females mature, proportion females at age, and natural mortality at age. The CV of length was estimated by the assessment model; other values were treated as input.*

| Age | TL (mm) | TL (in) | CV length | WW (kg) | WW (lb) | Fecundity (million eggs) | Female maturity | Proportion female at age | Natural mortality |
|---|---|---|---|---|---|---|---|---|---|
| 0 | 110.2 | 4.3 | 0.13 | 0.02 | 0.05 | 0.08 | 0.00 | 0.963 | 0.93 |
| 1 | 172.8 | 6.8 | 0.13 | 0.08 | 0.17 | 0.10 | 0.52 | 0.918 | 0.64 |
| 2 | 225.2 | 8.9 | 0.13 | 0.16 | 0.36 | 0.16 | 0.90 | 0.827 | 0.51 |
| 3 | 269.1 | 10.6 | 0.13 | 0.27 | 0.60 | 0.28 | 0.98 | 0.671 | 0.44 |
| 4 | 305.9 | 12.0 | 0.13 | 0.39 | 0.85 | 0.52 | 1.00 | 0.465 | 0.39 |
| 5 | 336.7 | 13.3 | 0.13 | 0.50 | 1.11 | 0.98 | 1.00 | 0.270 | 0.36 |
| 6 | 362.5 | 14.3 | 0.13 | 0.62 | 1.36 | 1.79 | 1.00 | 0.136 | 0.34 |
| 7 | 384.2 | 15.1 | 0.13 | 0.72 | 1.60 | 3.16 | 1.00 | 0.063 | 0.32 |
| 8 | 402.3 | 15.8 | 0.13 | 0.82 | 1.81 | 5.33 | 1.00 | 0.028 | 0.31 |
| 9 | 417.5 | 16.4 | 0.13 | 0.91 | 2.01 | 8.53 | 1.00 | 0.012 | 0.30 |
| 10 | 430.2 | 16.9 | 0.13 | 0.99 | 2.18 | 12.97 | 1.00 | 0.005 | 0.29 |
| 11 | 440.9 | 17.4 | 0.13 | 1.06 | 2.34 | 18.75 | 1.00 | 0.002 | 0.29 |

*Table 2. Observed time series of landings (L) and discards (D) for commercial lines (cl), commercial pots (cp), commercial trawl (ct), recreational headboat (hb), and general recreational (mrip). Commercial landings are in units of 1000 lb whole weight. Recreational landings and all discards are in units of 1000 fish. Discards include all released fish, live or dead. Commercial discards are combined due to data confidentiality.*

| Year | L.cl | L.cp | L.ct | L.hb | L.mrip | D.comm | D.hb | D.mrip |
|---|---|---|---|---|---|---|---|---|
| 1978 | 118.675 | 134.350 | 31.817 | 532.207 | . | . | . | . |
| 1979 | 140.539 | 676.696 | 27.327 | 571.238 | . | . | . | . |
| 1980 | 107.927 | 888.174 | 25.393 | 617.798 | . | . | . | . |
| 1981 | 163.821 | 1028.197 | 32.221 | 678.256 | 714.130 | . | . | 1125.995 |
| 1982 | 150.879 | 788.173 | 20.623 | 701.365 | 1558.430 | . | . | 1008.826 |
| 1983 | 145.746 | 484.284 | 8.527 | 690.327 | 986.299 | . | . | 418.920 |
| 1984 | 194.532 | 410.419 | 17.778 | 661.070 | 1734.527 | . | . | 1039.659 |
| 1985 | 164.100 | 395.772 | 23.826 | 568.099 | 1258.872 | . | . | 1021.949 |
| 1986 | 163.256 | 502.508 | 22.346 | 536.798 | 529.963 | . | 256.429 | 832.520 |
| 1987 | 149.297 | 403.407 | 7.474 | 616.517 | 889.549 | . | 290.283 | 1200.733 |
| 1988 | 236.629 | 513.731 | 21.177 | 635.222 | 2239.564 | . | 96.499 | 1027.197 |
| 1989 | 248.538 | 517.738 | 13.484 | 478.031 | 1055.298 | . | 70.259 | 933.506 |
| 1990 | 258.736 | 684.587 | 13.576 | 379.573 | 595.990 | . | 4.944 | 505.925 |
| 1991 | 267.179 | 616.552 | . | 286.240 | 849.645 | . | 159.999 | 829.800 |
| 1992 | 226.570 | 546.323 | . | 215.877 | 655.613 | . | 63.101 | 850.052 |
| 1993 | 188.927 | 508.023 | . | 143.027 | 472.871 | 153.920 | 27.249 | 775.582 |
| 1994 | 213.869 | 531.041 | . | 132.441 | 475.039 | 216.510 | 81.777 | 1347.775 |
| 1995 | 141.466 | 413.274 | . | 127.626 | 604.102 | 187.736 | 56.631 | 931.182 |
| 1996 | 128.008 | 511.790 | . | 146.543 | 647.209 | 207.810 | 68.272 | 782.582 |
| 1997 | 162.325 | 540.959 | . | 147.742 | 509.131 | 189.224 | 63.499 | 1120.684 |
| 1998 | 221.095 | 450.850 | . | 142.504 | 320.988 | 191.409 | 46.332 | 824.983 |
| 1999 | 187.538 | 501.350 | . | 192.569 | 278.628 | 176.750 | 105.502 | 1189.981 |
| 2000 | 92.849 | 407.650 | . | 144.590 | 265.890 | 132.152 | 94.202 | 1672.568 |
| 2001 | 88.663 | 492.746 | . | 172.025 | 499.781 | 160.580 | 108.949 | 1809.148 |
| 2002 | 97.985 | 419.811 | . | 123.275 | 292.178 | 68.928 | 75.899 | 1235.472 |
| 2003 | 91.588 | 484.243 | . | 134.111 | 376.793 | 170.849 | 68.594 | 1397.668 |
| 2004 | 107.121 | 626.498 | . | 237.587 | 883.481 | 118.246 | 105.362 | 2688.046 |
| 2005 | 66.911 | 384.384 | . | 179.660 | 643.775 | 185.459 | 125.804 | 2147.181 |
| 2006 | 62.169 | 483.272 | . | 174.067 | 536.678 | 242.582 | 123.187 | 2548.964 |
| 2007 | 54.915 | 351.913 | . | 162.070 | 545.064 | 64.535 | 109.045 | 3224.788 |
| 2008 | 57.594 | 360.016 | . | 99.311 | 362.109 | 67.076 | 69.912 | 2382.362 |
| 2009 | 87.707 | 564.614 | . | 163.171 | 309.414 | 103.114 | 104.077 | 2096.943 |
| 2010 | 71.207 | 408.269 | . | 289.236 | 592.679 | 41.314 | 165.075 | 2888.091 |
| 2011 | 44.184 | 343.771 | . | 232.570 | 376.827 | 28.863 | 152.030 | 2962.486 |
| 2012 | 85.029 | 173.888 | . | 222.234 | 410.362 | 35.554 | 137.720 | 2375.344 |

*Table 3. Observed indices of abundance and CVs from MARMAP blackfish trap (Mbft), MARMAP chevron trap (Mcvt), commercial lines (cl), headboats (hb), and headboat discards (hbd).*

| Year | Mbft | Mbft CV | Mcvt | Mcvt CV | cl | cl CV | hb | hb CV | hbd | hbd CV |
|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | . | . | . | . | . | . | 2.17 | 0.30 | . | . |
| 1980 | . | . | . | . | . | . | 1.85 | 0.30 | . | . |
| 1981 | 1.07 | 0.06 | . | . | . | . | 2.13 | 0.30 | . | . |
| 1982 | 1.21 | 0.08 | . | . | . | . | 2.19 | 0.30 | . | . |
| 1983 | 1.10 | 0.06 | . | . | . | . | 1.98 | 0.30 | . | . |
| 1984 | 0.94 | 0.05 | . | . | . | . | 1.84 | 0.15 | . | . |
| 1985 | 1.09 | 0.06 | . | . | . | . | 1.99 | 0.15 | . | . |
| 1986 | 0.78 | 0.07 | . | . | . | . | 1.63 | 0.15 | . | . |
| 1987 | 0.81 | 0.09 | . | . | . | . | 1.56 | 0.15 | . | . |
| 1988 | . | . | . | . | . | . | 1.50 | 0.15 | . | . |
| 1989 | . | . | . | . | . | . | 1.23 | 0.15 | . | . |
| 1990 | . | . | 1.42 | 0.09 | . | . | 1.22 | 0.15 | . | . |
| 1991 | . | . | 1.10 | 0.10 | . | . | 1.01 | 0.15 | . | . |
| 1992 | . | . | 1.21 | 0.10 | . | . | 0.69 | 0.15 | . | . |
| 1993 | . | . | 0.66 | 0.10 | 1.05 | 0.22 | 0.44 | 0.15 | . | . |
| 1994 | . | . | 0.66 | 0.10 | 0.97 | 0.21 | 0.49 | 0.15 | . | . |
| 1995 | . | . | 0.31 | 0.11 | 0.61 | 0.22 | 0.50 | 0.15 | . | . |
| 1996 | . | . | 0.63 | 0.12 | 0.63 | 0.22 | 0.52 | 0.15 | . | . |
| 1997 | . | . | 0.94 | 0.11 | 0.80 | 0.21 | 0.57 | 0.15 | . | . |
| 1998 | . | . | 0.93 | 0.09 | 1.10 | 0.21 | 0.50 | 0.15 | . | . |
| 1999 | . | . | 0.82 | 0.13 | 1.15 | 0.22 | 0.56 | 0.15 | . | . |
| 2000 | . | . | 0.96 | 0.13 | 0.79 | 0.23 | 0.41 | 0.15 | . | . |
| 2001 | . | . | 1.29 | 0.16 | 0.84 | 0.22 | 0.43 | 0.15 | . | . |
| 2002 | . | . | 0.56 | 0.13 | 0.78 | 0.22 | 0.42 | 0.15 | . | . |
| 2003 | . | . | 0.77 | 0.14 | 1.00 | 0.23 | 0.48 | 0.15 | . | . |
| 2004 | . | . | 1.51 | 0.14 | 1.41 | 0.23 | 0.66 | 0.15 | . | . |
| 2005 | . | . | 1.21 | 0.11 | 1.01 | 0.23 | 0.58 | 0.15 | 0.45 | 0.11 |
| 2006 | . | . | 1.04 | 0.12 | 0.90 | 0.23 | 0.62 | 0.15 | 0.73 | 0.12 |
| 2007 | . | . | 0.83 | 0.13 | 0.55 | 0.24 | 0.38 | 0.15 | 0.87 | 0.12 |
| 2008 | . | . | 0.79 | 0.12 | 0.73 | 0.23 | 0.30 | 0.15 | 0.73 | 0.13 |
| 2009 | . | . | 0.80 | 0.12 | 1.16 | 0.23 | 0.46 | 0.15 | 0.86 | 0.12 |
| 2010 | . | . | 1.06 | 0.08 | 2.52 | 0.24 | 0.73 | 0.15 | 1.69 | 0.15 |
| 2011 | . | . | 1.56 | 0.08 | . | . | . | . | 1.67 | 0.11 |
| 2012 | . | . | 1.94 | 0.06 | . | . | . | . | . | . |

*Table 4. Sample sizes (number of trips) of length compositions (len) or age compositions (age) by survey or fleet, including those of discards (D). Data sources are MARMAP chevron trap (Mcvt), MARMAP Florida blackfish trap (Mbft), commercial lines (cl), commercial pots(cp), headboats (hb), and general recreational (mrip).*

| Year | len.Mbft | len.cl | len.cp | len.hb | len.mrip | len.hbd | age.Mcvt | age.Mbft | age.cl | age.cp | age.hb | age.mrip |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1979 | . | . | . | 201 | . | . | . | . | . | . | . | . |
| 1980 | . | . | . | 276 | . | . | . | . | . | . | . | . |
| 1981 | 108 | . | . | 388 | 97 | . | . | . | . | . | . | . |
| 1982 | 120 | . | . | 439 | 222 | . | . | . | . | . | . | . |
| 1983 | . | . | . | 625 | 113 | . | 453 | . | . | . | . | . |
| 1984 | 62 | 66 | . | 694 | 163 | . | . | . | . | . | . | . |
| 1985 | 25 | 56 | . | 638 | 222 | . | . | . | . | . | . | . |
| 1986 | 26 | 45 | . | 682 | 175 | . | . | . | . | . | . | . |
| 1987 | 16 | 50 | . | 787 | 387 | . | . | . | . | . | . | . |
| 1988 | . | 52 | 37 | 545 | 339 | . | . | . | . | . | . | . |
| 1989 | . | 30 | . | 427 | 445 | . | . | . | . | . | . | . |
| 1990 | . | 43 | . | 481 | 372 | . | . | 159 | . | . | . | . |
| 1991 | . | 46 | . | . | 220 | . | . | 107 | . | . | 43 | . |
| 1992 | . | . | . | . | 492 | . | . | 130 | . | . | 31 | . |
| 1993 | . | 32 | . | 389 | 345 | . | . | 163 | . | . | . | . |
| 1994 | . | . | . | 350 | 376 | . | . | 135 | 41 | . | . | . |
| 1995 | . | 39 | . | 283 | 281 | . | . | 109 | . | . | . | . |
| 1996 | . | . | . | 285 | 281 | . | . | 167 | . | . | . | . |
| 1997 | . | . | . | 379 | 301 | . | . | 139 | . | . | . | . |
| 1998 | . | . | . | 462 | 302 | . | . | 128 | . | . | . | 57 |
| 1999 | . | 42 | . | 402 | 315 | . | . | 86 | . | . | . | . |
| 2000 | . | 47 | . | 333 | 250 | . | . | 97 | . | . | . | . |
| 2001 | . | 73 | . | 329 | 452 | . | . | 79 | . | . | . | . |
| 2002 | . | . | . | 304 | 264 | . | . | 78 | 61 | . | . | . |
| 2003 | . | . | . | 405 | 413 | . | . | 64 | 53 | . | . | . |
| 2004 | . | . | . | . | 597 | . | . | 91 | 98 | . | 53 | 46 |
| 2005 | . | . | . | . | 395 | 151 | . | 106 | 116 | . | 104 | 36 |
| 2006 | . | . | . | . | 524 | 133 | . | 105 | 98 | . | 247 | . |
| 2007 | . | . | . | . | 368 | 152 | . | 99 | 93 | 47 | 271 | . |
| 2008 | . | . | . | . | 355 | 153 | . | 106 | 90 | 79 | 161 | . |
| 2009 | . | . | . | . | 402 | 136 | . | 126 | 71 | 89 | 218 | . |
| 2010 | . | . | . | . | 542 | 146 | . | 176 | 91 | 74 | 342 | . |
| 2011 | . | . | . | . | 282 | . | . | 164 | 40 | 43 | 131 | . |
| 2012 | . | . | . | . | . | . | . | 260 | 65 | 39 | 91 | . |

*Table 5. Estimated total abundance at age (1000 fish) at start of year.*

| Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 54364.51 | 13282.32 | 7257.91 | 3141.94 | 1711.76 | 942.73 | 509.53 | 281.26 | 158.50 | 90.43 | 52.16 | 72.18 | 81865.23 |
| 1979 | 66004.78 | 21443.78 | 6928.35 | 3649.14 | 1483.01 | 844.97 | 479.41 | 264.35 | 148.87 | 84.73 | 48.83 | 67.82 | 101448.05 |
| 1980 | 60674.38 | 26030.99 | 11139.97 | 3284.40 | 1520.40 | 642.01 | 376.75 | 218.07 | 122.68 | 69.78 | 40.12 | 55.78 | 104175.33 |
| 1981 | 25483.58 | 23927.16 | 13499.81 | 5153.48 | 1306.37 | 627.50 | 272.89 | 163.37 | 96.47 | 54.82 | 31.49 | 43.72 | 70660.66 |
| 1982 | 72652.73 | 10049.95 | 12429.53 | 6435.53 | 2134.03 | 561.19 | 277.61 | 123.16 | 75.22 | 44.87 | 25.75 | 35.69 | 104845.25 |
| 1983 | 25219.05 | 28651.36 | 5208.96 | 5668.78 | 2526.17 | 870.94 | 235.89 | 119.04 | 53.88 | 33.24 | 20.03 | 27.70 | 68635.04 |
| 1984 | 26378.52 | 9946.54 | 14906.39 | 2514.03 | 2464.41 | 1142.46 | 405.72 | 112.11 | 57.72 | 26.39 | 16.44 | 23.84 | 57994.56 |
| 1985 | 55914.28 | 10404.02 | 5185.33 | 7212.91 | 910.93 | 913.41 | 435.88 | 157.91 | 44.52 | 23.15 | 10.69 | 16.48 | 81229.52 |
| 1986 | 41055.61 | 22054.47 | 5432.94 | 2613.86 | 2943.05 | 383.84 | 396.28 | 192.92 | 71.31 | 20.30 | 10.66 | 12.64 | 75187.90 |
| 1987 | 37418.13 | 16193.68 | 11519.36 | 2792.91 | 1134.14 | 1325.79 | 178.05 | 187.53 | 93.14 | 34.77 | 10.00 | 11.60 | 70899.10 |
| 1988 | 26217.58 | 14758.84 | 8453.54 | 5799.45 | 1136.51 | 477.18 | 574.33 | 78.69 | 84.55 | 42.42 | 15.99 | 10.03 | 57649.12 |
| 1989 | 33577.13 | 10338.87 | 7655.95 | 3717.63 | 1629.92 | 322.26 | 139.21 | 170.93 | 23.89 | 25.93 | 13.14 | 8.14 | 57623.02 |
| 1990 | 13336.76 | 13242.17 | 5378.84 | 3615.75 | 1257.53 | 560.67 | 114.08 | 50.28 | 62.98 | 8.89 | 9.75 | 8.08 | 37645.78 |
| 1991 | 23548.39 | 5259.63 | 6891.22 | 2583.34 | 1287.58 | 454.35 | 208.47 | 43.27 | 19.46 | 24.62 | 3.51 | 7.11 | 40330.94 |
| 1992 | 11317.06 | 9286.19 | 2730.11 | 3162.41 | 809.17 | 407.76 | 148.04 | 69.30 | 14.67 | 6.66 | 8.52 | 3.71 | 27963.60 |
| 1993 | 22151.23 | 4462.70 | 4816.17 | 1246.63 | 990.84 | 257.43 | 133.47 | 49.44 | 23.61 | 5.05 | 2.32 | 4.29 | 34143.18 |
| 1994 | 37038.30 | 8734.68 | 2313.13 | 2186.93 | 383.10 | 307.79 | 82.27 | 43.51 | 16.44 | 7.93 | 1.71 | 2.27 | 51118.07 |
| 1995 | 23831.95 | 14602.41 | 4500.85 | 971.78 | 554.45 | 98.43 | 81.32 | 22.18 | 11.97 | 4.57 | 2.23 | 1.13 | 44683.24 |
| 1996 | 23983.23 | 9394.94 | 7508.37 | 1747.74 | 194.20 | 108.99 | 19.89 | 16.76 | 4.66 | 2.54 | 0.98 | 0.73 | 42983.04 |
| 1997 | 17756.90 | 9455.73 | 4850.47 | 3128.95 | 425.65 | 46.93 | 27.09 | 5.04 | 4.34 | 1.22 | 0.67 | 0.45 | 35703.43 |
| 1998 | 24311.55 | 7001.82 | 4899.39 | 2192.11 | 960.95 | 132.51 | 15.03 | 8.85 | 1.68 | 1.46 | 0.41 | 0.39 | 39526.16 |
| 1999 | 11803.20 | 9587.81 | 3643.13 | 2375.55 | 783.67 | 348.62 | 49.47 | 5.72 | 3.44 | 0.66 | 0.58 | 0.32 | 28602.18 |
| 2000 | 20877.15 | 4655.67 | 5023.36 | 1981.63 | 805.58 | 236.02 | 106.88 | 15.46 | 1.83 | 1.11 | 0.21 | 0.30 | 33705.21 |
| 2001 | 39312.64 | 8235.62 | 2440.79 | 2772.43 | 752.94 | 285.75 | 85.74 | 39.61 | 5.85 | 0.70 | 0.43 | 0.20 | 53932.68 |
| 2002 | 24999.83 | 15507.76 | 4311.60 | 1319.29 | 893.88 | 218.13 | 84.76 | 25.95 | 12.23 | 1.82 | 0.22 | 0.20 | 47375.69 |
| 2003 | 23005.77 | 9861.80 | 8133.49 | 2362.22 | 454.09 | 277.04 | 69.09 | 27.38 | 8.55 | 4.07 | 0.61 | 0.14 | 44204.25 |
| 2004 | 14687.29 | 9075.50 | 5176.79 | 4496.40 | 832.68 | 144.21 | 89.98 | 22.89 | 9.25 | 2.92 | 1.40 | 0.26 | 34539.58 |
| 2005 | 17665.03 | 5793.81 | 4754.47 | 2800.56 | 1335.89 | 213.98 | 37.91 | 24.13 | 6.26 | 2.56 | 0.82 | 0.47 | 32635.89 |
| 2006 | 25161.76 | 6968.77 | 3037.35 | 2628.06 | 1003.20 | 437.40 | 71.88 | 12.99 | 8.44 | 2.21 | 0.91 | 0.46 | 39333.44 |
| 2007 | 28471.82 | 9925.82 | 3645.03 | 1642.53 | 898.91 | 318.81 | 142.77 | 23.95 | 4.42 | 2.90 | 0.77 | 0.48 | 45078.21 |
| 2008 | 28936.33 | 11231.38 | 5188.26 | 1971.03 | 542.68 | 231.48 | 84.43 | 38.79 | 6.66 | 1.24 | 0.82 | 0.36 | 48233.46 |
| 2009 | 36139.60 | 11415.07 | 5887.58 | 2872.36 | 742.53 | 170.96 | 74.79 | 27.92 | 13.11 | 2.27 | 0.43 | 0.41 | 57347.03 |
| 2010 | 42666.59 | 14256.61 | 5987.51 | 3260.96 | 1096.65 | 243.14 | 57.34 | 25.65 | 9.78 | 4.64 | 0.81 | 0.30 | 67609.98 |
| 2011 | 34116.42 | 16831.87 | 7477.60 | 3347.33 | 1243.84 | 340.13 | 77.26 | 18.64 | 8.52 | 3.28 | 1.57 | 0.38 | 63466.86 |
| 2012 | 33042.17 | 13459.56 | 8842.77 | 4277.59 | 1542.90 | 516.58 | 145.21 | 33.72 | 8.31 | 3.84 | 1.49 | 0.90 | 61875.04 |

*Table 6. Estimated biomass at age (1000 lb) at start of year*

| Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 2730.9 | 2318.2 | 2638.9 | 1871.3 | 1453.9 | 1044.6 | 692.9 | 449.1 | 287.5 | 181.7 | 114.0 | 168.7 | 13951.5 |
| 1979 | 3315.5 | 3742.6 | 2519.2 | 2173.3 | 1259.5 | 936.3 | 651.9 | 422.0 | 270.1 | 170.4 | 106.7 | 158.5 | 15726.0 |
| 1980 | 3047.9 | 4543.3 | 4050.6 | 1956.2 | 1291.2 | 711.4 | 512.4 | 348.1 | 222.4 | 140.2 | 87.5 | 130.3 | 17041.7 |
| 1981 | 1280.2 | 4176.0 | 4908.4 | 3069.3 | 1109.6 | 695.3 | 371.0 | 260.8 | 175.0 | 110.2 | 68.8 | 102.3 | 16326.8 |
| 1982 | 3649.5 | 1754.0 | 4519.3 | 3832.7 | 1812.6 | 621.9 | 377.4 | 196.7 | 136.5 | 90.2 | 56.2 | 83.3 | 17130.6 |
| 1983 | 1266.8 | 5000.5 | 1894.0 | 3376.2 | 2145.5 | 965.0 | 320.8 | 190.0 | 97.7 | 66.8 | 43.7 | 64.8 | 15431.9 |
| 1984 | 1325.0 | 1735.9 | 5419.8 | 1497.4 | 2093.1 | 1265.9 | 551.6 | 179.0 | 104.7 | 53.1 | 35.9 | 55.8 | 14317.5 |
| 1985 | 2808.7 | 1815.7 | 1885.4 | 4295.7 | 773.6 | 1012.1 | 592.6 | 252.2 | 80.7 | 46.5 | 23.4 | 38.6 | 13625.5 |
| 1986 | 2062.4 | 3849.3 | 1975.3 | 1556.7 | 2499.6 | 425.3 | 538.8 | 308.0 | 129.4 | 40.8 | 23.4 | 29.5 | 13438.5 |
| 1987 | 1879.7 | 2826.3 | 4188.3 | 1663.4 | 963.2 | 1469.2 | 242.1 | 299.4 | 168.9 | 69.9 | 21.8 | 27.1 | 13819.5 |
| 1988 | 1317.0 | 2575.9 | 3073.7 | 3454.0 | 965.4 | 528.7 | 780.9 | 125.7 | 153.4 | 85.3 | 34.8 | 23.4 | 13118.2 |
| 1989 | 1686.8 | 1804.5 | 2783.8 | 2214.1 | 1384.3 | 357.1 | 189.4 | 272.9 | 43.4 | 52.0 | 28.7 | 19.0 | 10835.7 |
| 1990 | 670.0 | 2311.1 | 1955.7 | 2153.5 | 1068.1 | 621.3 | 155.2 | 80.2 | 114.2 | 17.9 | 21.4 | 19.0 | 9187.3 |
| 1991 | 1183.0 | 918.0 | 2505.6 | 1538.6 | 1093.5 | 503.5 | 283.5 | 69.0 | 35.3 | 49.4 | 7.7 | 16.5 | 8203.8 |
| 1992 | 568.6 | 1620.6 | 992.7 | 1883.4 | 687.2 | 451.7 | 201.3 | 110.7 | 26.7 | 13.4 | 18.5 | 8.6 | 6583.7 |
| 1993 | 1112.7 | 778.9 | 1751.1 | 742.5 | 841.5 | 285.3 | 181.4 | 78.9 | 42.8 | 10.1 | 5.1 | 10.1 | 5840.5 |
| 1994 | 1860.5 | 1524.5 | 841.1 | 1302.5 | 325.4 | 341.1 | 111.8 | 69.4 | 29.8 | 15.9 | 3.7 | 5.3 | 6431.1 |
| 1995 | 1197.1 | 2548.5 | 1636.5 | 578.7 | 470.9 | 109.1 | 110.7 | 35.5 | 21.6 | 9.3 | 4.9 | 2.6 | 6725.4 |
| 1996 | 1204.8 | 1639.8 | 2730.0 | 1040.8 | 164.9 | 120.8 | 27.1 | 26.7 | 8.4 | 5.1 | 2.2 | 1.8 | 6972.3 |
| 1997 | 892.0 | 1650.4 | 1763.7 | 1863.6 | 361.6 | 52.0 | 36.8 | 8.2 | 7.9 | 2.4 | 1.5 | 1.1 | 6640.8 |
| 1998 | 1221.1 | 1222.0 | 1781.3 | 1305.6 | 816.2 | 146.8 | 20.5 | 14.1 | 3.1 | 2.9 | 0.9 | 0.9 | 6535.6 |
| 1999 | 592.8 | 1673.3 | 1324.5 | 1414.7 | 665.6 | 386.2 | 67.2 | 9.0 | 6.2 | 1.3 | 1.3 | 0.7 | 6143.6 |
| 2000 | 1048.7 | 812.6 | 1826.5 | 1180.1 | 684.3 | 261.5 | 145.3 | 24.7 | 3.3 | 2.2 | 0.4 | 0.7 | 5990.4 |
| 2001 | 1974.7 | 1437.4 | 887.4 | 1651.3 | 639.6 | 316.6 | 116.6 | 63.3 | 10.6 | 1.3 | 0.9 | 0.4 | 7100.2 |
| 2002 | 1255.8 | 2706.6 | 1567.7 | 785.7 | 759.3 | 241.6 | 115.3 | 41.4 | 22.3 | 3.7 | 0.4 | 0.4 | 7500.1 |
| 2003 | 1155.7 | 1721.1 | 2957.3 | 1406.8 | 385.6 | 306.9 | 93.9 | 43.7 | 15.4 | 8.2 | 1.3 | 0.4 | 8096.7 |
| 2004 | 737.9 | 1584.0 | 1882.3 | 2678.0 | 707.2 | 159.8 | 122.4 | 36.6 | 16.8 | 6.0 | 3.1 | 0.7 | 7934.2 |
| 2005 | 887.4 | 1011.3 | 1728.6 | 1668.0 | 1134.7 | 237.0 | 51.6 | 38.6 | 11.5 | 5.1 | 1.8 | 1.1 | 6776.3 |
| 2006 | 1263.9 | 1216.3 | 1104.3 | 1565.3 | 852.1 | 484.6 | 97.7 | 20.7 | 15.2 | 4.4 | 2.0 | 1.1 | 6627.8 |
| 2007 | 1430.1 | 1732.4 | 1325.4 | 978.2 | 763.5 | 353.2 | 194.2 | 38.1 | 7.9 | 5.7 | 1.8 | 1.1 | 6831.9 |
| 2008 | 1453.5 | 1960.1 | 1886.5 | 1174.0 | 461.0 | 256.4 | 114.9 | 61.9 | 12.1 | 2.4 | 1.8 | 0.9 | 7385.5 |
| 2009 | 1815.5 | 1992.3 | 2140.7 | 1710.8 | 630.7 | 189.4 | 101.6 | 44.5 | 23.8 | 4.6 | 0.9 | 0.9 | 8655.8 |
| 2010 | 2143.3 | 2488.1 | 2177.1 | 1942.1 | 931.5 | 269.4 | 78.0 | 41.0 | 17.6 | 9.3 | 1.8 | 0.7 | 10100.0 |
| 2011 | 1713.9 | 2937.7 | 2718.7 | 1993.6 | 1056.5 | 377.0 | 105.2 | 29.8 | 15.4 | 6.6 | 3.5 | 0.9 | 10958.5 |
| 2012 | 1659.9 | 2349.0 | 3215.2 | 2547.7 | 1310.4 | 572.3 | 197.5 | 53.8 | 15.0 | 7.7 | 3.3 | 2.2 | 11934.1 |

*Table 7. Estimated time series and status indicators. Fishing mortality rate is apical $F$, which includes discard mortalities. Total biomass (B, mt) is at the start of the year, and spawning biomass (SSB, population fecundity, 1E10 eggs) at the time of peak spawning (end of March). The* MSST *is defined by* $\mathrm{MSST} = (1 - M)\mathrm{SSB}_{\mathrm{MSY}}$*, with constant* $M = 0.38$*. SPR is static spawning potential ratio. Prop.fem is proportion of age-*$2^+$ *population that is female.*

| Year | $F$ | $F/F_{\mathrm{MSY}}$ | B | $B/B_{\mathrm{unfished}}$ | SSB | $\mathrm{SSB}/\mathrm{SSB}_{\mathrm{MSY}}$ | SSB/MSST | SPR | Prop.fem |
|---|---|---|---|---|---|---|---|---|---|
| 1978 | 0.316 | 0.518 | 6328 | 0.490 | 256 | 0.997 | 1.608 | 0.666 | 0.651 |
| 1979 | 0.448 | 0.734 | 7133 | 0.553 | 279 | 1.087 | 1.752 | 0.600 | 0.656 |
| 1980 | 0.496 | 0.813 | 7730 | 0.599 | 325 | 1.269 | 2.047 | 0.579 | 0.708 |
| 1981 | 0.456 | 0.747 | 7406 | 0.574 | 362 | 1.414 | 2.280 | 0.599 | 0.727 |
| 1982 | 0.507 | 0.831 | 7770 | 0.602 | 323 | 1.261 | 2.034 | 0.572 | 0.713 |
| 1983 | 0.404 | 0.662 | 7000 | 0.543 | 336 | 1.311 | 2.114 | 0.619 | 0.648 |
| 1984 | 0.604 | 0.990 | 6494 | 0.503 | 309 | 1.206 | 1.946 | 0.571 | 0.717 |
| 1985 | 0.475 | 0.779 | 6180 | 0.479 | 254 | 0.991 | 1.599 | 0.615 | 0.662 |
| 1986 | 0.408 | 0.669 | 6096 | 0.472 | 267 | 1.042 | 1.680 | 0.642 | 0.645 |
| 1987 | 0.477 | 0.781 | 6268 | 0.486 | 285 | 1.113 | 1.796 | 0.614 | 0.713 |
| 1988 | 0.872 | 1.430 | 5950 | 0.461 | 266 | 1.039 | 1.676 | 0.503 | 0.697 |
| 1989 | 0.678 | 1.112 | 4915 | 0.381 | 216 | 0.842 | 1.358 | 0.550 | 0.708 |
| 1990 | 0.629 | 1.032 | 4167 | 0.323 | 201 | 0.784 | 1.265 | 0.564 | 0.690 |
| 1991 | 0.761 | 1.248 | 3721 | 0.288 | 164 | 0.641 | 1.033 | 0.528 | 0.710 |
| 1992 | 0.757 | 1.241 | 2986 | 0.231 | 137 | 0.536 | 0.864 | 0.527 | 0.665 |
| 1993 | 0.781 | 1.280 | 2649 | 0.205 | 110 | 0.431 | 0.695 | 0.522 | 0.713 |
| 1994 | 0.971 | 1.592 | 2917 | 0.226 | 103 | 0.401 | 0.647 | 0.480 | 0.684 |
| 1995 | 1.239 | 2.032 | 3051 | 0.236 | 129 | 0.501 | 0.808 | 0.445 | 0.748 |
| 1996 | 1.032 | 1.693 | 3163 | 0.245 | 141 | 0.550 | 0.888 | 0.474 | 0.781 |
| 1997 | 0.779 | 1.277 | 3012 | 0.233 | 141 | 0.548 | 0.885 | 0.521 | 0.745 |
| 1998 | 0.625 | 1.025 | 2964 | 0.230 | 132 | 0.514 | 0.829 | 0.567 | 0.732 |
| 1999 | 0.823 | 1.349 | 2787 | 0.216 | 134 | 0.523 | 0.843 | 0.583 | 0.703 |
| 2000 | 0.653 | 1.070 | 2717 | 0.211 | 123 | 0.481 | 0.775 | 0.616 | 0.727 |
| 2001 | 0.855 | 1.402 | 3221 | 0.250 | 120 | 0.469 | 0.756 | 0.573 | 0.677 |
| 2002 | 0.790 | 1.295 | 3402 | 0.264 | 151 | 0.591 | 0.952 | 0.590 | 0.719 |
| 2003 | 0.765 | 1.254 | 3673 | 0.285 | 176 | 0.686 | 1.106 | 0.598 | 0.759 |
| 2004 | 0.976 | 1.601 | 3599 | 0.279 | 173 | 0.676 | 1.090 | 0.558 | 0.718 |
| 2005 | 0.731 | 1.198 | 3074 | 0.238 | 145 | 0.564 | 0.909 | 0.601 | 0.708 |
| 2006 | 0.760 | 1.246 | 3006 | 0.233 | 127 | 0.496 | 0.800 | 0.585 | 0.676 |
| 2007 | 0.969 | 1.588 | 3099 | 0.240 | 127 | 0.496 | 0.800 | 0.569 | 0.695 |
| 2008 | 0.770 | 1.262 | 3350 | 0.260 | 147 | 0.573 | 0.924 | 0.606 | 0.737 |
| 2009 | 0.732 | 1.201 | 3926 | 0.304 | 171 | 0.666 | 1.074 | 0.611 | 0.735 |
| 2010 | 0.786 | 1.289 | 4581 | 0.355 | 197 | 0.767 | 1.238 | 0.610 | 0.723 |
| 2011 | 0.491 | 0.805 | 4971 | 0.385 | 234 | 0.914 | 1.475 | 0.684 | 0.728 |
| 2012 | 0.329 | 0.539 | 5413 | 0.420 | 265 | 1.032 | 1.664 | 0.754 | 0.720 |

*Table 8. Selectivity at age for MARMAP blackfish/snapper traps (Mbft), MARMAP chevron traps (Mcvt), commercial lines (cl), commercial pots (cp), headboat (hb), commercial discard mortalities (D.comm), headboat discard mortalities (D.hb), selectivity of landings averaged across fisheries (L.avg), and selectivity of discard mortalities averaged across fisheries (D.avg). Selectivities of landings and discards from the general recreational fleet were assumed equal to those from the headboat fleet. Similarly, selectivity from the commercial trawl fleet (1978–1990) mirrored that of the commercial pot fleet. TL is total length. For time-varying selectivities, values shown are from the terminal assessment year.*

| Age | TL(mm) | TL(in) | Mbft | Mcvt | cl | cp | hb | D.comm | D.hb | L.avg | D.avg | L.avg+D.avg |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | 110.2 | 4.3 | 0.000 | 0.000 | 0.001 | 0.000 | 0.000 | 0.002 | 0.001 | 0.000 | 0.000 | 0.000 |
| 1 | 172.8 | 6.8 | 0.002 | 0.007 | 0.013 | 0.005 | 0.001 | 0.083 | 0.093 | 0.002 | 0.005 | 0.008 |
| 2 | 225.2 | 8.9 | 0.210 | 0.145 | 0.112 | 0.150 | 0.028 | 0.568 | 0.630 | 0.057 | 0.036 | 0.093 |
| 3 | 269.1 | 10.6 | 0.969 | 0.794 | 0.552 | 0.869 | 0.563 | 1.000 | 1.000 | 0.604 | 0.057 | 0.661 |
| 4 | 305.9 | 12.0 | 1.000 | 0.989 | 0.923 | 0.996 | 0.983 | 0.764 | 0.818 | 0.947 | 0.047 | 0.993 |
| 5 | 336.7 | 13.3 | 1.000 | 0.999 | 0.992 | 1.000 | 1.000 | 0.775 | 0.640 | 0.963 | 0.037 | 1.000 |
| 6 | 362.5 | 14.3 | 1.000 | 1.000 | 0.999 | 1.000 | 1.000 | 0.768 | 0.549 | 0.964 | 0.032 | 0.996 |
| 7 | 384.2 | 15.1 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.764 | 0.508 | 0.964 | 0.029 | 0.993 |
| 8 | 402.3 | 15.8 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.763 | 0.488 | 0.964 | 0.028 | 0.992 |
| 9 | 417.5 | 16.4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.762 | 0.479 | 0.964 | 0.028 | 0.992 |
| 10 | 430.2 | 16.9 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.762 | 0.473 | 0.964 | 0.027 | 0.991 |
| 11 | 440.9 | 17.4 | 1.000 | 1.000 | 1.000 | 1.000 | 1.000 | 0.762 | 0.470 | 0.964 | 0.027 | 0.991 |

*Table 9. Estimated time series of fully selected fishing mortality rates for commercial lines (F.cl), commercial pots (F.cp), commercial trawl (F.ct), headboat (F.hb), general recreational (F.rec), commercial discard mortalities (F.comm.D), headboat discard mortalities (F.hb.D), general recreational discard mortalities (F.rec.D). Also shown is apical F, the maximum F at age summed across fleets, which may not equal the sum of fully selected F's because of dome-shaped selectivities.*

| Year | F.cl | F.cp | F.ct | F.hb | F.rec | F.comm.D | F.hb.D | F.rec.D | Apical F |
|---|---|---|---|---|---|---|---|---|---|
| 1978 | 0.027 | 0.025 | 0.006 | 0.093 | 0.166 | 0.000 | 0.000 | 0.005 | 0.316 |
| 1979 | 0.034 | 0.135 | 0.005 | 0.107 | 0.166 | 0.000 | 0.000 | 0.005 | 0.448 |
| 1980 | 0.030 | 0.181 | 0.005 | 0.114 | 0.166 | 0.000 | 0.000 | 0.005 | 0.496 |
| 1981 | 0.041 | 0.184 | 0.006 | 0.109 | 0.115 | 0.000 | 0.000 | 0.006 | 0.456 |
| 1982 | 0.033 | 0.130 | 0.003 | 0.105 | 0.235 | 0.000 | 0.000 | 0.006 | 0.507 |
| 1983 | 0.031 | 0.086 | 0.002 | 0.117 | 0.168 | 0.000 | 0.000 | 0.003 | 0.404 |
| 1984 | 0.050 | 0.075 | 0.003 | 0.131 | 0.344 | 0.002 | 0.000 | 0.006 | 0.604 |
| 1985 | 0.038 | 0.075 | 0.005 | 0.111 | 0.247 | 0.002 | 0.000 | 0.008 | 0.475 |
| 1986 | 0.043 | 0.112 | 0.005 | 0.125 | 0.123 | 0.002 | 0.002 | 0.008 | 0.408 |
| 1987 | 0.044 | 0.086 | 0.002 | 0.141 | 0.204 | 0.002 | 0.002 | 0.008 | 0.477 |
| 1988 | 0.071 | 0.116 | 0.005 | 0.151 | 0.529 | 0.002 | 0.001 | 0.008 | 0.872 |
| 1989 | 0.091 | 0.141 | 0.004 | 0.138 | 0.305 | 0.002 | 0.001 | 0.008 | 0.678 |
| 1990 | 0.102 | 0.210 | 0.004 | 0.122 | 0.192 | 0.002 | 0.000 | 0.005 | 0.629 |
| 1991 | 0.126 | 0.214 | 0.000 | 0.105 | 0.316 | 0.002 | 0.002 | 0.010 | 0.761 |
| 1992 | 0.121 | 0.239 | 0.000 | 0.097 | 0.300 | 0.002 | 0.001 | 0.014 | 0.757 |
| 1993 | 0.143 | 0.277 | 0.000 | 0.083 | 0.277 | 0.002 | 0.000 | 0.014 | 0.781 |
| 1994 | 0.187 | 0.355 | 0.000 | 0.095 | 0.335 | 0.003 | 0.002 | 0.028 | 0.971 |
| 1995 | 0.200 | 0.347 | 0.000 | 0.121 | 0.573 | 0.002 | 0.001 | 0.015 | 1.239 |
| 1996 | 0.157 | 0.317 | 0.000 | 0.105 | 0.454 | 0.002 | 0.001 | 0.009 | 1.032 |
| 1997 | 0.126 | 0.282 | 0.000 | 0.083 | 0.287 | 0.002 | 0.001 | 0.014 | 0.779 |
| 1998 | 0.156 | 0.223 | 0.000 | 0.076 | 0.171 | 0.002 | 0.001 | 0.012 | 0.625 |
| 1999 | 0.152 | 0.321 | 0.000 | 0.143 | 0.207 | 0.002 | 0.002 | 0.018 | 0.823 |
| 2000 | 0.075 | 0.264 | 0.000 | 0.110 | 0.204 | 0.001 | 0.001 | 0.024 | 0.653 |
| 2001 | 0.070 | 0.307 | 0.000 | 0.122 | 0.356 | 0.002 | 0.002 | 0.031 | 0.855 |
| 2002 | 0.090 | 0.324 | 0.000 | 0.111 | 0.265 | 0.001 | 0.001 | 0.017 | 0.790 |
| 2003 | 0.073 | 0.293 | 0.000 | 0.106 | 0.293 | 0.001 | 0.001 | 0.013 | 0.765 |
| 2004 | 0.068 | 0.289 | 0.000 | 0.133 | 0.486 | 0.001 | 0.001 | 0.028 | 0.976 |
| 2005 | 0.043 | 0.196 | 0.000 | 0.105 | 0.386 | 0.002 | 0.002 | 0.028 | 0.731 |
| 2006 | 0.042 | 0.268 | 0.000 | 0.108 | 0.340 | 0.003 | 0.002 | 0.042 | 0.760 |
| 2007 | 0.047 | 0.253 | 0.000 | 0.148 | 0.509 | 0.000 | 0.002 | 0.050 | 0.969 |
| 2008 | 0.052 | 0.253 | 0.000 | 0.099 | 0.360 | 0.000 | 0.001 | 0.029 | 0.770 |
| 2009 | 0.063 | 0.299 | 0.000 | 0.127 | 0.238 | 0.000 | 0.001 | 0.021 | 0.732 |
| 2010 | 0.043 | 0.186 | 0.000 | 0.184 | 0.368 | 0.000 | 0.002 | 0.026 | 0.786 |
| 2011 | 0.022 | 0.132 | 0.000 | 0.122 | 0.198 | 0.000 | 0.001 | 0.026 | 0.491 |
| 2012 | 0.030 | 0.049 | 0.000 | 0.084 | 0.155 | 0.000 | 0.001 | 0.017 | 0.329 |

*Table 10. Estimated instantaneous fishing mortality rate (per yr) at age, including discard mortality*

| Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 0.000 | 0.011 | 0.178 | 0.311 | 0.316 | 0.316 | 0.316 | 0.316 | 0.316 | 0.316 | 0.316 | 0.316 |
| 1979 | 0.000 | 0.015 | 0.236 | 0.436 | 0.447 | 0.448 | 0.448 | 0.448 | 0.448 | 0.448 | 0.448 | 0.448 |
| 1980 | 0.001 | 0.017 | 0.261 | 0.482 | 0.495 | 0.496 | 0.496 | 0.496 | 0.496 | 0.496 | 0.496 | 0.496 |
| 1981 | 0.000 | 0.015 | 0.231 | 0.442 | 0.455 | 0.456 | 0.456 | 0.456 | 0.456 | 0.456 | 0.456 | 0.456 |
| 1982 | 0.000 | 0.017 | 0.275 | 0.495 | 0.506 | 0.507 | 0.507 | 0.507 | 0.507 | 0.507 | 0.507 | 0.507 |
| 1983 | 0.000 | 0.013 | 0.218 | 0.393 | 0.404 | 0.404 | 0.404 | 0.404 | 0.404 | 0.404 | 0.404 | 0.404 |
| 1984 | 0.000 | 0.011 | 0.216 | 0.575 | 0.603 | 0.604 | 0.604 | 0.604 | 0.604 | 0.604 | 0.604 | 0.604 |
| 1985 | 0.000 | 0.010 | 0.175 | 0.456 | 0.474 | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 | 0.475 |
| 1986 | 0.000 | 0.009 | 0.155 | 0.395 | 0.407 | 0.408 | 0.408 | 0.408 | 0.408 | 0.408 | 0.408 | 0.408 |
| 1987 | 0.000 | 0.010 | 0.176 | 0.459 | 0.476 | 0.477 | 0.477 | 0.477 | 0.477 | 0.477 | 0.477 | 0.477 |
| 1988 | 0.001 | 0.016 | 0.311 | 0.829 | 0.870 | 0.872 | 0.872 | 0.872 | 0.872 | 0.872 | 0.872 | 0.872 |
| 1989 | 0.000 | 0.013 | 0.240 | 0.644 | 0.677 | 0.678 | 0.678 | 0.678 | 0.678 | 0.678 | 0.678 | 0.678 |
| 1990 | 0.000 | 0.013 | 0.223 | 0.593 | 0.628 | 0.629 | 0.629 | 0.629 | 0.629 | 0.629 | 0.629 | 0.629 |
| 1991 | 0.001 | 0.016 | 0.269 | 0.721 | 0.760 | 0.761 | 0.761 | 0.761 | 0.761 | 0.761 | 0.761 | 0.761 |
| 1992 | 0.001 | 0.017 | 0.274 | 0.721 | 0.755 | 0.757 | 0.757 | 0.757 | 0.757 | 0.757 | 0.757 | 0.757 |
| 1993 | 0.001 | 0.017 | 0.279 | 0.740 | 0.779 | 0.781 | 0.781 | 0.781 | 0.781 | 0.781 | 0.781 | 0.781 |
| 1994 | 0.001 | 0.023 | 0.357 | 0.932 | 0.969 | 0.971 | 0.971 | 0.971 | 0.971 | 0.971 | 0.971 | 0.971 |
| 1995 | 0.001 | 0.025 | 0.436 | 1.170 | 1.237 | 1.239 | 1.239 | 1.239 | 1.239 | 1.239 | 1.239 | 1.239 |
| 1996 | 0.001 | 0.021 | 0.365 | 0.972 | 1.030 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 | 1.032 |
| 1997 | 0.001 | 0.018 | 0.284 | 0.741 | 0.777 | 0.779 | 0.779 | 0.779 | 0.779 | 0.779 | 0.779 | 0.779 |
| 1998 | 0.000 | 0.013 | 0.214 | 0.589 | 0.624 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 | 0.625 |
| 1999 | 0.000 | 0.006 | 0.099 | 0.641 | 0.810 | 0.822 | 0.823 | 0.823 | 0.823 | 0.823 | 0.823 | 0.823 |
| 2000 | 0.000 | 0.006 | 0.084 | 0.528 | 0.646 | 0.653 | 0.653 | 0.653 | 0.652 | 0.652 | 0.652 | 0.652 |
| 2001 | 0.000 | 0.007 | 0.105 | 0.692 | 0.849 | 0.855 | 0.855 | 0.855 | 0.855 | 0.855 | 0.855 | 0.855 |
| 2002 | 0.000 | 0.005 | 0.092 | 0.627 | 0.781 | 0.790 | 0.790 | 0.790 | 0.790 | 0.790 | 0.790 | 0.790 |
| 2003 | 0.000 | 0.004 | 0.083 | 0.603 | 0.757 | 0.765 | 0.765 | 0.765 | 0.765 | 0.765 | 0.765 | 0.765 |
| 2004 | 0.000 | 0.006 | 0.104 | 0.774 | 0.969 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 | 0.976 |
| 2005 | 0.000 | 0.006 | 0.083 | 0.587 | 0.727 | 0.731 | 0.731 | 0.730 | 0.730 | 0.730 | 0.730 | 0.730 |
| 2006 | 0.000 | 0.008 | 0.105 | 0.633 | 0.756 | 0.760 | 0.759 | 0.759 | 0.759 | 0.759 | 0.758 | 0.758 |
| 2007 | 0.000 | 0.009 | 0.105 | 0.667 | 0.967 | 0.969 | 0.963 | 0.960 | 0.959 | 0.958 | 0.958 | 0.957 |
| 2008 | 0.000 | 0.006 | 0.081 | 0.536 | 0.765 | 0.770 | 0.767 | 0.765 | 0.764 | 0.764 | 0.764 | 0.764 |
| 2009 | 0.000 | 0.005 | 0.081 | 0.523 | 0.726 | 0.732 | 0.730 | 0.729 | 0.728 | 0.728 | 0.728 | 0.728 |
| 2010 | 0.000 | 0.005 | 0.072 | 0.524 | 0.781 | 0.786 | 0.784 | 0.782 | 0.781 | 0.781 | 0.781 | 0.781 |
| 2011 | 0.000 | 0.004 | 0.049 | 0.334 | 0.489 | 0.491 | 0.489 | 0.488 | 0.487 | 0.487 | 0.487 | 0.487 |
| 2012 | 0.000 | 0.002 | 0.029 | 0.212 | 0.326 | 0.329 | 0.328 | 0.327 | 0.327 | 0.326 | 0.326 | 0.326 |

*Table 11. Estimated total landings at age in numbers (1000 fish)*

| Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 9.48 | 99.86 | 911.76 | 676.41 | 387.91 | 216.65 | 118.15 | 65.80 | 37.25 | 21.35 | 12.37 | 17.11 |
| 1979 | 18.49 | 225.15 | 1135.31 | 1047.62 | 449.21 | 259.53 | 148.54 | 82.62 | 46.73 | 26.72 | 15.46 | 21.48 |
| 1980 | 19.68 | 305.88 | 1995.77 | 1024.03 | 499.37 | 213.80 | 126.55 | 73.89 | 41.74 | 23.85 | 13.77 | 19.15 |
| 1981 | 7.56 | 249.49 | 2155.19 | 1492.75 | 401.20 | 195.44 | 85.74 | 51.78 | 30.71 | 17.53 | 10.11 | 14.04 |
| 1982 | 22.65 | 121.32 | 2328.06 | 2046.08 | 713.38 | 190.17 | 94.89 | 42.46 | 26.05 | 15.60 | 8.99 | 12.46 |
| 1983 | 6.05 | 274.04 | 798.88 | 1500.11 | 703.61 | 245.98 | 67.21 | 34.22 | 15.56 | 9.64 | 5.83 | 8.07 |
| 1984 | 5.85 | 75.45 | 2213.34 | 894.87 | 941.46 | 442.59 | 158.51 | 44.17 | 22.84 | 10.49 | 6.56 | 9.52 |
| 1985 | 10.37 | 64.59 | 625.33 | 2125.90 | 289.19 | 294.18 | 141.61 | 51.75 | 14.65 | 7.65 | 3.55 | 5.47 |
| 1986 | 7.54 | 127.95 | 574.52 | 677.43 | 826.14 | 109.34 | 113.89 | 55.93 | 20.76 | 5.94 | 3.13 | 3.71 |
| 1987 | 7.05 | 101.23 | 1384.46 | 823.36 | 360.94 | 428.07 | 57.99 | 61.61 | 30.73 | 11.52 | 3.33 | 3.86 |
| 1988 | 8.53 | 162.90 | 1745.87 | 2689.98 | 562.25 | 239.20 | 290.22 | 40.08 | 43.25 | 21.78 | 8.25 | 5.17 |
| 1989 | 9.12 | 91.36 | 1243.50 | 1436.18 | 678.41 | 136.01 | 59.25 | 73.36 | 10.30 | 11.22 | 5.71 | 3.54 |
| 1990 | 3.90 | 118.83 | 827.83 | 1319.26 | 495.45 | 224.04 | 45.97 | 20.43 | 25.70 | 3.64 | 4.01 | 3.33 |
| 1991 | 7.71 | 54.05 | 1233.18 | 1080.96 | 581.33 | 207.97 | 96.21 | 20.14 | 9.09 | 11.55 | 1.65 | 3.35 |
| 1992 | 3.87 | 98.21 | 491.68 | 1316.65 | 363.79 | 185.86 | 68.04 | 32.11 | 6.83 | 3.11 | 4.00 | 1.74 |
| 1993 | 8.08 | 49.44 | 885.82 | 529.67 | 455.13 | 119.88 | 62.67 | 23.40 | 11.22 | 2.41 | 1.11 | 2.06 |
| 1994 | 16.92 | 120.32 | 509.55 | 1069.40 | 202.93 | 165.20 | 44.51 | 23.73 | 9.00 | 4.36 | 0.95 | 1.25 |
| 1995 | 12.72 | 243.78 | 1224.23 | 556.23 | 338.63 | 60.86 | 50.66 | 13.92 | 7.54 | 2.89 | 1.41 | 0.72 |
| 1996 | 11.11 | 134.94 | 1779.13 | 899.33 | 106.82 | 60.72 | 11.17 | 9.49 | 2.65 | 1.45 | 0.56 | 0.42 |
| 1997 | 6.60 | 106.74 | 904.58 | 1329.21 | 195.14 | 21.81 | 12.69 | 2.38 | 2.06 | 0.58 | 0.32 | 0.22 |
| 1998 | 6.82 | 59.30 | 704.29 | 786.46 | 376.74 | 52.70 | 6.03 | 3.58 | 0.68 | 0.60 | 0.17 | 0.16 |
| 1999 | 1.88 | 26.26 | 221.54 | 900.31 | 368.64 | 167.98 | 24.06 | 2.81 | 1.69 | 0.33 | 0.29 | 0.16 |
| 2000 | 1.84 | 8.39 | 236.26 | 636.53 | 322.83 | 96.72 | 44.21 | 6.45 | 0.76 | 0.47 | 0.09 | 0.12 |
| 2001 | 3.51 | 16.52 | 138.25 | 1089.80 | 364.83 | 141.24 | 42.76 | 19.92 | 2.95 | 0.35 | 0.22 | 0.10 |
| 2002 | 2.67 | 33.96 | 246.06 | 492.93 | 410.42 | 102.29 | 40.11 | 12.38 | 5.86 | 0.88 | 0.11 | 0.10 |
| 2003 | 2.08 | 19.15 | 432.35 | 862.54 | 204.09 | 127.09 | 31.97 | 12.78 | 4.01 | 1.92 | 0.29 | 0.07 |
| 2004 | 1.28 | 18.25 | 307.25 | 1936.85 | 439.68 | 77.58 | 48.82 | 12.52 | 5.08 | 1.61 | 0.78 | 0.15 |
| 2005 | 1.01 | 7.97 | 203.56 | 972.25 | 581.97 | 95.07 | 16.99 | 10.91 | 2.84 | 1.17 | 0.37 | 0.22 |
| 2006 | 1.56 | 11.11 | 148.84 | 944.29 | 448.58 | 199.47 | 33.07 | 6.03 | 3.93 | 1.04 | 0.43 | 0.22 |
| 2007 | 1.90 | 16.03 | 167.25 | 611.20 | 463.02 | 168.68 | 76.36 | 12.93 | 2.40 | 1.58 | 0.42 | 0.26 |
| 2008 | 1.99 | 17.63 | 221.29 | 637.42 | 241.54 | 105.77 | 38.97 | 18.07 | 3.11 | 0.58 | 0.39 | 0.17 |
| 2009 | 2.95 | 20.45 | 275.94 | 922.58 | 319.93 | 75.59 | 33.40 | 12.58 | 5.93 | 1.03 | 0.20 | 0.19 |
| 2010 | 2.42 | 18.53 | 218.01 | 1037.12 | 495.48 | 112.79 | 26.87 | 12.12 | 4.64 | 2.21 | 0.39 | 0.15 |
| 2011 | 1.10 | 13.60 | 178.35 | 714.85 | 385.78 | 108.42 | 24.88 | 6.06 | 2.78 | 1.08 | 0.52 | 0.13 |
| 2012 | 1.06 | 7.59 | 118.54 | 607.58 | 342.55 | 118.38 | 33.63 | 7.88 | 1.95 | 0.91 | 0.35 | 0.21 |

*Table 12. Estimated total landings at age in whole weight (1000 lb)*

| Year | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1978 | 0.48 | 17.43 | 331.51 | 402.85 | 329.47 | 240.07 | 160.65 | 105.06 | 67.57 | 42.91 | 27.02 | 40.01 |
| 1979 | 0.93 | 39.30 | 412.79 | 623.93 | 381.53 | 287.58 | 201.98 | 131.91 | 84.77 | 53.70 | 33.78 | 50.20 |
| 1980 | 0.99 | 53.38 | 725.65 | 609.88 | 424.14 | 236.91 | 172.08 | 117.97 | 75.73 | 47.94 | 30.08 | 44.76 |
| 1981 | 0.38 | 43.54 | 783.62 | 889.04 | 340.76 | 216.57 | 116.58 | 82.67 | 55.71 | 35.23 | 22.09 | 32.81 |
| 1982 | 1.14 | 21.17 | 846.47 | 1218.58 | 605.91 | 210.73 | 129.03 | 67.79 | 47.25 | 31.36 | 19.65 | 29.14 |
| 1983 | 0.30 | 47.83 | 290.47 | 893.42 | 597.61 | 272.56 | 91.39 | 54.63 | 28.22 | 19.38 | 12.74 | 18.86 |
| 1984 | 0.32 | 13.17 | 804.77 | 532.96 | 799.63 | 490.43 | 215.54 | 70.52 | 41.43 | 21.07 | 14.31 | 22.17 |
| 1985 | 0.58 | 11.28 | 227.37 | 1266.13 | 245.62 | 325.97 | 192.55 | 82.62 | 26.57 | 15.37 | 7.74 | 12.75 |
| 1986 | 0.42 | 22.34 | 208.90 | 403.46 | 701.68 | 121.16 | 154.86 | 89.30 | 37.66 | 11.93 | 6.83 | 8.66 |
| 1987 | 0.39 | 17.68 | 503.39 | 490.37 | 306.57 | 474.33 | 78.85 | 98.36 | 55.74 | 23.15 | 7.26 | 8.99 |
| 1988 | 0.47 | 28.44 | 634.80 | 1602.08 | 477.54 | 265.05 | 394.63 | 64.00 | 78.44 | 43.76 | 17.99 | 12.06 |
| 1989 | 0.51 | 15.95 | 452.14 | 855.35 | 576.20 | 150.71 | 80.56 | 117.12 | 18.68 | 22.55 | 12.45 | 8.25 |
| 1990 | 0.22 | 20.75 | 301.00 | 785.71 | 420.81 | 248.26 | 62.51 | 32.62 | 46.62 | 7.32 | 8.75 | 7.75 |
| 1991 | 0.43 | 9.44 | 448.39 | 643.79 | 493.75 | 230.45 | 130.83 | 32.15 | 16.49 | 23.20 | 3.61 | 7.80 |
| 1992 | 0.21 | 17.15 | 178.78 | 784.16 | 308.98 | 205.95 | 92.51 | 51.26 | 12.38 | 6.26 | 8.71 | 4.06 |
| 1993 | 0.45 | 8.63 | 322.08 | 315.46 | 386.57 | 132.84 | 85.22 | 37.36 | 20.35 | 4.84 | 2.42 | 4.79 |
| 1994 | 0.94 | 21.01 | 185.27 | 636.90 | 172.36 | 183.06 | 60.52 | 37.88 | 16.33 | 8.76 | 2.06 | 2.91 |
| 1995 | 0.71 | 42.57 | 445.13 | 331.28 | 287.61 | 67.44 | 68.89 | 22.22 | 13.67 | 5.80 | 3.08 | 1.67 |
| 1996 | 0.62 | 23.56 | 646.89 | 535.61 | 90.73 | 67.29 | 15.18 | 15.15 | 4.81 | 2.91 | 1.22 | 0.97 |
| 1997 | 0.37 | 18.64 | 328.90 | 791.64 | 165.74 | 24.17 | 17.26 | 3.80 | 3.73 | 1.17 | 0.70 | 0.51 |
| 1998 | 0.38 | 10.35 | 256.08 | 468.39 | 319.98 | 58.40 | 8.20 | 5.72 | 1.24 | 1.20 | 0.37 | 0.37 |
| 1999 | 0.10 | 4.59 | 80.55 | 536.20 | 313.11 | 186.13 | 32.71 | 4.48 | 3.07 | 0.66 | 0.63 | 0.37 |
| 2000 | 0.10 | 1.46 | 85.90 | 379.10 | 274.19 | 107.17 | 60.11 | 10.30 | 1.39 | 0.94 | 0.20 | 0.29 |
| 2001 | 0.19 | 2.88 | 50.27 | 649.05 | 309.87 | 156.51 | 58.14 | 31.80 | 5.35 | 0.71 | 0.47 | 0.24 |
| 2002 | 0.15 | 5.93 | 89.47 | 293.58 | 348.59 | 113.35 | 54.54 | 19.77 | 10.63 | 1.76 | 0.23 | 0.22 |
| 2003 | 0.12 | 3.34 | 157.20 | 513.70 | 173.35 | 140.82 | 43.48 | 20.40 | 7.27 | 3.85 | 0.63 | 0.16 |
| 2004 | 0.07 | 3.19 | 111.72 | 1153.53 | 373.44 | 85.97 | 66.38 | 19.98 | 9.22 | 3.23 | 1.70 | 0.34 |
| 2005 | 0.06 | 1.39 | 74.02 | 579.05 | 494.29 | 105.34 | 23.10 | 17.42 | 5.16 | 2.34 | 0.81 | 0.50 |
| 2006 | 0.09 | 1.94 | 54.12 | 562.39 | 381.00 | 221.03 | 44.97 | 9.63 | 7.13 | 2.08 | 0.94 | 0.51 |
| 2007 | 0.11 | 2.80 | 60.81 | 364.01 | 393.26 | 186.91 | 103.83 | 20.64 | 4.34 | 3.17 | 0.92 | 0.61 |
| 2008 | 0.11 | 3.08 | 80.46 | 379.63 | 205.15 | 117.21 | 52.99 | 28.85 | 5.65 | 1.17 | 0.85 | 0.39 |
| 2009 | 0.16 | 3.57 | 100.33 | 549.46 | 271.73 | 83.76 | 45.42 | 20.08 | 10.76 | 2.08 | 0.43 | 0.44 |
| 2010 | 0.13 | 3.23 | 79.27 | 617.68 | 420.83 | 124.98 | 36.54 | 19.36 | 8.42 | 4.44 | 0.85 | 0.34 |
| 2011 | 0.06 | 2.37 | 64.85 | 425.75 | 327.66 | 120.13 | 33.83 | 9.67 | 5.05 | 2.16 | 1.13 | 0.29 |
| 2012 | 0.06 | 1.32 | 43.10 | 361.86 | 290.94 | 131.17 | 45.72 | 12.59 | 3.54 | 1.82 | 0.77 | 0.50 |

*Table 13. Estimated time series of landings in numbers (1000 fish) for commercial lines (L.cl), commercial pots (L.cp), commercial trawl (L.ct), headboat (L.hb), and general recreational (L.rec)*

| Year | L.cl | L.cp | L.ct | L.hb | L.rec | Total |
|---|---|---|---|---|---|---|
| 1978 | 134.91 | 190.32 | 45.07 | 792.41 | 1411.39 | 2574.10 |
| 1979 | 165.07 | 1005.98 | 40.58 | 889.03 | 1376.19 | 3476.85 |
| 1980 | 134.67 | 1495.39 | 42.66 | 1095.47 | 1589.28 | 4357.47 |
| 1981 | 225.14 | 1828.90 | 57.27 | 1265.87 | 1334.36 | 4711.53 |
| 1982 | 210.54 | 1344.32 | 35.12 | 1249.04 | 2783.10 | 5622.11 |
| 1983 | 192.37 | 755.35 | 13.26 | 1113.05 | 1595.16 | 3669.19 |
| 1984 | 247.68 | 697.64 | 30.20 | 1060.64 | 2789.50 | 4825.65 |
| 1985 | 223.90 | 617.83 | 37.16 | 856.02 | 1899.32 | 3634.24 |
| 1986 | 200.60 | 764.59 | 33.77 | 768.60 | 758.74 | 2526.31 |
| 1987 | 188.68 | 683.25 | 12.66 | 978.31 | 1411.24 | 3274.16 |
| 1988 | 325.53 | 868.35 | 35.88 | 1019.71 | 3568.01 | 5817.48 |
| 1989 | 343.86 | 889.77 | 23.19 | 780.24 | 1720.88 | 3757.94 |
| 1990 | 356.46 | 1154.11 | 22.74 | 605.84 | 953.23 | 3092.39 |
| 1991 | 365.61 | 1067.50 | 0.00 | 468.96 | 1405.12 | 3307.20 |
| 1992 | 313.16 | 896.67 | 0.00 | 334.87 | 1031.18 | 2575.88 |
| 1993 | 252.45 | 885.57 | 0.00 | 234.27 | 778.61 | 2150.90 |
| 1994 | 296.72 | 900.81 | 0.00 | 214.10 | 756.49 | 2168.11 |
| 1995 | 210.45 | 876.55 | 0.00 | 248.14 | 1178.44 | 2513.58 |
| 1996 | 220.13 | 1135.35 | 0.00 | 312.06 | 1350.23 | 3017.77 |
| 1997 | 266.75 | 1074.11 | 0.00 | 279.70 | 961.78 | 2582.34 |
| 1998 | 333.86 | 840.85 | 0.00 | 253.38 | 569.44 | 1997.53 |
| 1999 | 282.96 | 769.24 | 0.00 | 271.19 | 392.55 | 1715.94 |
| 2000 | 140.01 | 637.94 | 0.00 | 202.48 | 374.23 | 1354.66 |
| 2001 | 131.03 | 742.35 | 0.00 | 241.16 | 705.90 | 1820.45 |
| 2002 | 149.98 | 639.70 | 0.00 | 165.21 | 392.88 | 1347.77 |
| 2003 | 153.19 | 800.10 | 0.00 | 197.66 | 547.37 | 1698.32 |
| 2004 | 171.98 | 1006.64 | 0.00 | 358.21 | 1313.03 | 2849.85 |
| 2005 | 100.39 | 598.35 | 0.00 | 256.27 | 939.32 | 1894.33 |
| 2006 | 88.68 | 720.63 | 0.00 | 238.69 | 750.57 | 1798.57 |
| 2007 | 79.64 | 523.71 | 0.00 | 206.66 | 712.00 | 1522.01 |
| 2008 | 91.74 | 572.51 | 0.00 | 134.36 | 488.33 | 1286.93 |
| 2009 | 141.29 | 877.38 | 0.00 | 227.16 | 424.92 | 1670.75 |
| 2010 | 112.77 | 632.60 | 0.00 | 394.95 | 790.41 | 1930.73 |
| 2011 | 68.87 | 537.92 | 0.00 | 317.47 | 513.28 | 1437.54 |
| 2012 | 126.48 | 265.14 | 0.00 | 297.99 | 551.02 | 1240.63 |

*Table 14. Estimated time series of landings in whole weight (1000 lb) for commercial lines (L.cl), commercial pots (L.cp), commercial trawl (L.ct), headboat (L.hb), and general recreational (L.rec)*

| Year | L.cl | L.cp | L.ct | L.hb | L.rec | Total |
|---|---|---|---|---|---|---|
| 1978 | 118.67 | 134.35 | 31.82 | 532.22 | 947.96 | 1765.02 |
| 1979 | 140.57 | 677.55 | 27.33 | 571.81 | 885.15 | 2302.40 |
| 1980 | 107.97 | 890.16 | 25.39 | 618.57 | 897.40 | 2539.50 |
| 1981 | 163.87 | 1029.07 | 32.22 | 678.56 | 715.27 | 2618.99 |
| 1982 | 150.94 | 789.46 | 20.62 | 702.31 | 1564.88 | 3228.21 |
| 1983 | 145.87 | 485.77 | 8.53 | 693.43 | 993.79 | 2327.40 |
| 1984 | 194.71 | 410.67 | 17.78 | 662.03 | 1741.14 | 3026.33 |
| 1985 | 164.12 | 396.11 | 23.83 | 568.70 | 1261.81 | 2414.56 |
| 1986 | 163.66 | 506.09 | 22.35 | 541.01 | 534.07 | 1767.20 |
| 1987 | 149.28 | 403.25 | 7.47 | 616.20 | 888.88 | 2065.09 |
| 1988 | 236.31 | 512.53 | 21.17 | 633.30 | 2215.94 | 3619.26 |
| 1989 | 248.43 | 517.32 | 13.48 | 477.67 | 1053.54 | 2310.45 |
| 1990 | 259.33 | 689.09 | 13.58 | 380.94 | 599.37 | 1942.31 |
| 1991 | 268.67 | 622.39 | 0.00 | 287.59 | 861.67 | 2040.32 |
| 1992 | 228.09 | 555.79 | 0.00 | 217.32 | 669.21 | 1670.41 |
| 1993 | 189.93 | 511.31 | 0.00 | 143.35 | 476.43 | 1321.02 |
| 1994 | 211.11 | 520.04 | 0.00 | 131.66 | 465.19 | 1328.00 |
| 1995 | 141.87 | 413.80 | 0.00 | 127.74 | 606.65 | 1290.06 |
| 1996 | 127.02 | 502.09 | 0.00 | 145.64 | 630.18 | 1404.93 |
| 1997 | 162.10 | 539.36 | 0.00 | 147.61 | 507.56 | 1356.63 |
| 1998 | 220.34 | 448.42 | 0.00 | 142.24 | 319.67 | 1130.68 |
| 1999 | 187.71 | 503.13 | 0.00 | 192.75 | 279.01 | 1162.60 |
| 2000 | 93.19 | 413.70 | 0.00 | 145.45 | 268.82 | 921.15 |
| 2001 | 88.84 | 498.45 | 0.00 | 172.69 | 505.50 | 1265.48 |
| 2002 | 98.15 | 422.62 | 0.00 | 123.58 | 293.87 | 938.21 |
| 2003 | 91.13 | 471.79 | 0.00 | 133.02 | 368.38 | 1064.32 |
| 2004 | 106.86 | 619.37 | 0.00 | 236.31 | 866.22 | 1828.77 |
| 2005 | 67.12 | 391.02 | 0.00 | 181.19 | 664.15 | 1303.48 |
| 2006 | 62.38 | 495.36 | 0.00 | 175.67 | 552.41 | 1285.82 |
| 2007 | 55.09 | 358.73 | 0.00 | 163.68 | 563.92 | 1141.41 |
| 2008 | 57.56 | 358.28 | 0.00 | 99.19 | 360.51 | 875.54 |
| 2009 | 87.04 | 540.05 | 0.00 | 160.64 | 300.48 | 1088.21 |
| 2010 | 70.82 | 397.42 | 0.00 | 282.49 | 565.34 | 1316.08 |
| 2011 | 44.16 | 342.36 | 0.00 | 231.75 | 374.69 | 992.96 |
| 2012 | 85.08 | 174.10 | 0.00 | 222.60 | 411.62 | 893.40 |

*Table 15. Estimated time series of dead discards in numbers (1000 fish) for commercial (D.comm), headboat (D.hb), and general recreational (D.rec). D.rec and D.hb are combined under D.rec prior to 1986.*

| Year | D.comm | D.hb | D.rec | Total |
|---|---|---|---|---|
| 1978 | 0.00 | 0.00 | 36.69 | 36.69 |
| 1979 | 0.00 | 0.00 | 39.86 | 39.86 |
| 1980 | 0.00 | 0.00 | 51.64 | 51.64 |
| 1981 | 0.00 | 0.00 | 78.82 | 78.82 |
| 1982 | 0.00 | 0.00 | 70.62 | 70.62 |
| 1983 | 0.00 | 0.00 | 29.33 | 29.33 |
| 1984 | 23.85 | 0.00 | 72.77 | 96.62 |
| 1985 | 18.72 | 0.00 | 71.55 | 90.27 |
| 1986 | 15.06 | 17.95 | 58.29 | 91.30 |
| 1987 | 21.68 | 20.32 | 84.05 | 126.04 |
| 1988 | 19.89 | 6.75 | 71.90 | 98.55 |
| 1989 | 16.27 | 4.92 | 65.34 | 86.53 |
| 1990 | 14.00 | 0.35 | 35.42 | 49.76 |
| 1991 | 12.66 | 11.20 | 58.09 | 81.95 |
| 1992 | 9.06 | 4.42 | 59.55 | 73.03 |
| 1993 | 7.79 | 1.91 | 54.27 | 63.97 |
| 1994 | 10.94 | 5.72 | 94.36 | 111.03 |
| 1995 | 9.50 | 3.96 | 65.17 | 78.64 |
| 1996 | 10.50 | 4.78 | 54.75 | 70.03 |
| 1997 | 9.57 | 4.44 | 78.45 | 92.46 |
| 1998 | 9.66 | 3.24 | 57.74 | 70.64 |
| 1999 | 8.91 | 7.39 | 83.35 | 99.64 |
| 2000 | 6.68 | 6.59 | 117.13 | 130.41 |
| 2001 | 8.11 | 7.63 | 126.82 | 142.56 |
| 2002 | 3.53 | 5.31 | 86.47 | 95.32 |
| 2003 | 8.64 | 4.80 | 97.72 | 111.16 |
| 2004 | 5.94 | 7.38 | 188.20 | 201.52 |
| 2005 | 9.32 | 8.81 | 150.55 | 168.68 |
| 2006 | 12.23 | 8.62 | 178.86 | 199.71 |
| 2007 | 0.80 | 7.63 | 226.33 | 234.77 |
| 2008 | 0.75 | 4.89 | 166.63 | 172.28 |
| 2009 | 1.99 | 7.28 | 146.39 | 155.67 |
| 2010 | 1.56 | 11.55 | 201.62 | 214.74 |
| 2011 | 3.00 | 10.64 | 207.26 | 220.90 |
| 2012 | 2.61 | 9.64 | 166.35 | 178.60 |

*Table 16. Estimated time series of dead discards in whole weight (1000 lb) for commercial (D.comm), headboat (D.hb), and general recreational (D.rec). D.rec and D.hb are combined under D.rec prior to 1986.*

| Year | D.comm | D.hb | D.rec | Total |
|---|---|---|---|---|
| 1978 | 0.00 | 0.00 | 7.71 | 7.71 |
| 1979 | 0.00 | 0.00 | 8.21 | 8.21 |
| 1980 | 0.00 | 0.00 | 10.65 | 10.65 |
| 1981 | 0.00 | 0.00 | 16.59 | 16.59 |
| 1982 | 0.00 | 0.00 | 15.20 | 15.20 |
| 1983 | 0.00 | 0.00 | 6.04 | 6.04 |
| 1984 | 5.09 | 0.00 | 15.53 | 20.62 |
| 1985 | 4.04 | 0.00 | 15.42 | 19.46 |
| 1986 | 3.06 | 3.65 | 11.85 | 18.56 |
| 1987 | 4.56 | 4.27 | 17.67 | 26.50 |
| 1988 | 4.22 | 1.43 | 15.27 | 20.92 |
| 1989 | 3.46 | 1.05 | 13.88 | 18.39 |
| 1990 | 2.94 | 0.07 | 7.45 | 10.47 |
| 1991 | 2.71 | 2.40 | 12.45 | 17.57 |
| 1992 | 1.91 | 0.93 | 12.53 | 15.37 |
| 1993 | 1.65 | 0.40 | 11.51 | 13.56 |
| 1994 | 2.25 | 1.18 | 19.41 | 22.83 |
| 1995 | 1.90 | 0.79 | 13.05 | 15.75 |
| 1996 | 2.20 | 1.00 | 11.49 | 14.70 |
| 1997 | 2.02 | 0.94 | 16.58 | 19.54 |
| 1998 | 2.05 | 0.69 | 12.23 | 14.96 |
| 1999 | 2.82 | 2.34 | 26.40 | 31.56 |
| 2000 | 2.19 | 2.16 | 38.45 | 42.81 |
| 2001 | 2.60 | 2.45 | 40.69 | 45.74 |
| 2002 | 1.03 | 1.55 | 25.26 | 27.84 |
| 2003 | 2.76 | 1.53 | 31.17 | 35.46 |
| 2004 | 1.97 | 2.44 | 62.32 | 66.73 |
| 2005 | 3.09 | 2.92 | 49.89 | 55.90 |
| 2006 | 3.99 | 2.81 | 58.33 | 65.13 |
| 2007 | 0.25 | 2.87 | 85.20 | 88.32 |
| 2008 | 0.23 | 1.82 | 62.13 | 64.19 |
| 2009 | 0.80 | 2.82 | 56.61 | 60.23 |
| 2010 | 0.63 | 4.47 | 77.99 | 83.10 |
| 2011 | 1.22 | 4.39 | 85.46 | 91.06 |
| 2012 | 1.12 | 4.17 | 71.99 | 77.29 |

*Table 17. Estimated status indicators, benchmarks, and related quantities from the Beaufort catch-age model, conditional on estimated current selectivities averaged across fleets. Precision is represented by standard errors (SE) approximated from Monte Carlo/Bootstrap analysis. Estimates of yield do not include discards; $D_{\mathrm{MSY}}$ represents discard mortalities expected when fishing at $F_{\mathrm{MSY}}$. Rate estimates (F) are in units of $\mathrm{y}^{-1}$; status indicators are dimensionless; and biomass estimates are whole weight in units of metric tons or pounds, as indicated. Spawning stock biomass (SSB) is measured as population fecundity.*

| Quantity | Units | Estimate | SE |
|---|---|---|---|
| $F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.610 | 0.381 |
| $85\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.518 | 0.324 |
| $75\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.457 | 0.285 |
| $65\%F_{\mathrm{MSY}}$ | $\mathrm{y}^{-1}$ | 0.396 | 0.247 |
| $F_{30\%}$ | $\mathrm{y}^{-1}$ | NA | NA |
| $F_{40\%}$ | $\mathrm{y}^{-1}$ | NA | NA |
| $F_{50\%}$ | $\mathrm{y}^{-1}$ | 1.89 | 0.643 |
| $B_{\mathrm{MSY}}$ | mt | 5617 | 716.7 |
| $\mathrm{SSB}_{\mathrm{MSY}}$ | 1E10 eggs | 256 | 32.8 |
| MSST | 1E10 eggs | 159 | 25.2 |
| MSY | 1000 lb | 1780 | 105.63 |
| $D_{\mathrm{MSY}}$ | 1000 fish | 288 | 91.48 |
| $R_{\mathrm{MSY}}$ | 1000 age-0 fish | 35843 | 1165 |
| Y at $85\%F_{\mathrm{MSY}}$ | 1000 lb | 1772.56 | 96.44 |
| Y at $75\%F_{\mathrm{MSY}}$ | 1000 lb | 1756.45 | 101.31 |
| Y at $65\%F_{\mathrm{MSY}}$ | 1000 lb | 1726.76 | 104.2 |
| $F_{2011-2012}/F_{\mathrm{MSY}}$ | — | 0.659 | 0.24 |
| $\mathrm{SSB}_{2012}/\mathrm{MSST}$ | — | 1.66 | 0.51 |
| $\mathrm{SSB}_{2012}/\mathrm{SSB}_{\mathrm{MSY}}$ | — | 1.03 | 0.23 |

# 8 Figures

*Figure 1. Mean length at age (mm) and estimated upper and lower 95% confidence intervals of the population.*

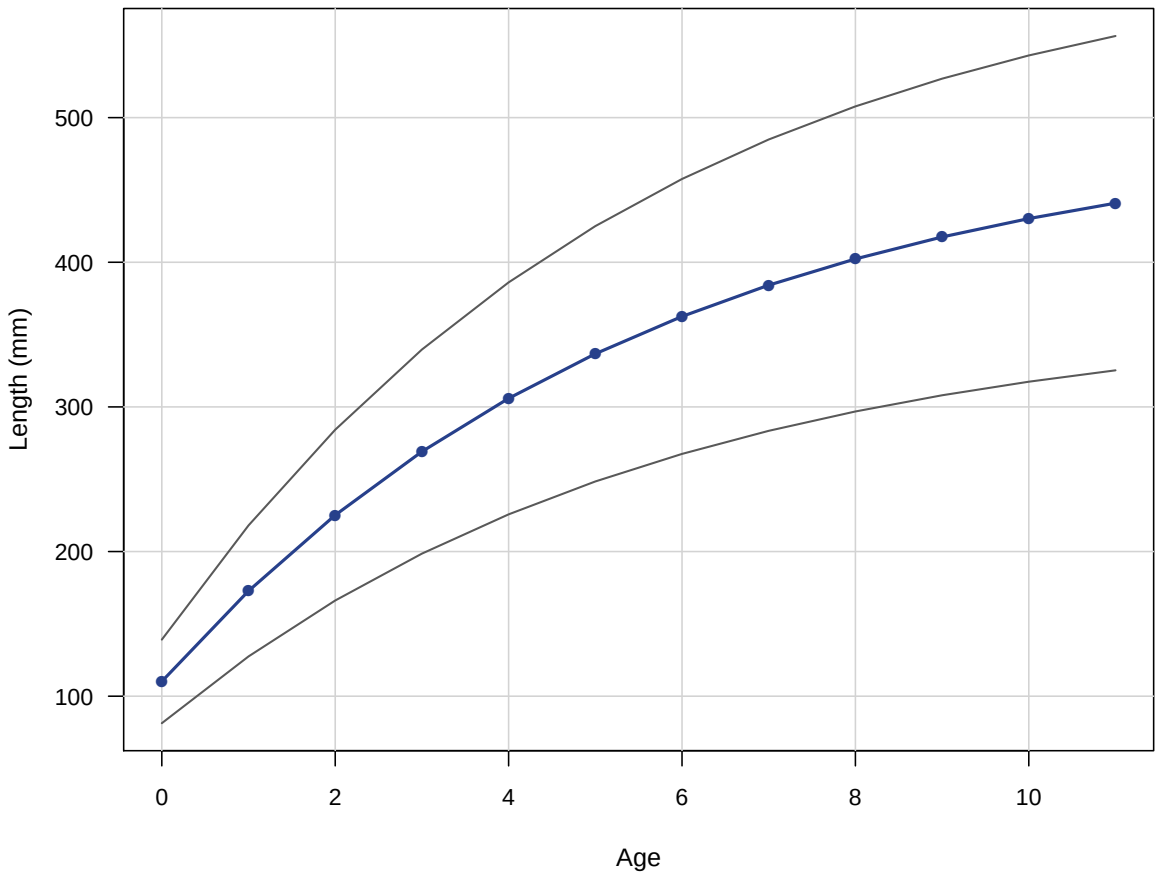


*Figure 2. Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey. In panels indicating the data set, lcomp refers to length compositions, acomp to age compositions, Mbft to MARMAP blackfish/snapper traps, Mcvt to MARMAP chevron traps, cl to commercial lines, cp to commercial pots, hb to headboat, mrip to general recreational, and hb.D to headboat discards. The one year of cp length data represents annual compositions pooled across years within the relevant time block of size-limit regulations. N indicates the number of trips from which individual fish samples were taken.*

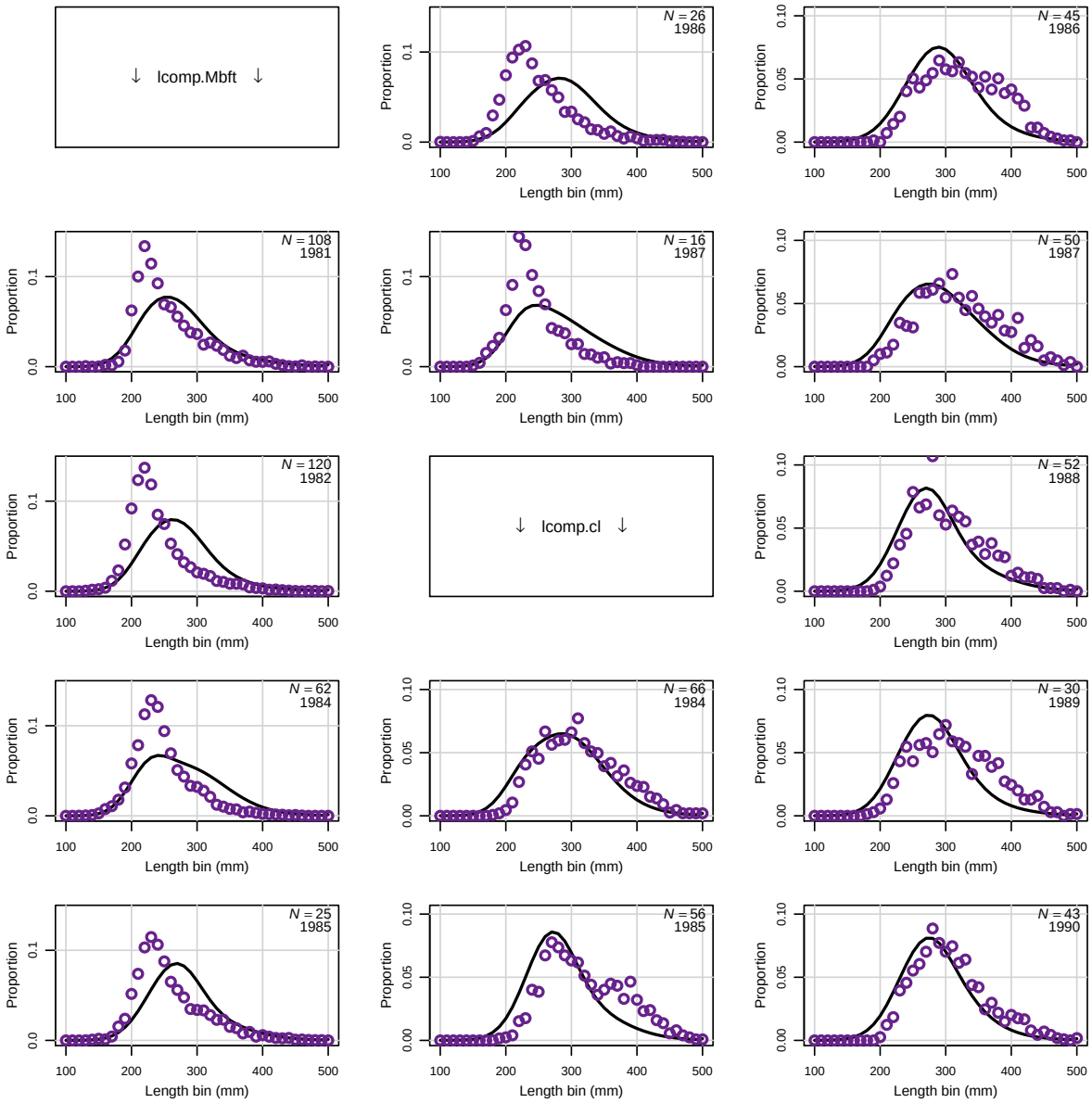


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

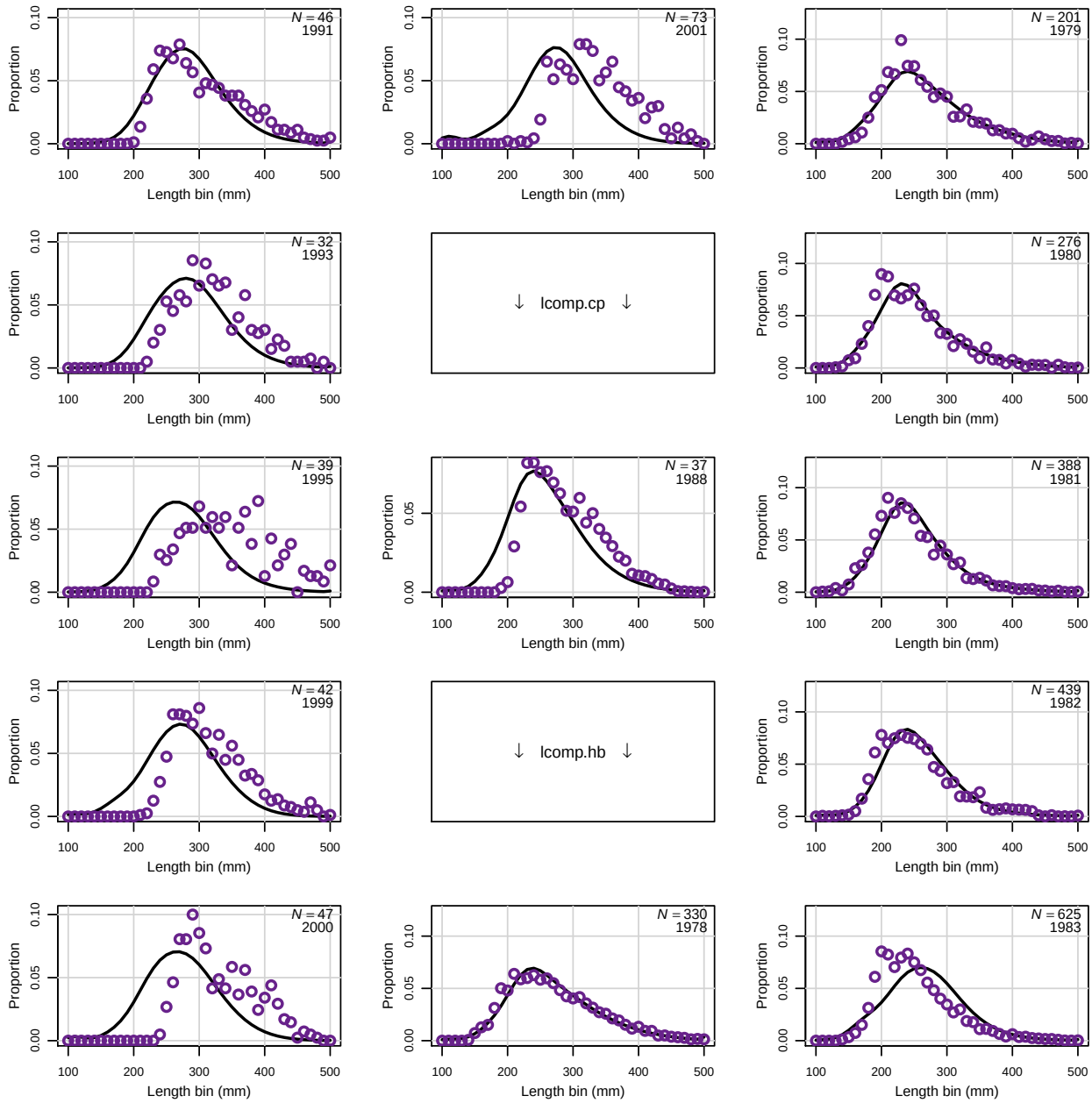


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

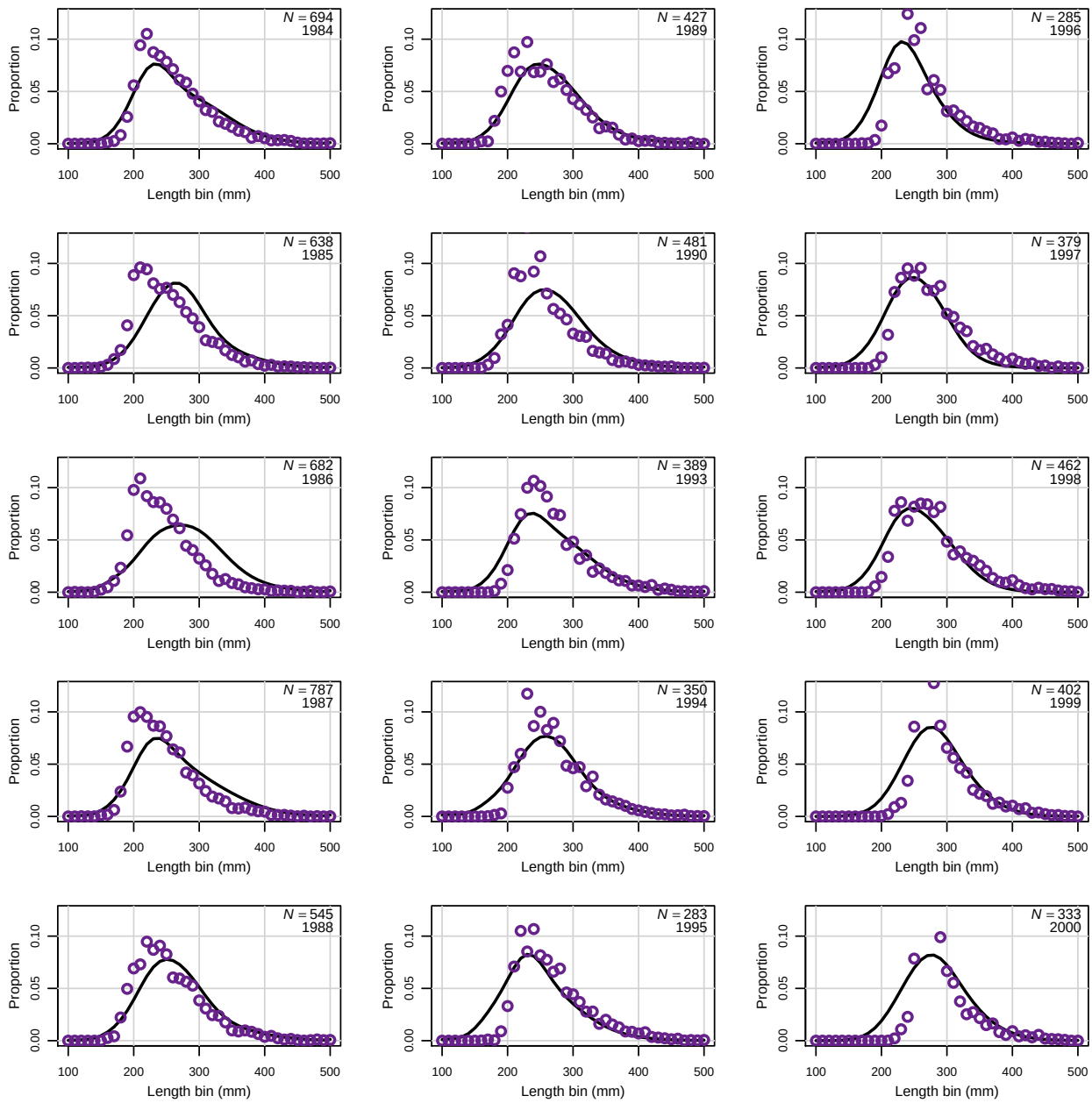


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

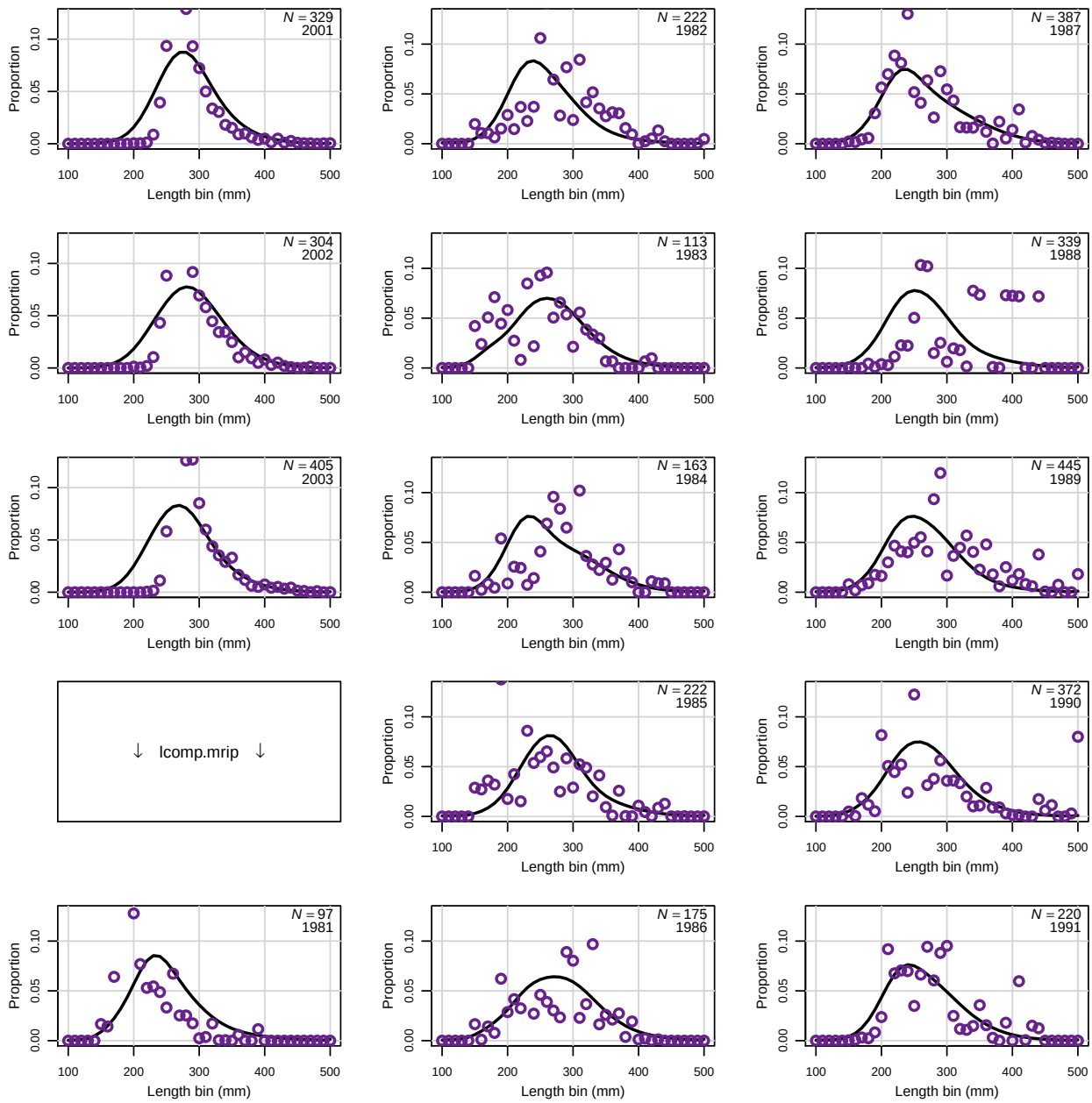


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

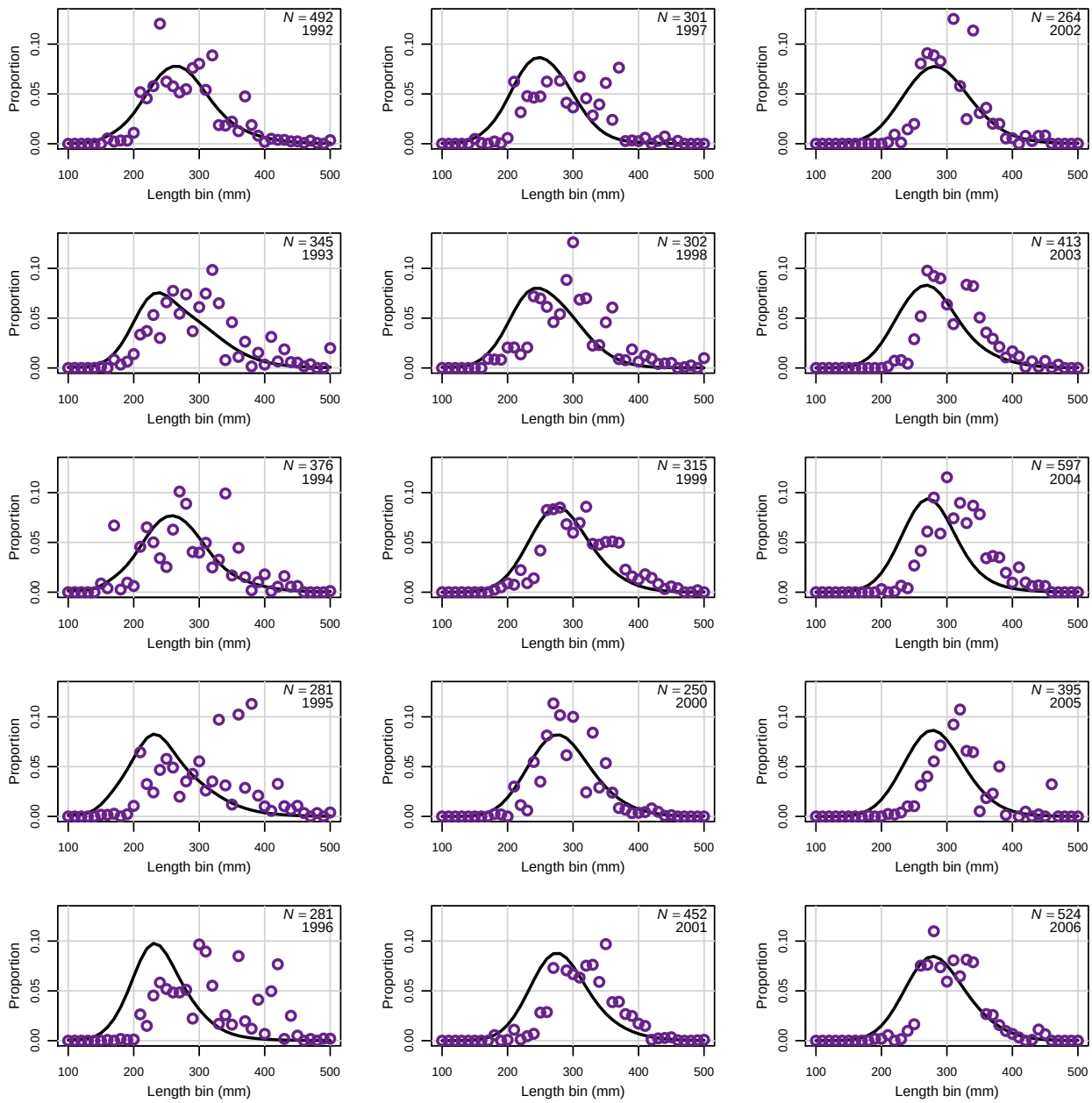


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

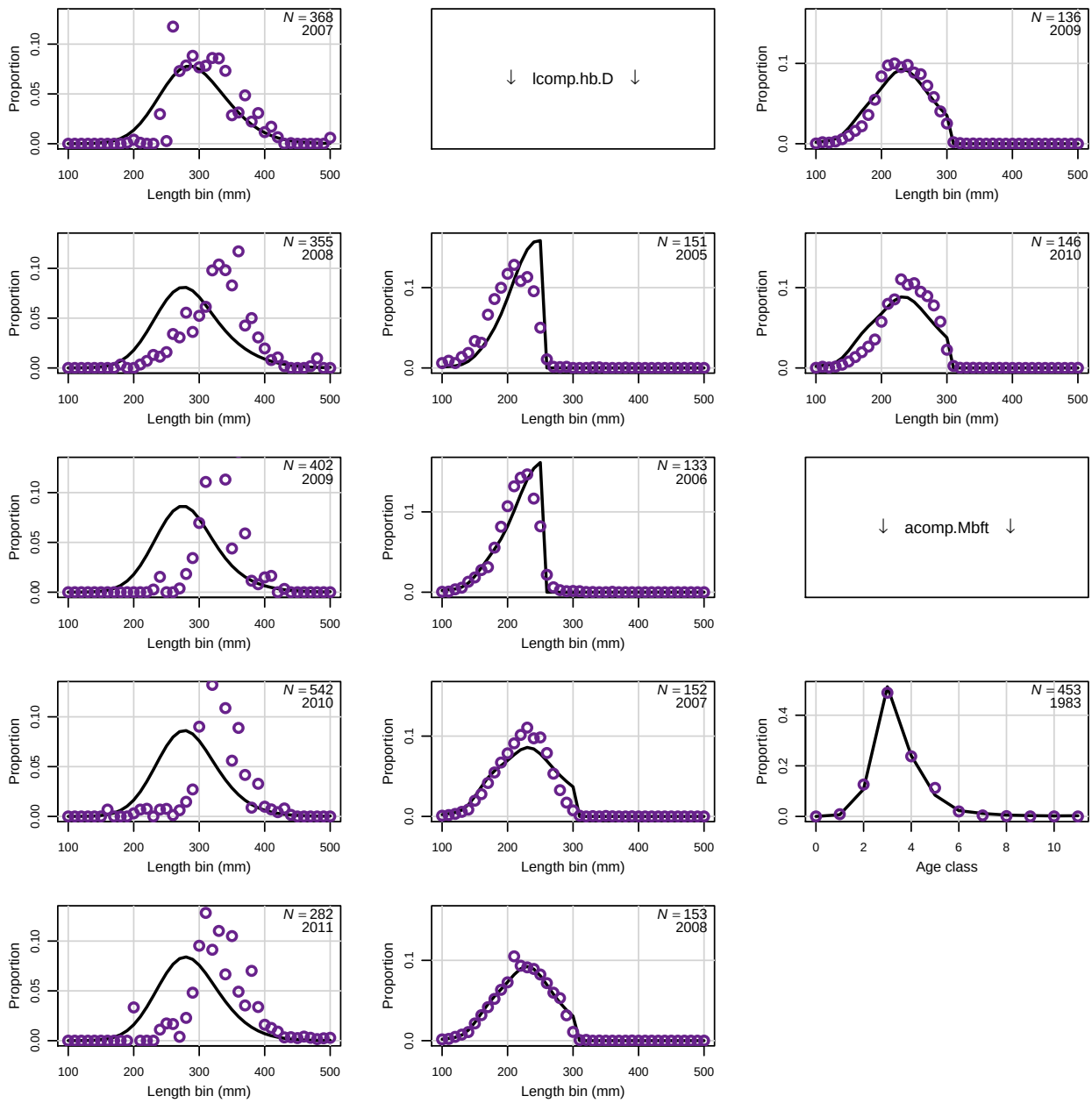


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

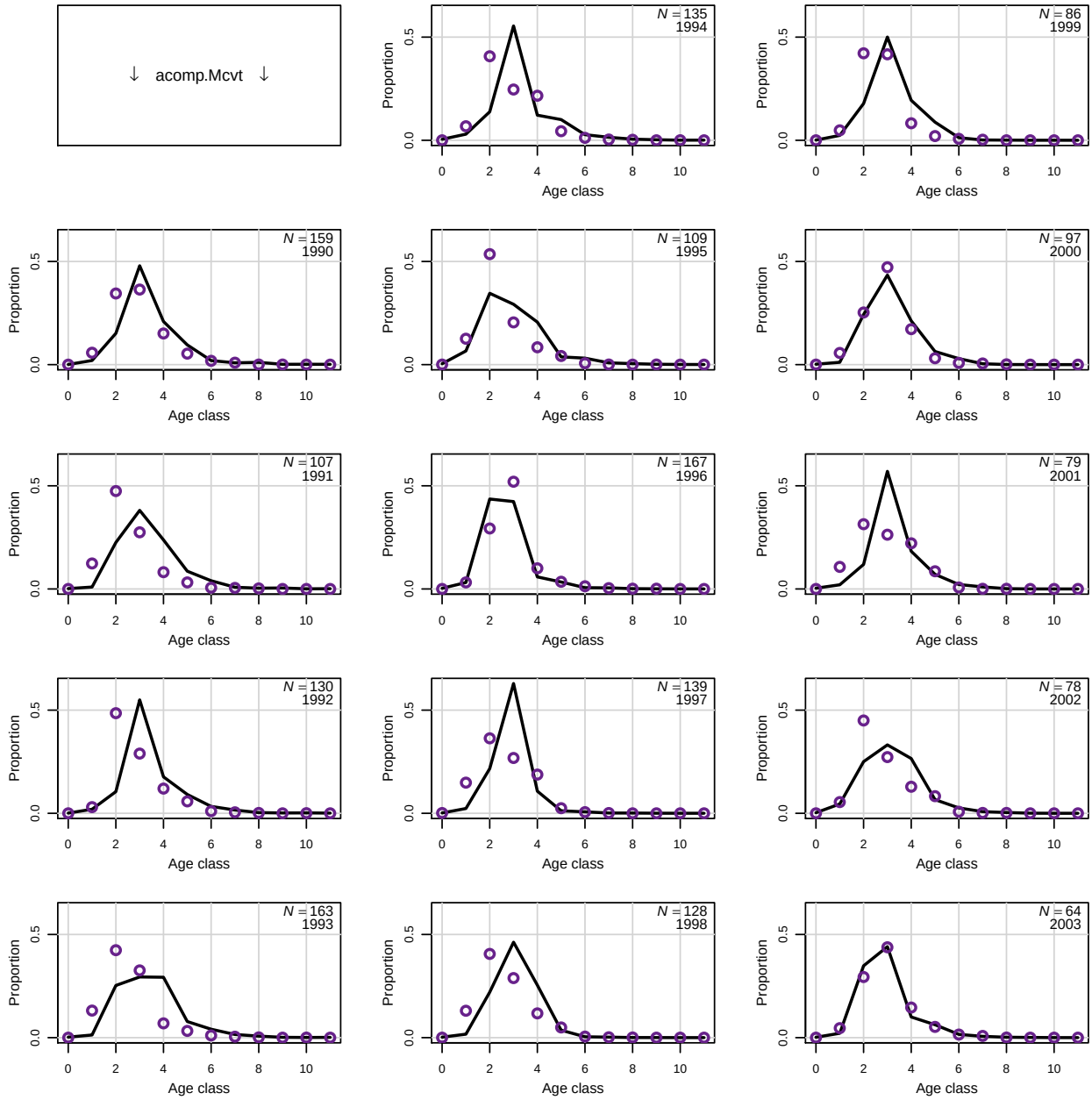


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

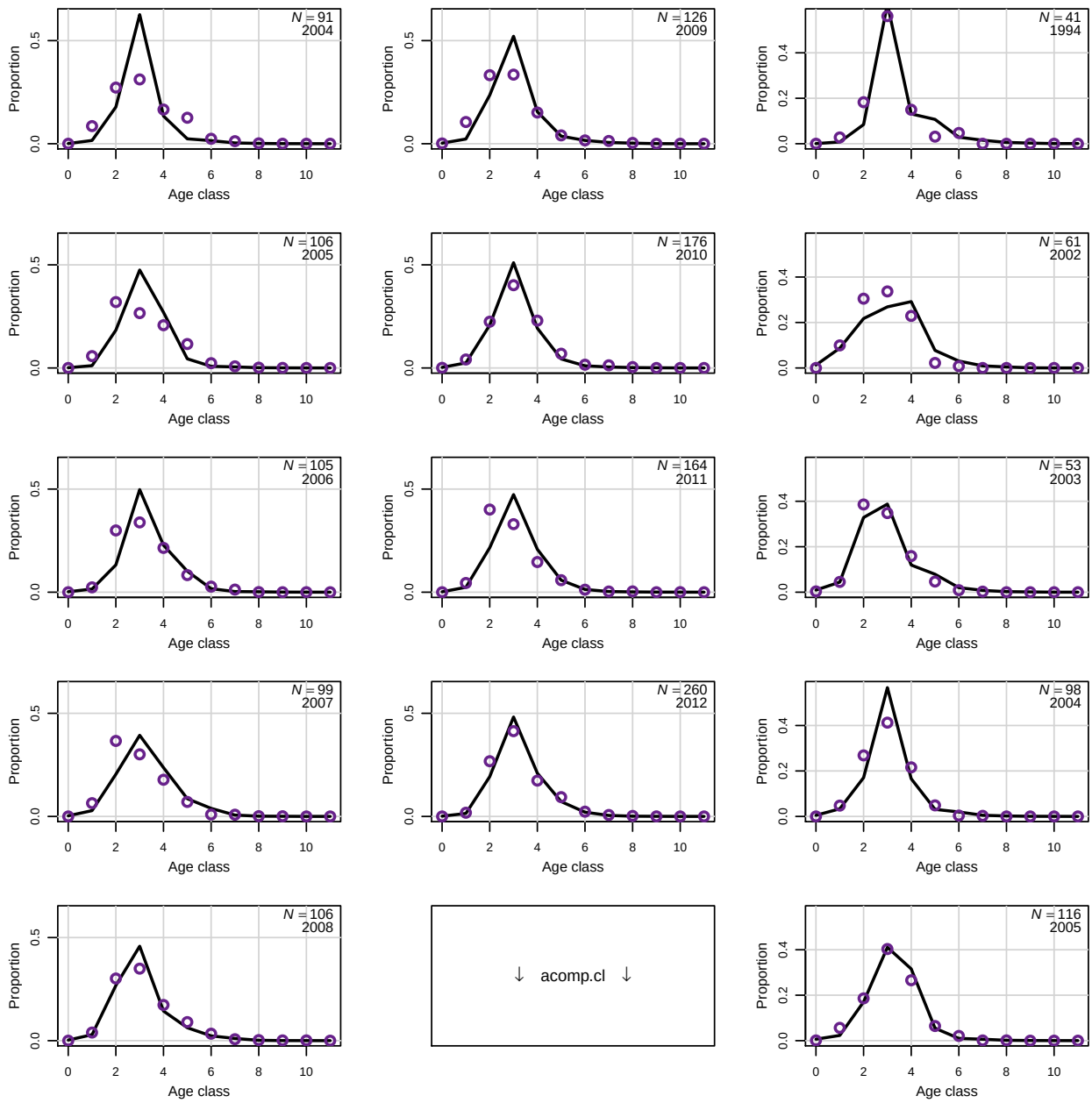


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

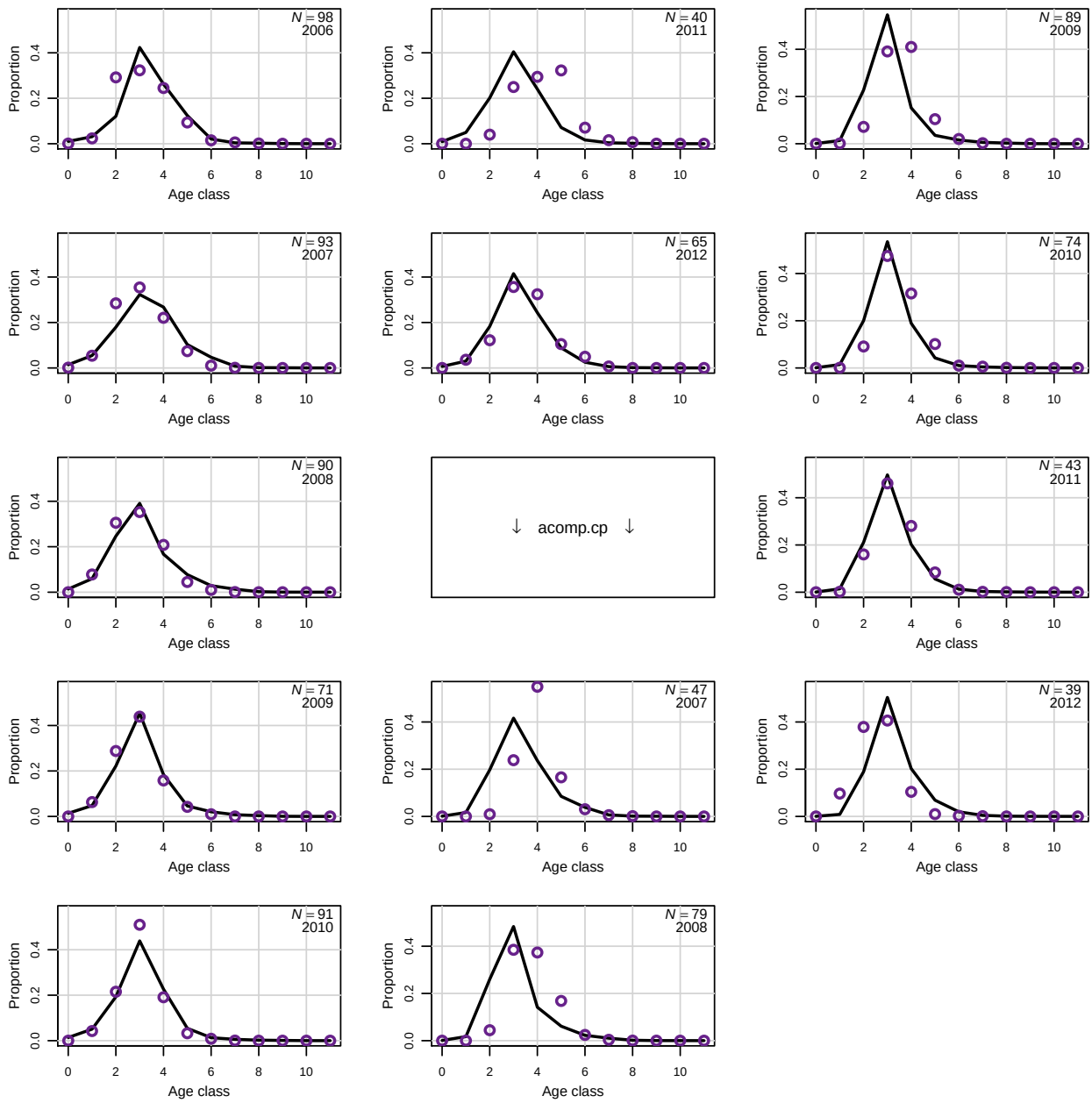


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

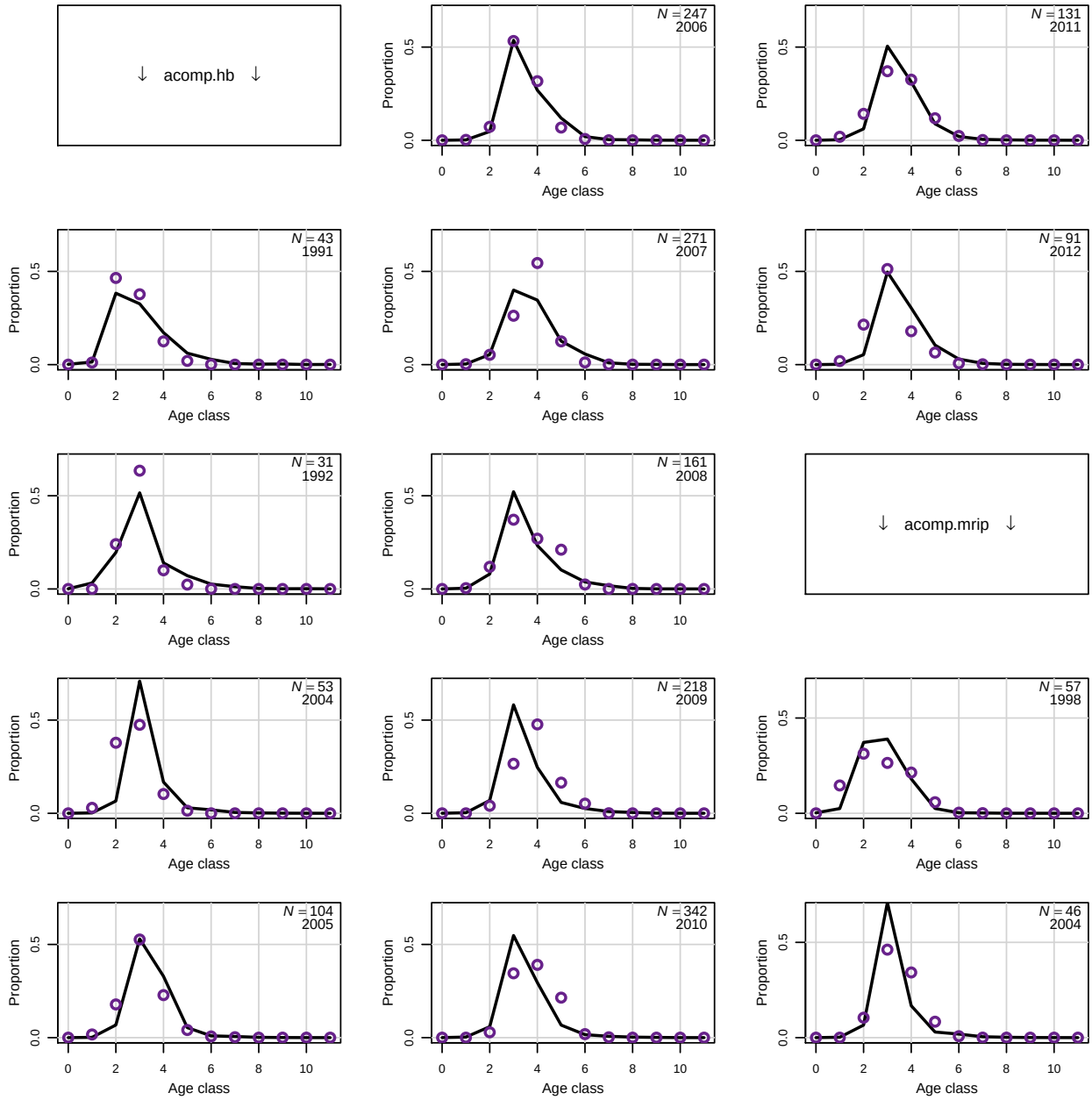


*Figure 2. (cont.) Observed (open circles) and estimated (solid line) annual length and age compositions by fleet or survey.*

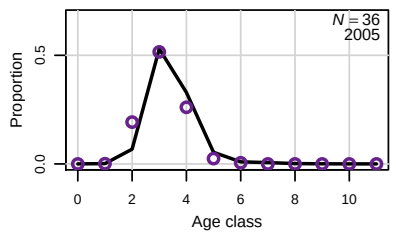


*Figure 3. Observed (open circles) and estimated (line, solid circles) commercial lines landings (1000 lb whole weight).*

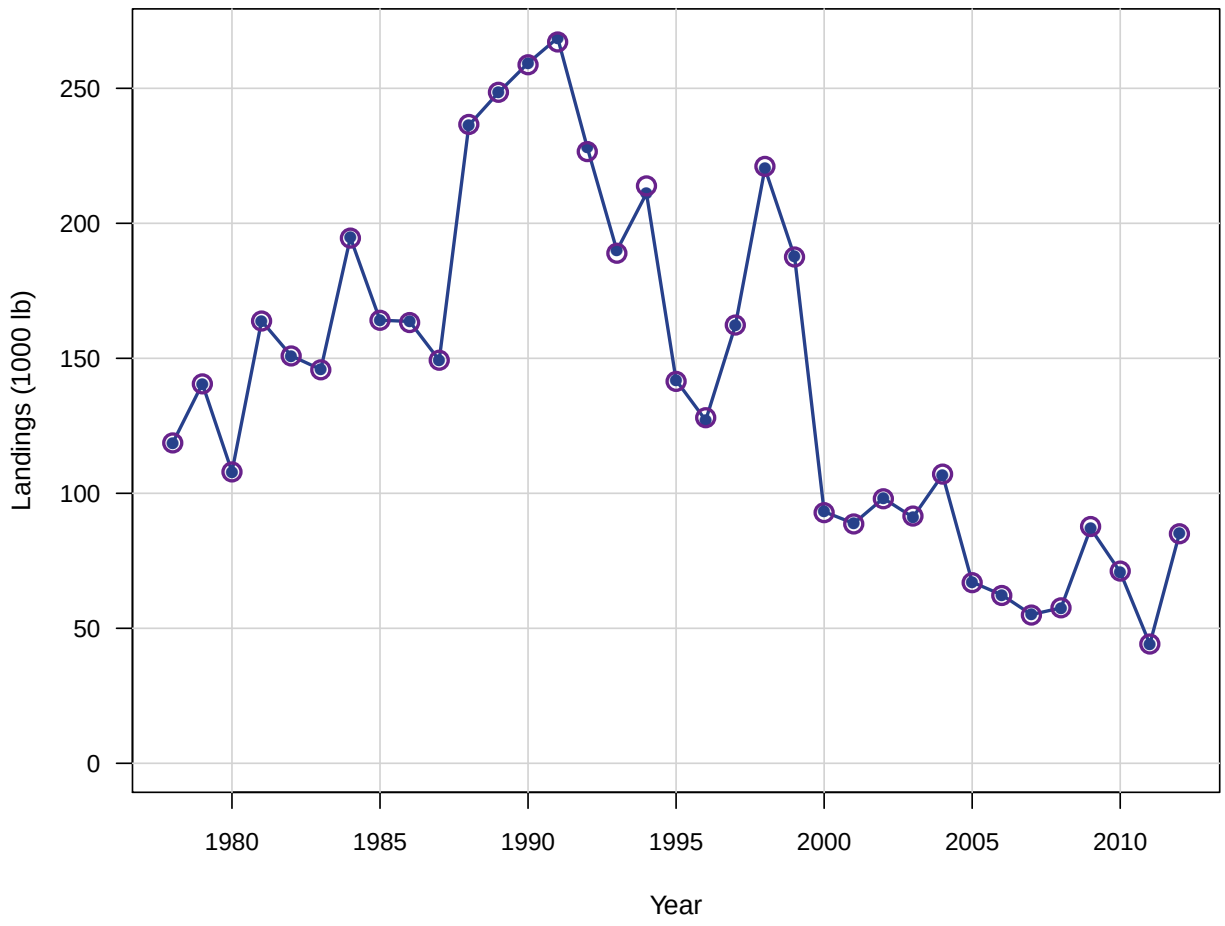


*Figure 4. Observed (open circles) and estimated (line, solid circles) commercial pot landings (1000 lb whole weight).*

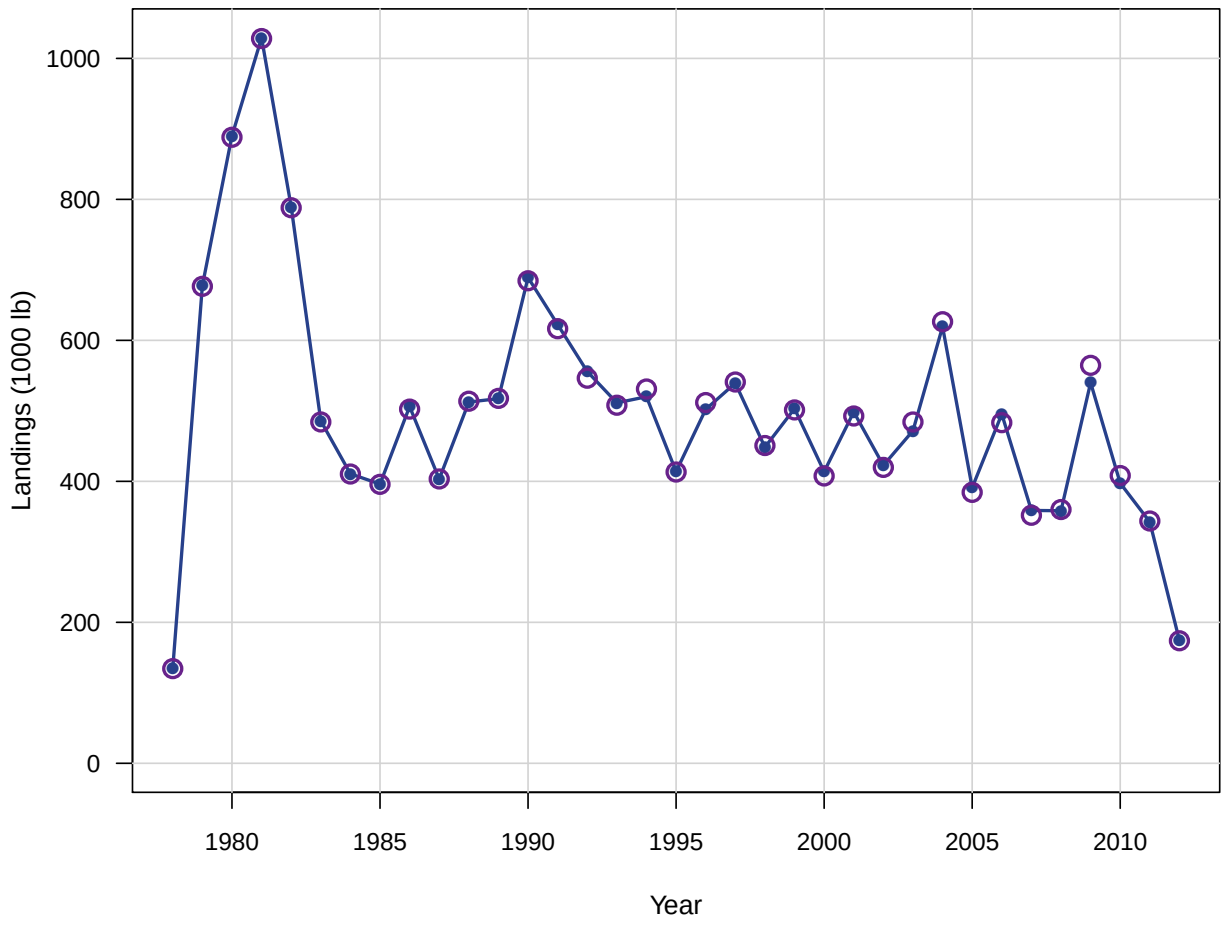


*Figure 5. Observed (open circles) and estimated (line, solid circles) commercial trawl landings (1000 lb whole weight).*

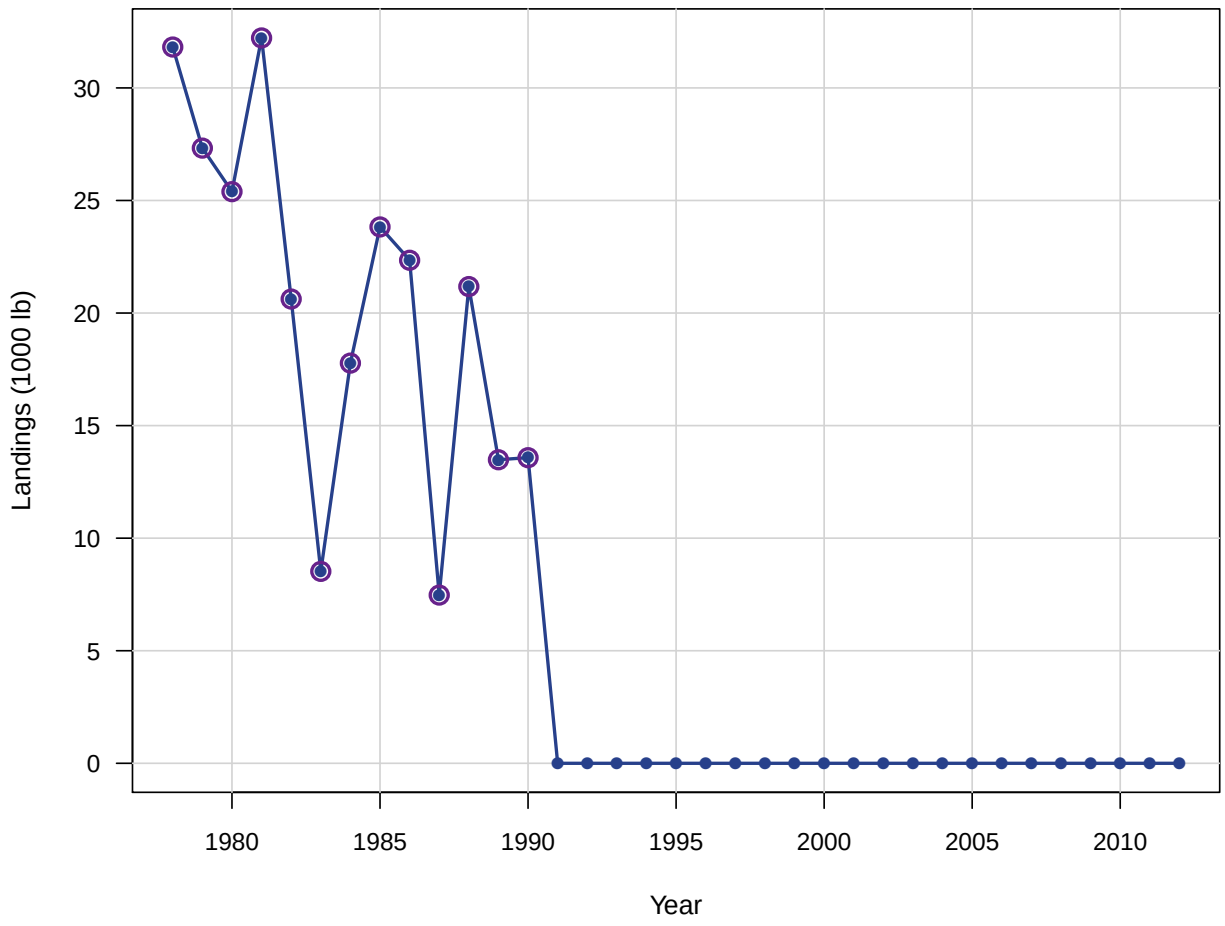


*Figure 6. Observed (open circles) and estimated (line, solid circles) headboat landings (1000 lb whole weight).*

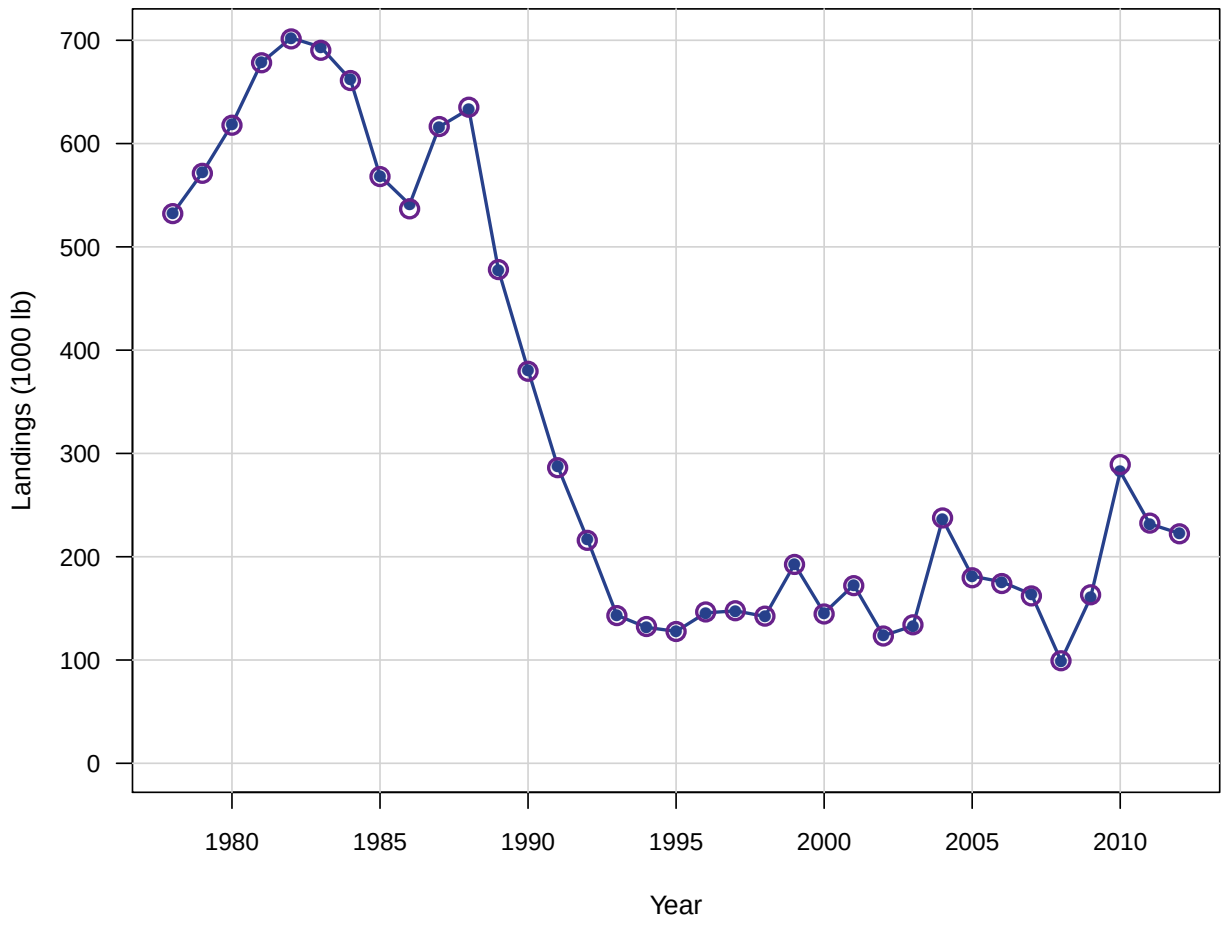


*Figure 7. Observed (open circles) and estimated (line, solid circles) general recreational landings (1000 lb whole weight). In years without observations (1978–1980), values were predicted using average F (see §3.3 for details).*

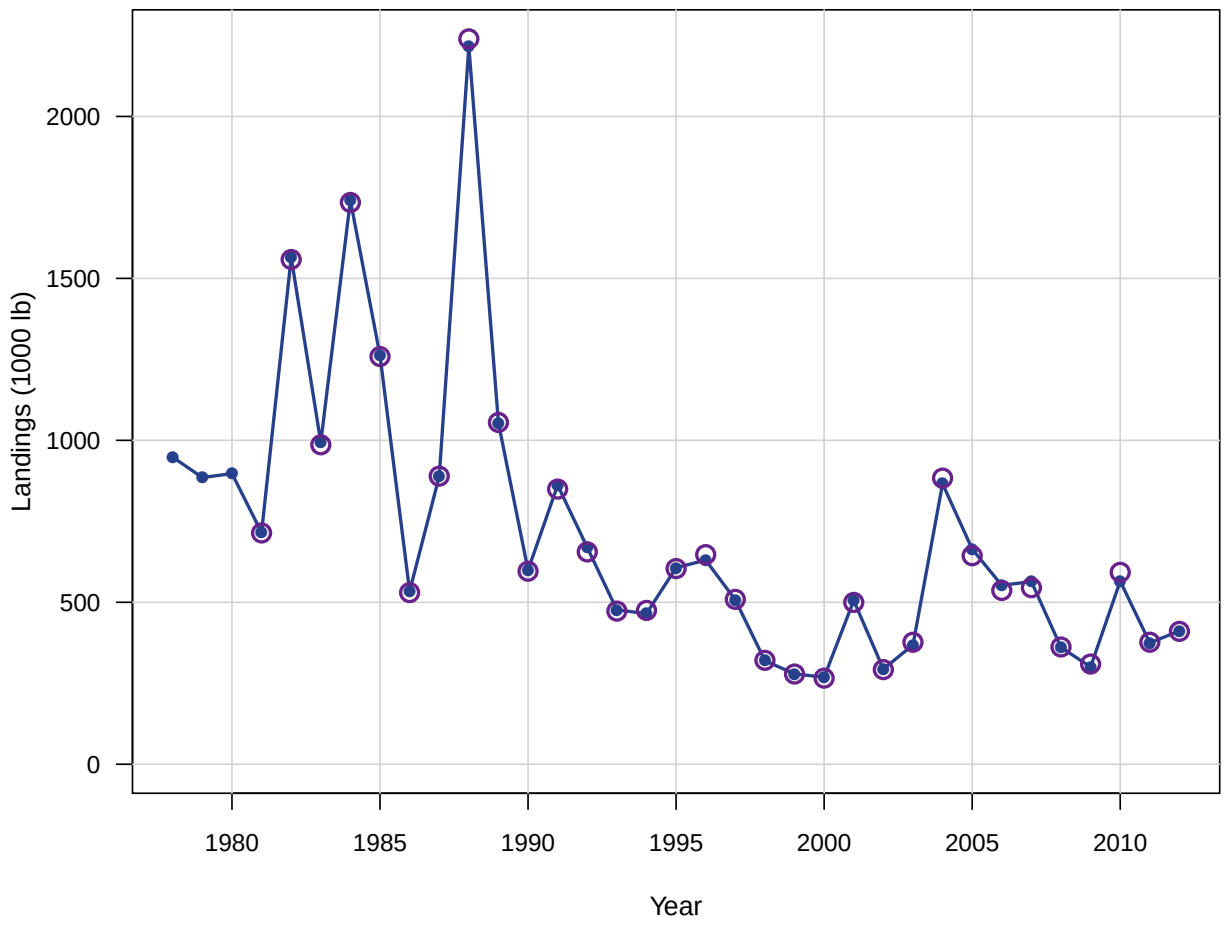


*Figure 8. Observed (open circles) and estimated (line, solid circles) commercial (lines + pots) discard mortalities (1000 dead fish). In years without observations (1984–1992), values were predicted using average F (see §3.3 for details). Commercial discards were modeled starting in 1984 with implementation of the 8-inch size limit.*

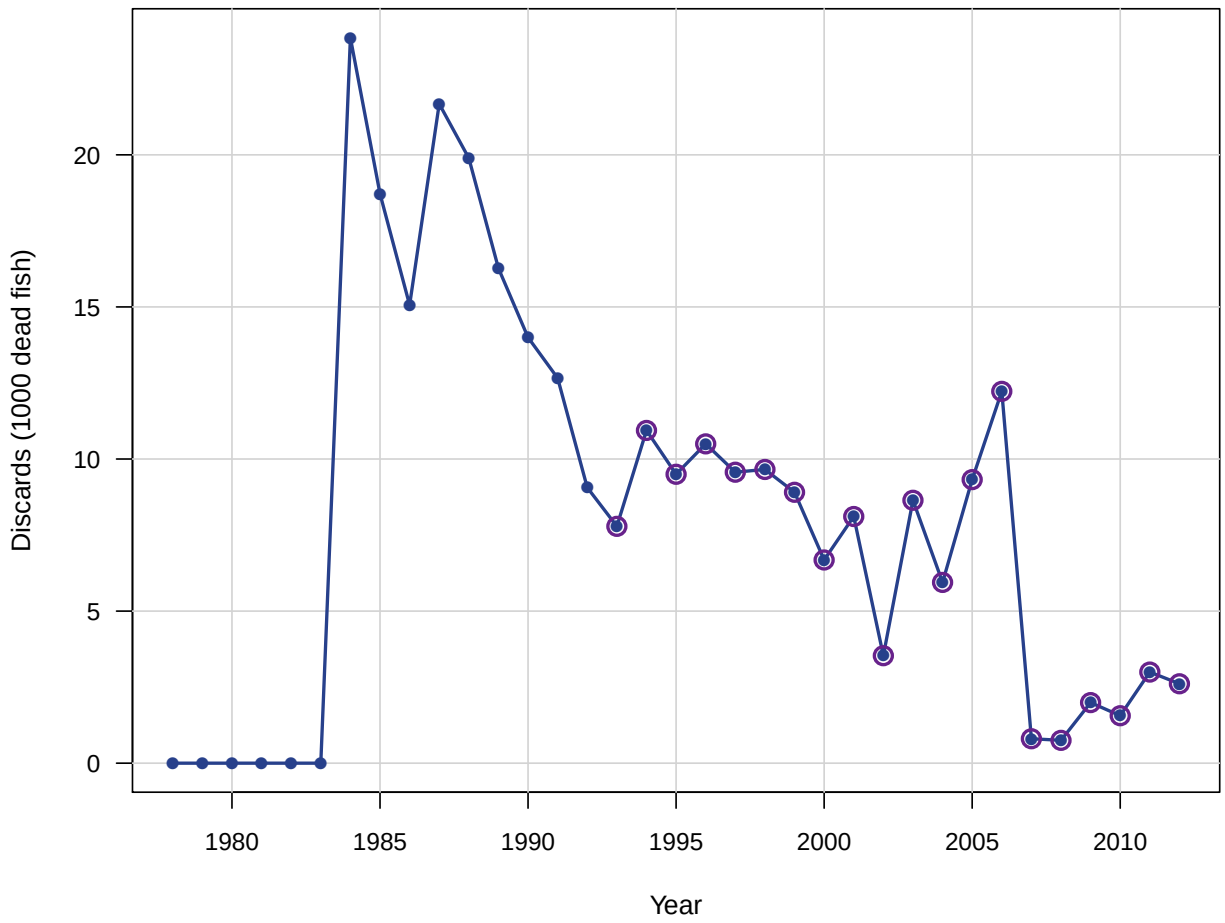


*Figure 9. Observed (open circles) and estimated (line, solid circles) headboat discard mortalities (1000 dead fish). Estimates prior to 1986 were combined with the general recreational discards.*

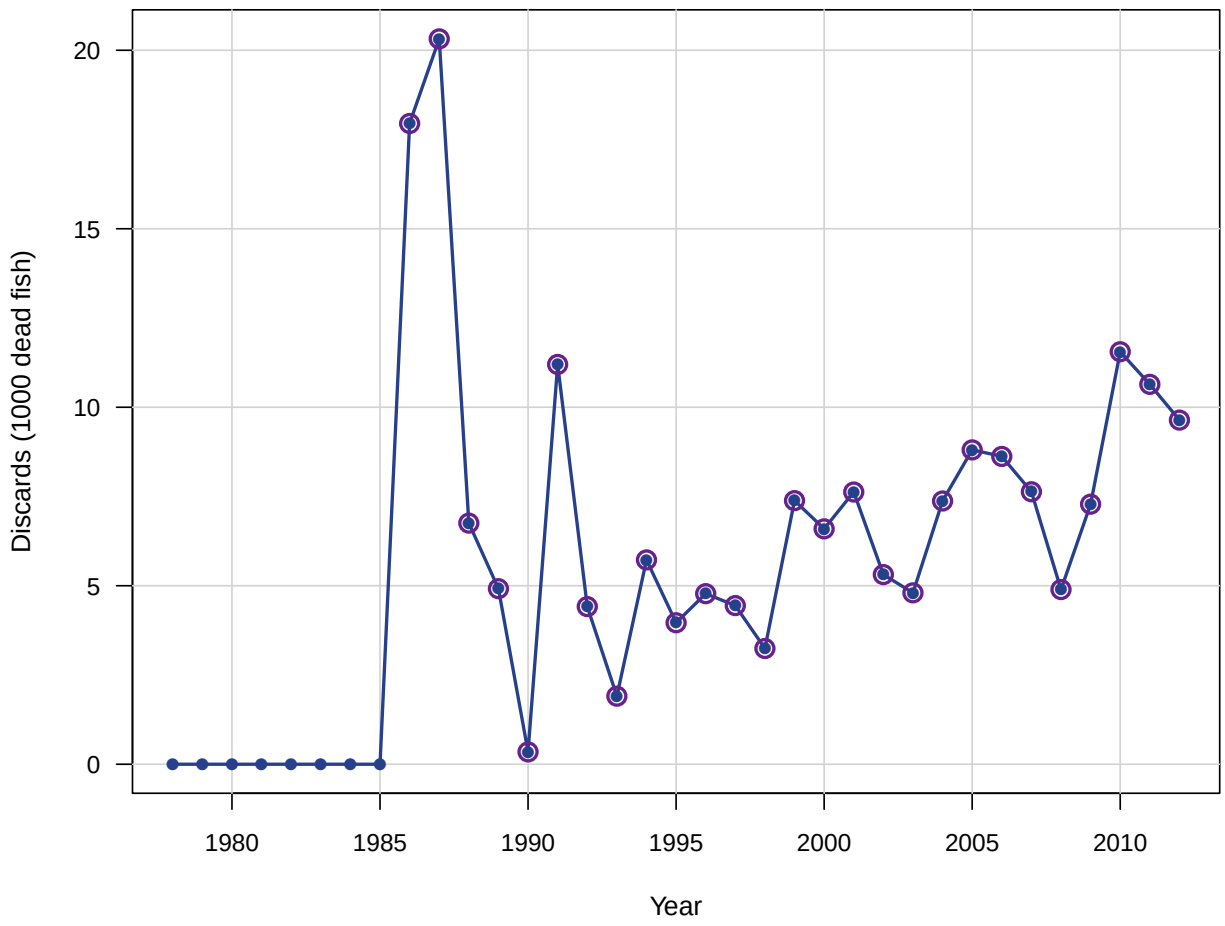


*Figure 10. Observed (open circles) and estimated (line, solid circles) general recreational discard mortalities (1000 dead fish). Estimates prior to 1986 include headboat discard mortalities. In years without observations (1978–1980), values were predicted using average F (see §3.3 for details).*

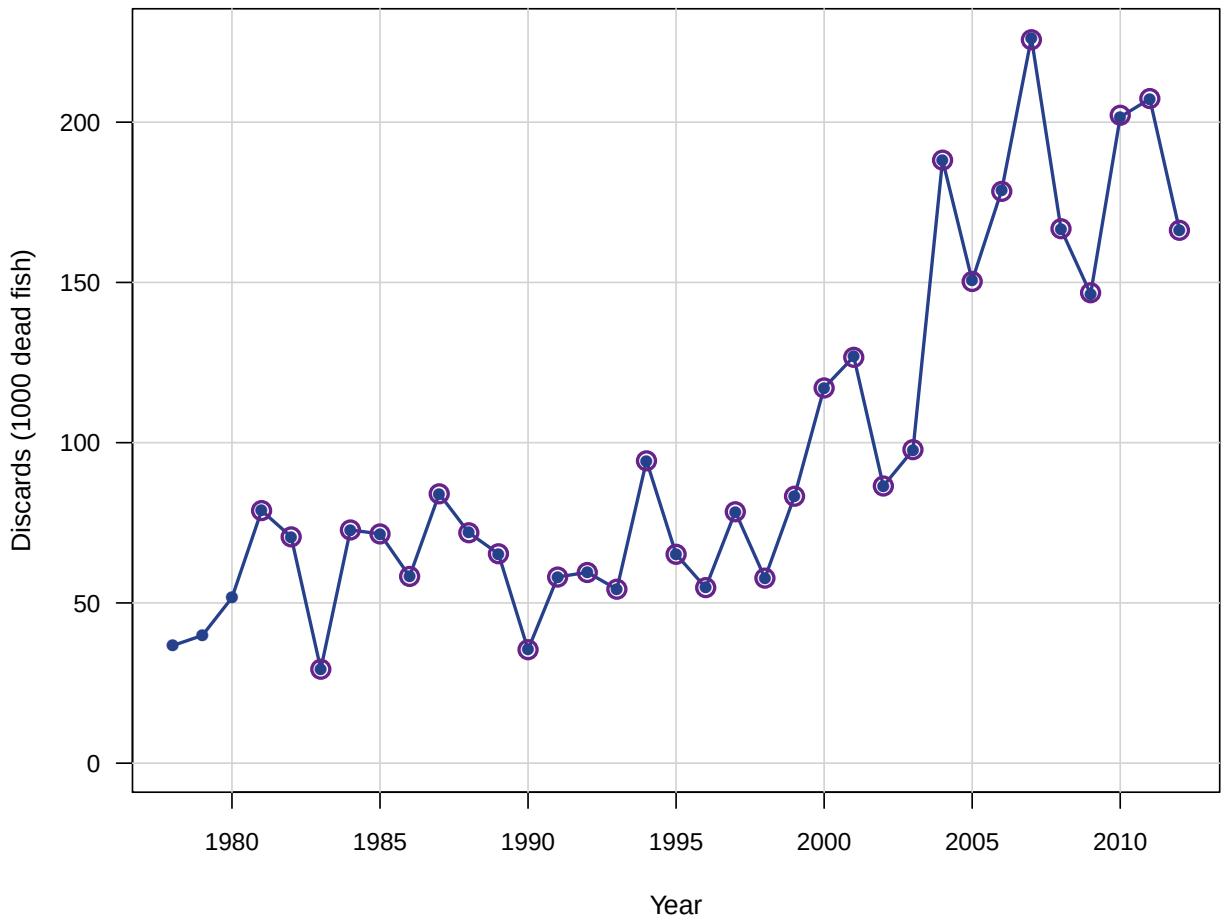


*Figure 11. Observed (open circles) and estimated (line, solid circles) index of abundance from MARMAP blackfish/snapper traps.*

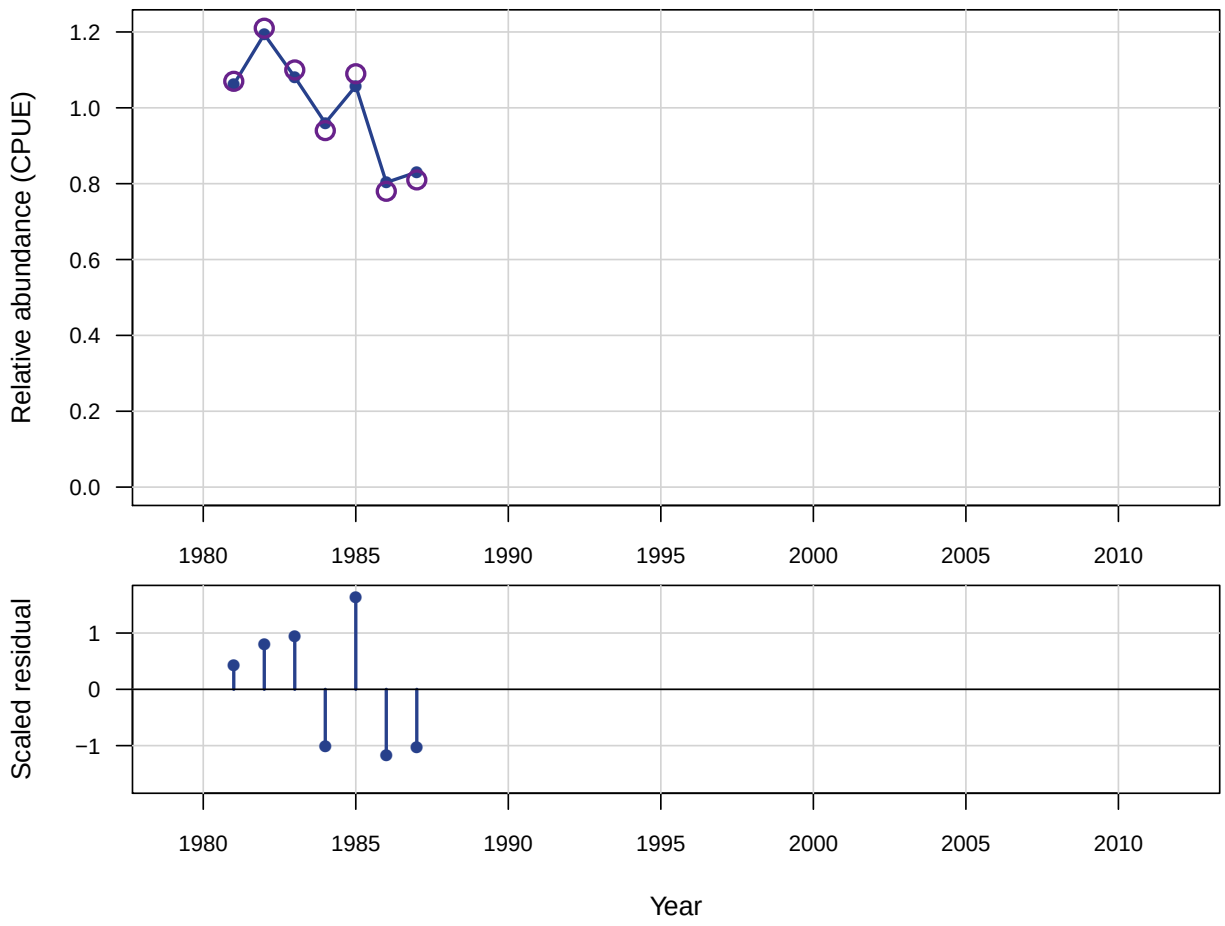


*Figure 12. Observed (open circles) and estimated (line, solid circles) index of abundance from MARMAP chevron traps.*

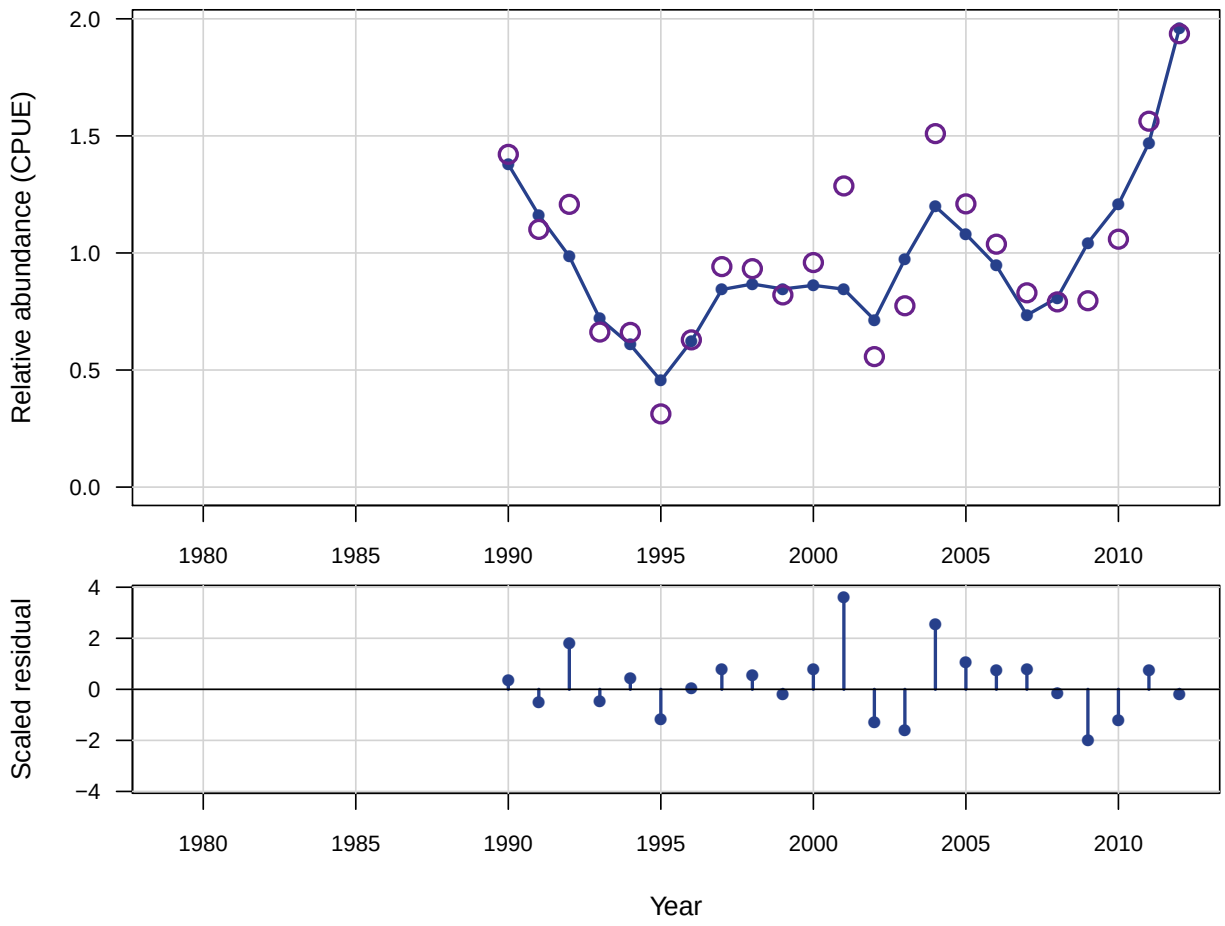


*Figure 13. Observed (open circles) and estimated (line, solid circles) index of abundance from commercial lines.*

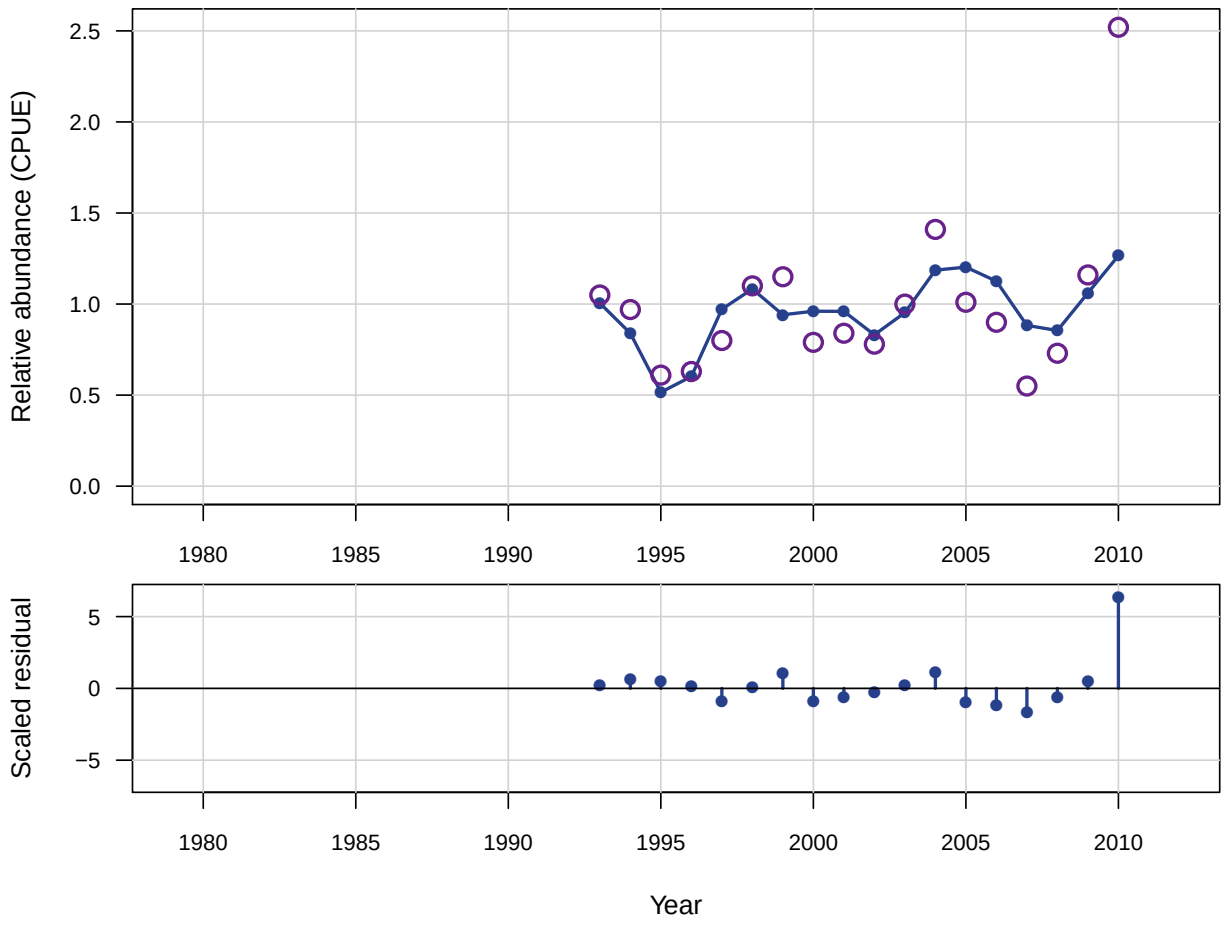


*Figure 14. Observed (open circles) and estimated (line, solid circles) index of abundance from the headboat fleet.*

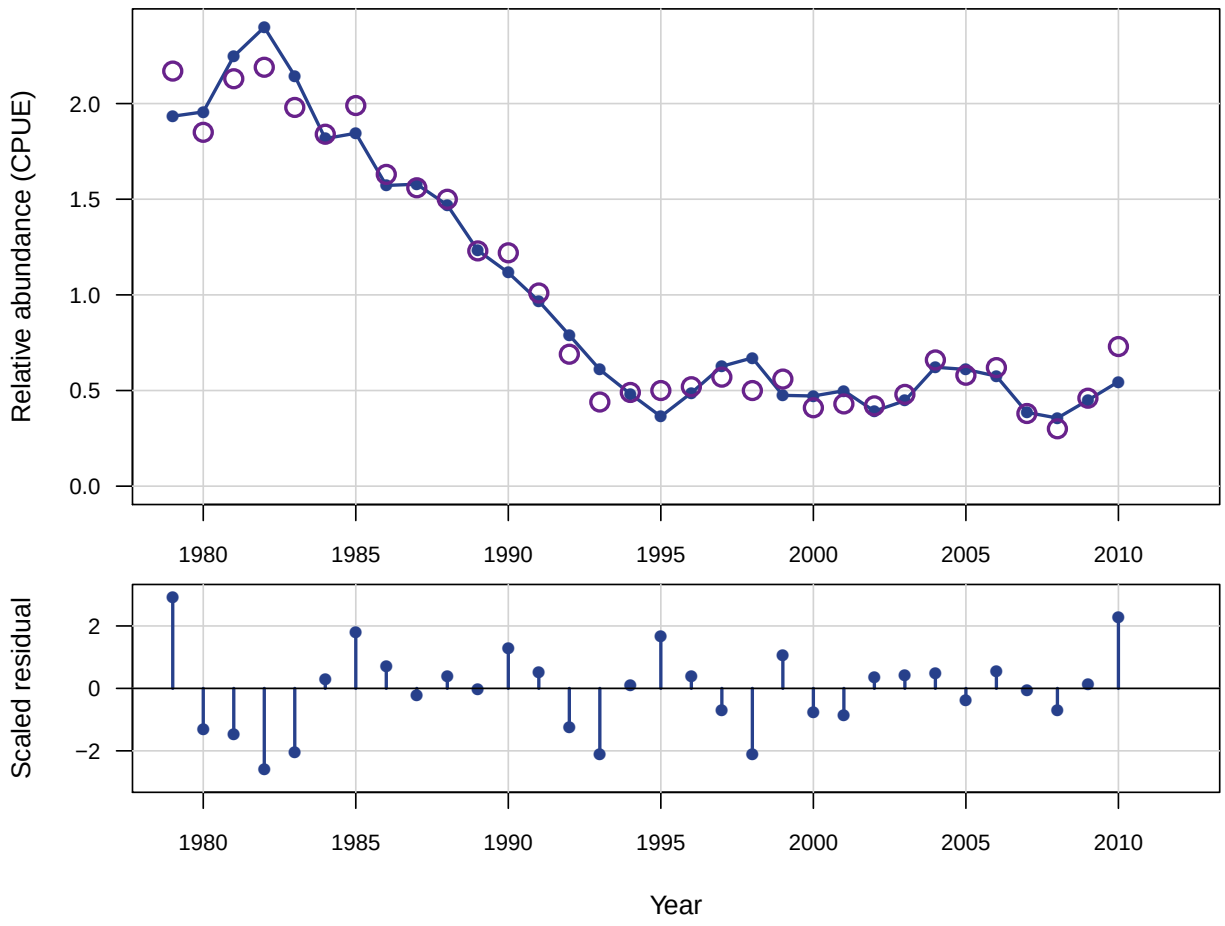


*Figure 15. Observed (open circles) and estimated (line, solid circles) index of abundance from headboat discards.*

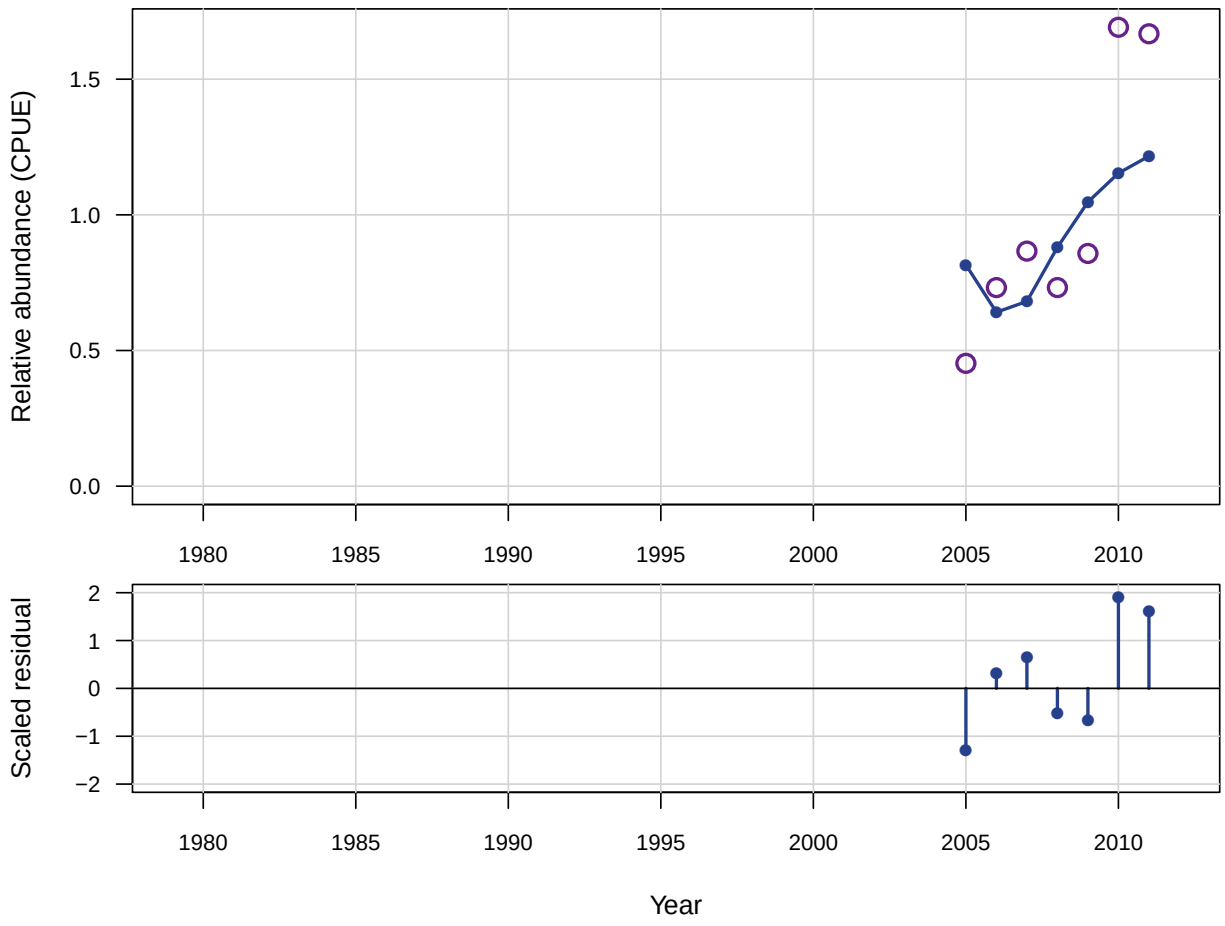


*Figure 16. Estimated abundance at age at start of year.*

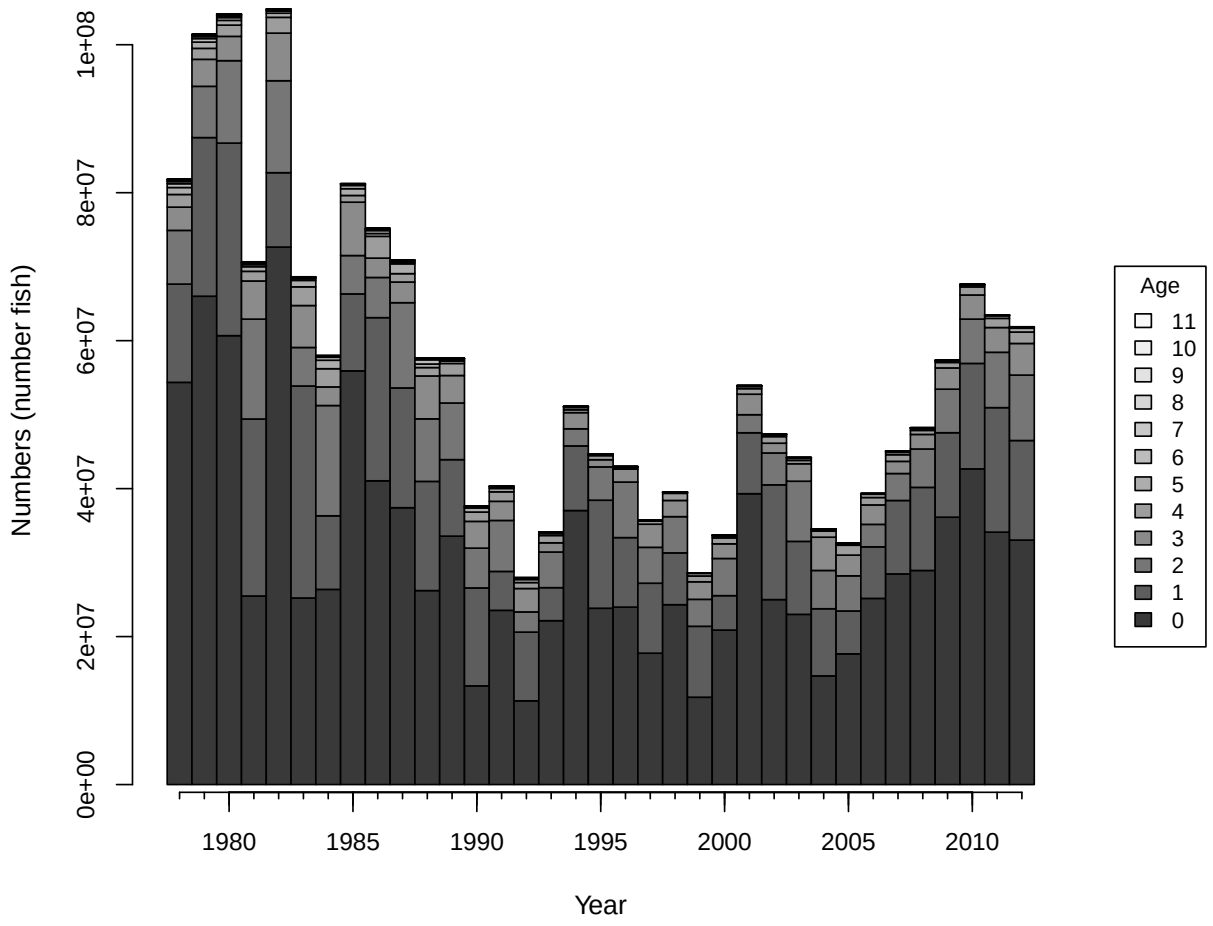


*Figure 17. Top panel: Estimated recruitment of age-0 fish. Horizontal dashed line indicates $R_{\mathrm{MSY}}$. Bottom panel: log recruitment residuals.*

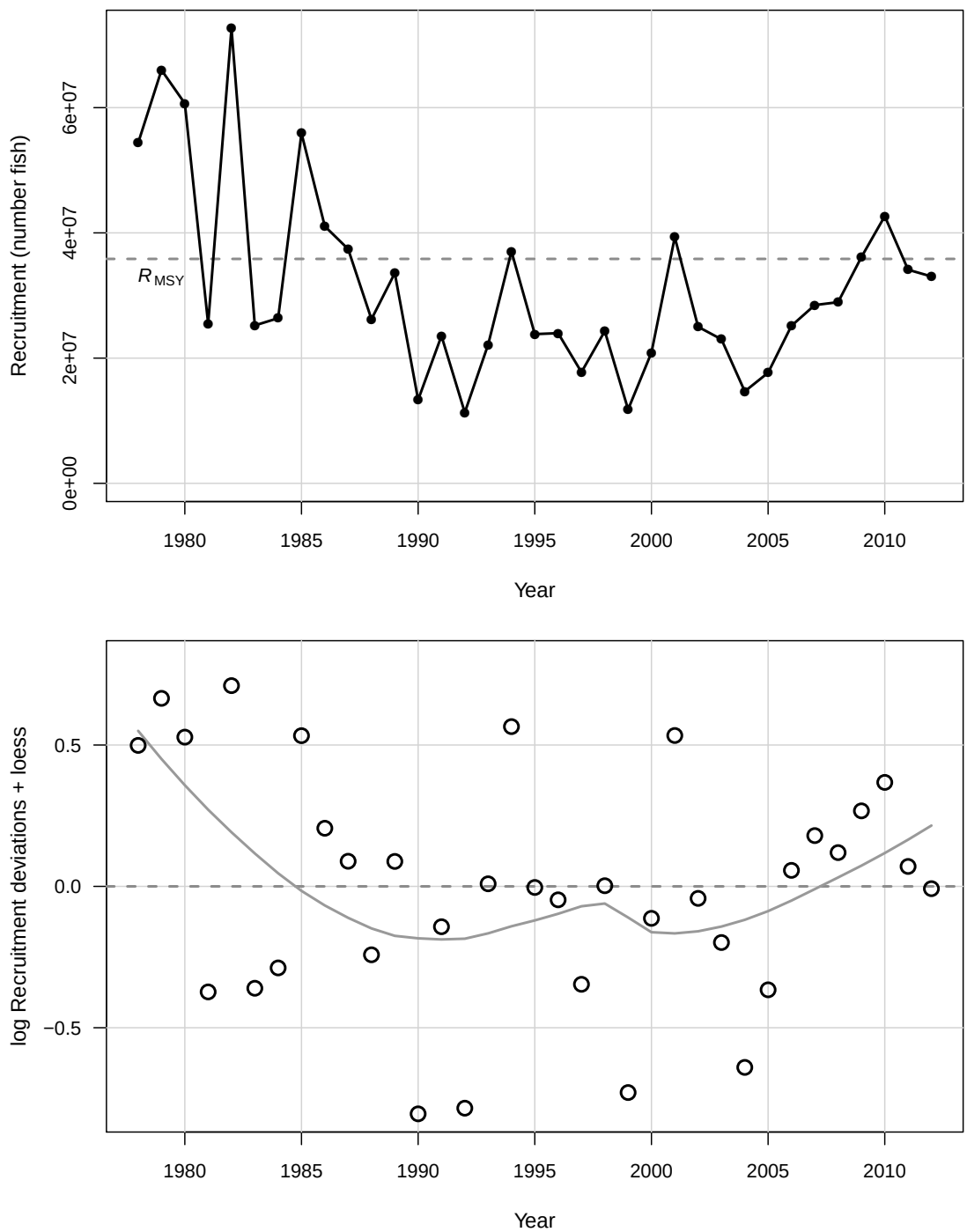


*Figure 18. Estimated biomass at age at start of year.*

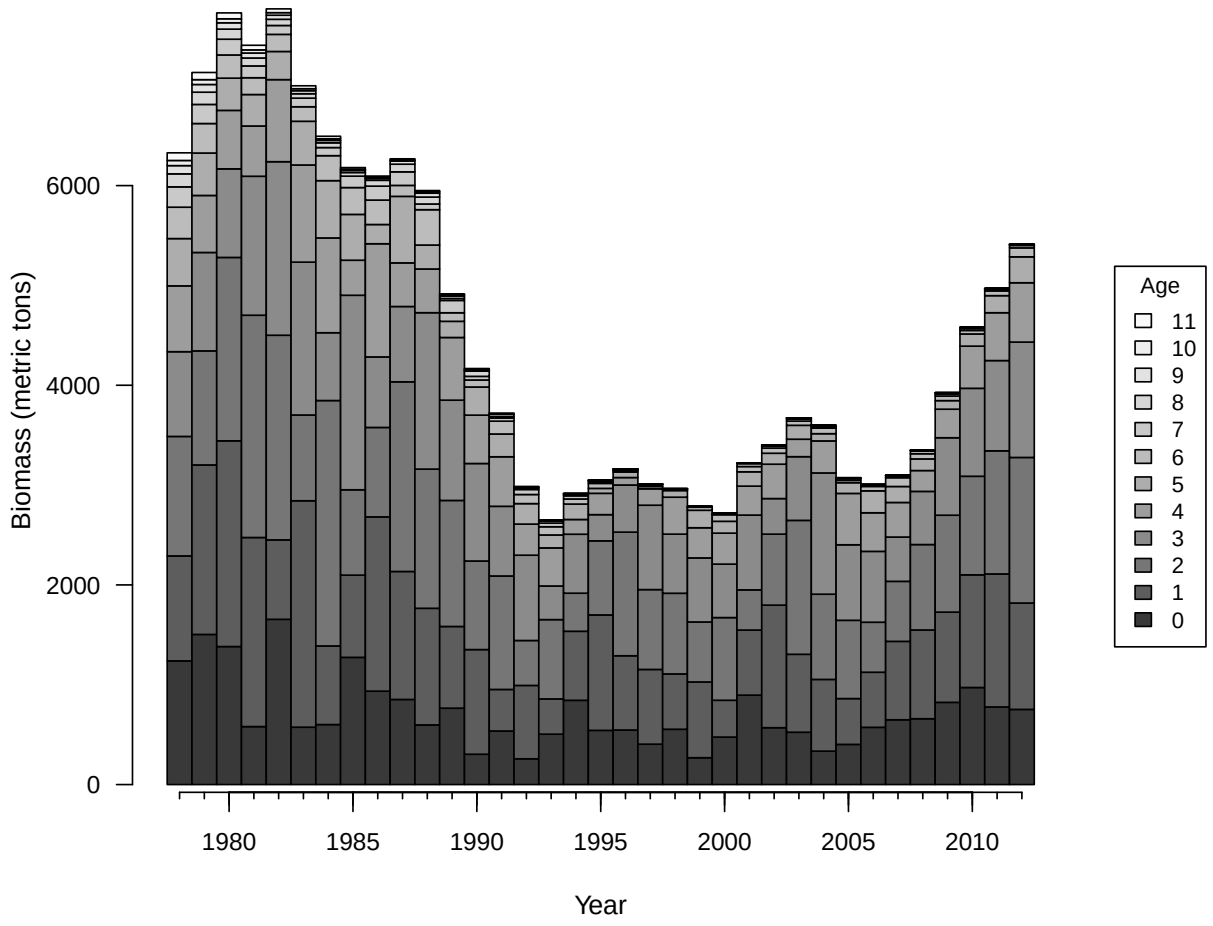


*Figure 19. Top panel: Estimated total biomass (metric tons) at start of year. Horizontal dashed line indicates $B_{\mathrm{MSY}}$. Bottom panel: Estimated spawning stock (population fecundity) at time of peak spawning.*

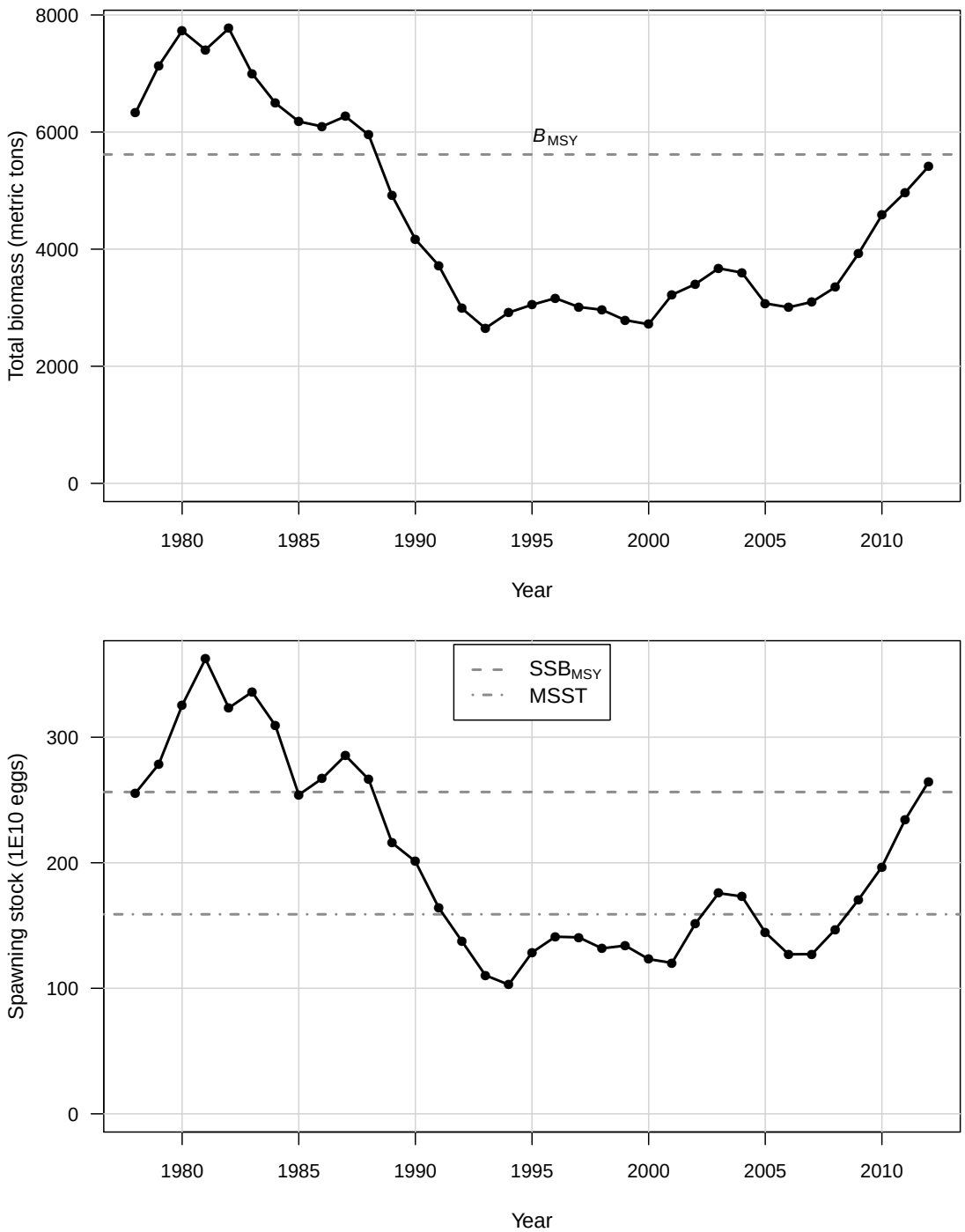


*Figure 20. Selectivities of MARMAP gears. Top panel: blackfish/snapper traps. Bottom panel: chevron traps.*

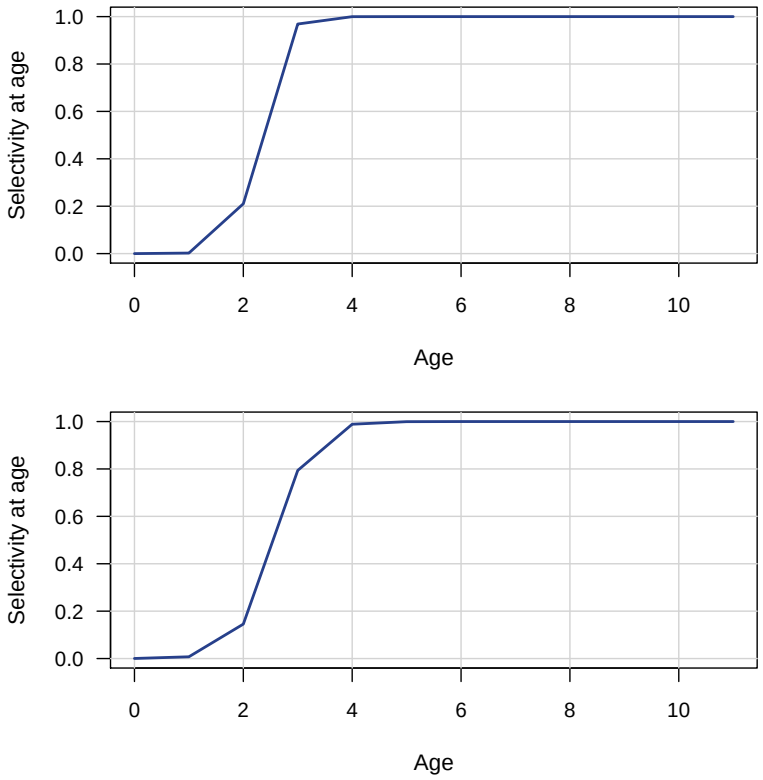


*Figure 21. Selectivities of commercial lines. Top panel: 1978–1998. Bottom panel: 1999–2012.*

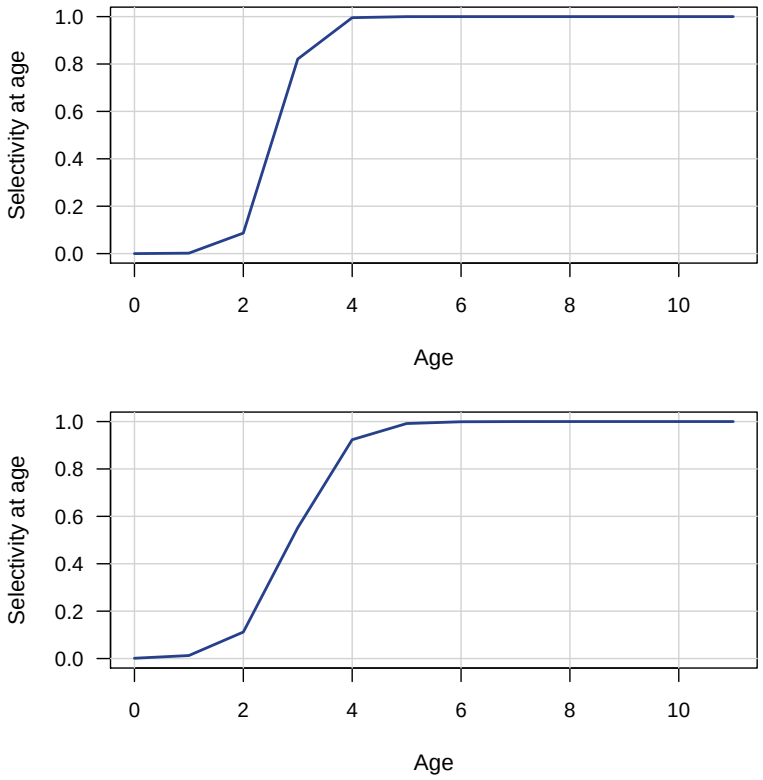


*Figure 22. Selectivities of commercial pots. Selectivity of commercial trawl (1978–1990) mirrored that of commercial pots. Top panel: 1978–1998. Bottom panel: 1999–2012.*

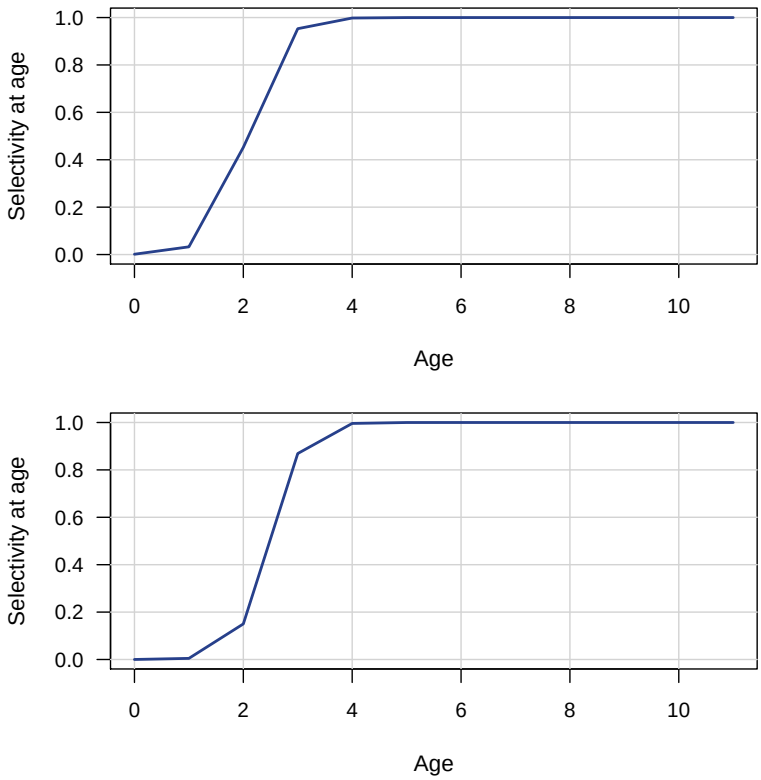


*Figure 23. Selectivities of the headboat and general recreational fleets. First (top) panel: 1978–1983. Second panel: 1984–1998. Third panel: 1999–2006. Fourth panel: 2007–2012.*

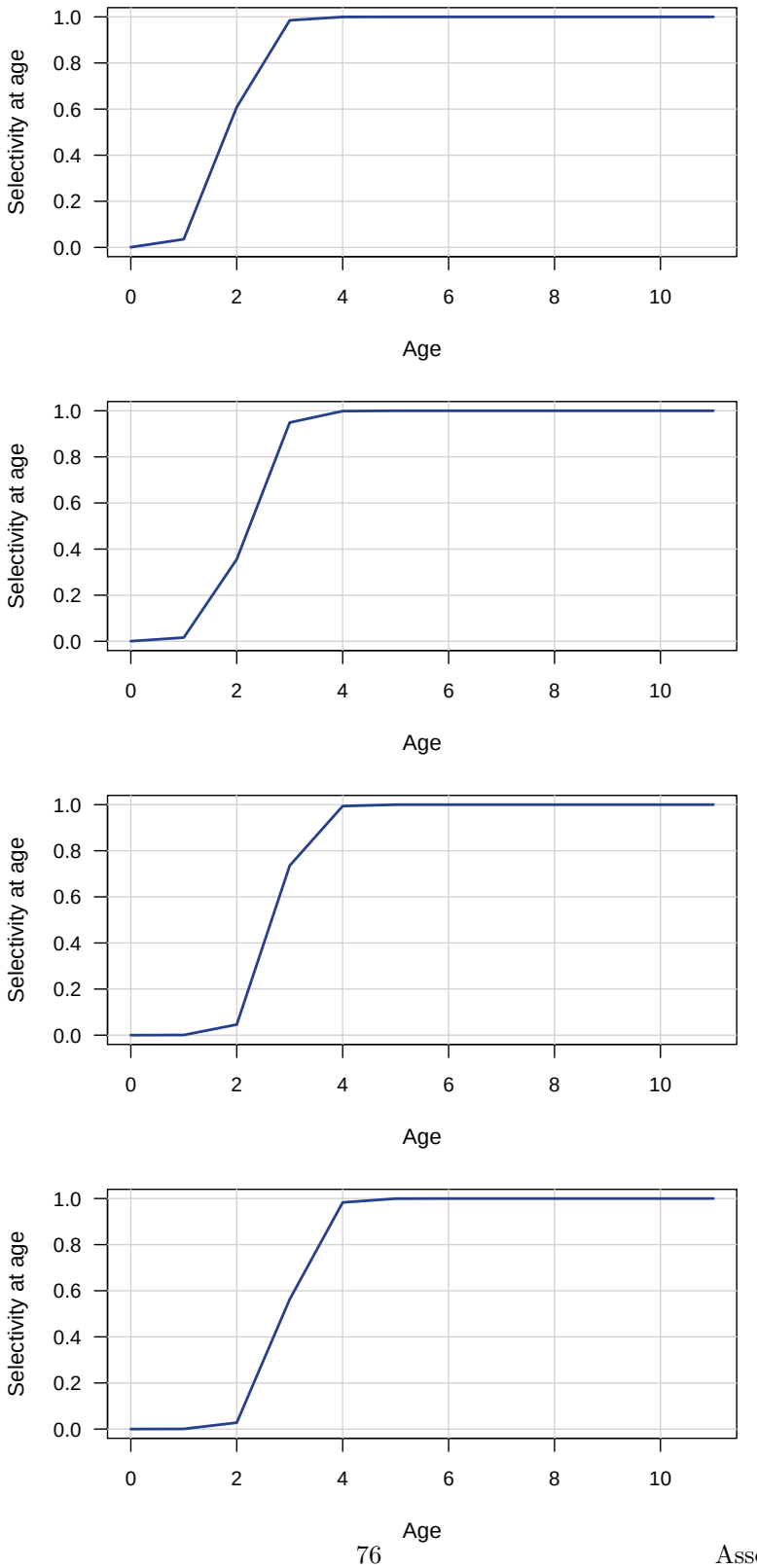


*Figure 24. Selectivities of commercial discard mortalities. Top panel: 1984–1998. Middle panel: 1999–2008. Bottom panel: 2009–2012.*

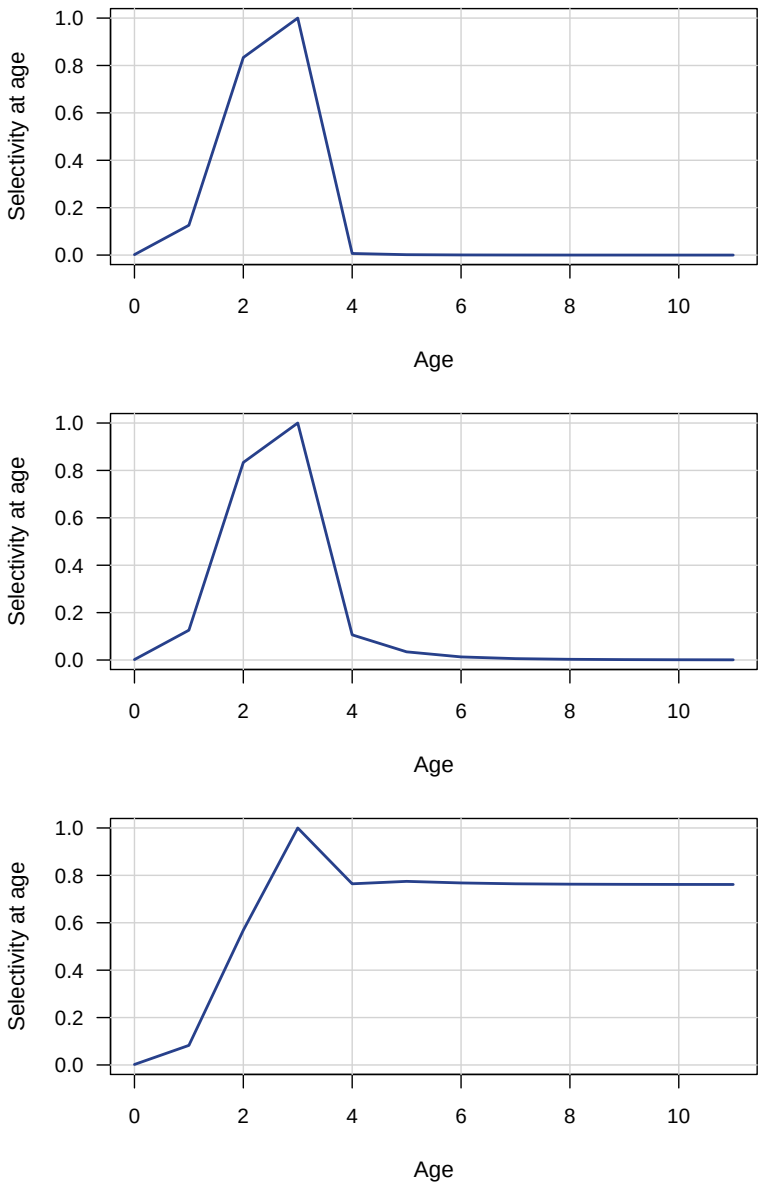


*Figure 25. Selectivities of headboat and general recreational discard mortalities. Top panel: 1978–1998. Second panel: 1999–2006. Third panel: 2007–2010. Bottom panel: 2011–2012.*

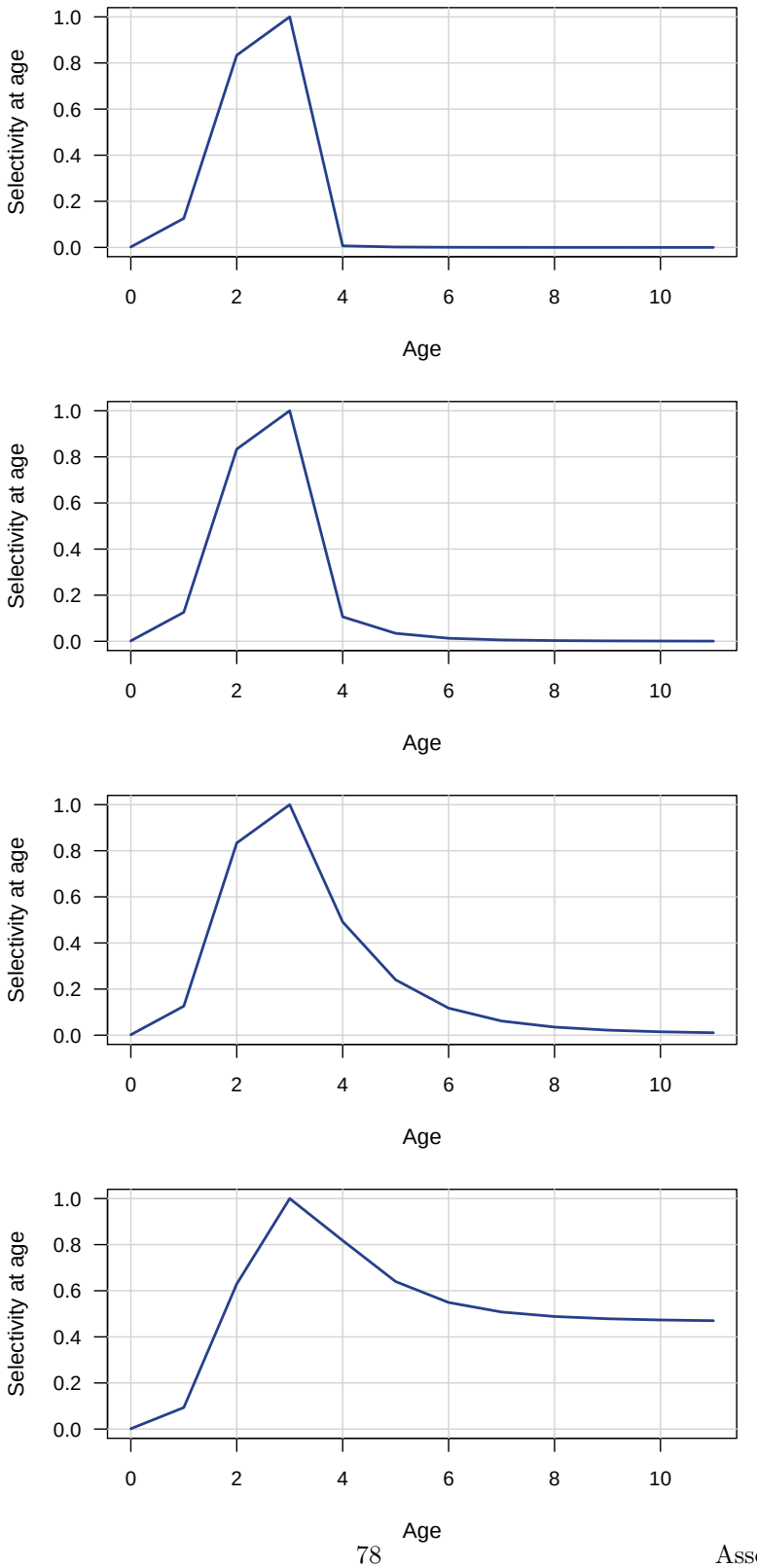


*Figure 26. Average selectivities from the terminal assessment year (2012), weighted by geometric mean Fs from the last two assessment years, and used in the computation of benchmarks. Top panel: average selectivity applied to landings. Middle panel: average selectivity applied to discard mortalities. Bottom panel: total average selectivity.*

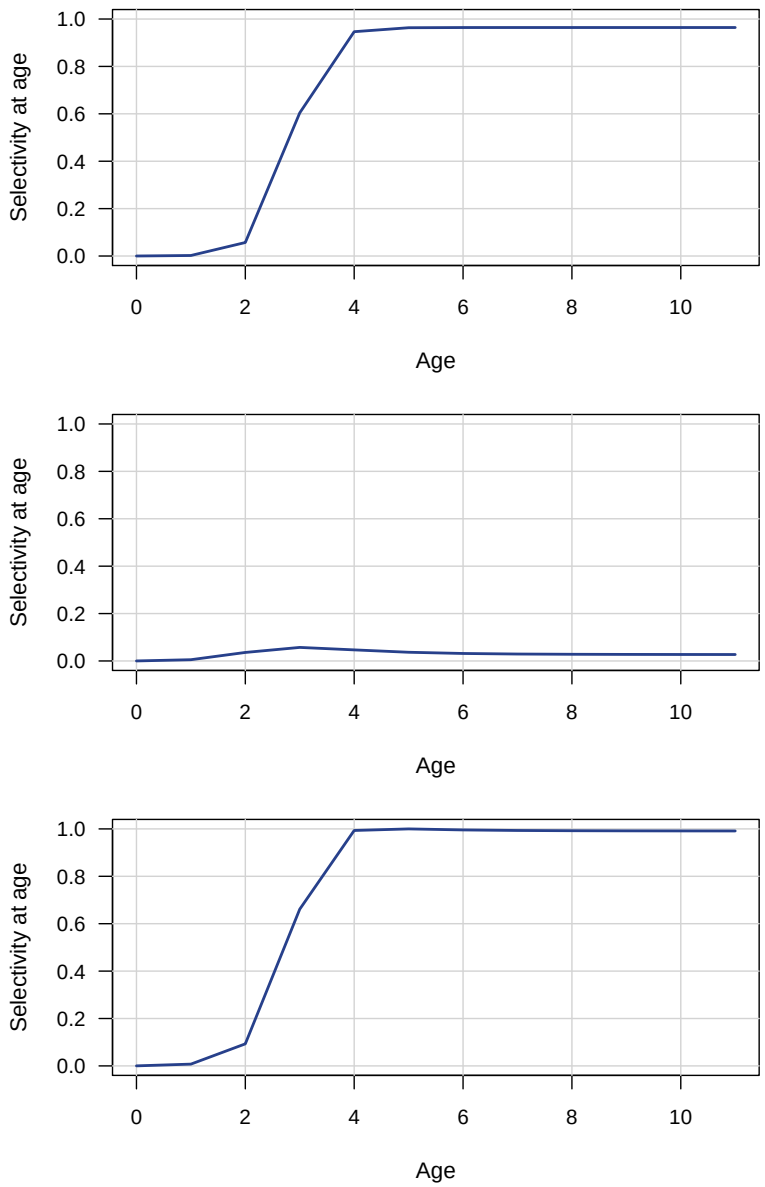


*Figure 27. Estimated fully selected fishing mortality rate (per year) by fishery. cl refers to commercial lines, cp to commercial pots, ct to commercial trawl, hb to headboat, mrip to general recreational, comm.D to commercial discard mortalities, hb.D to headboat discard mortalities, and mrip.D to general recreational discard mortalities.*

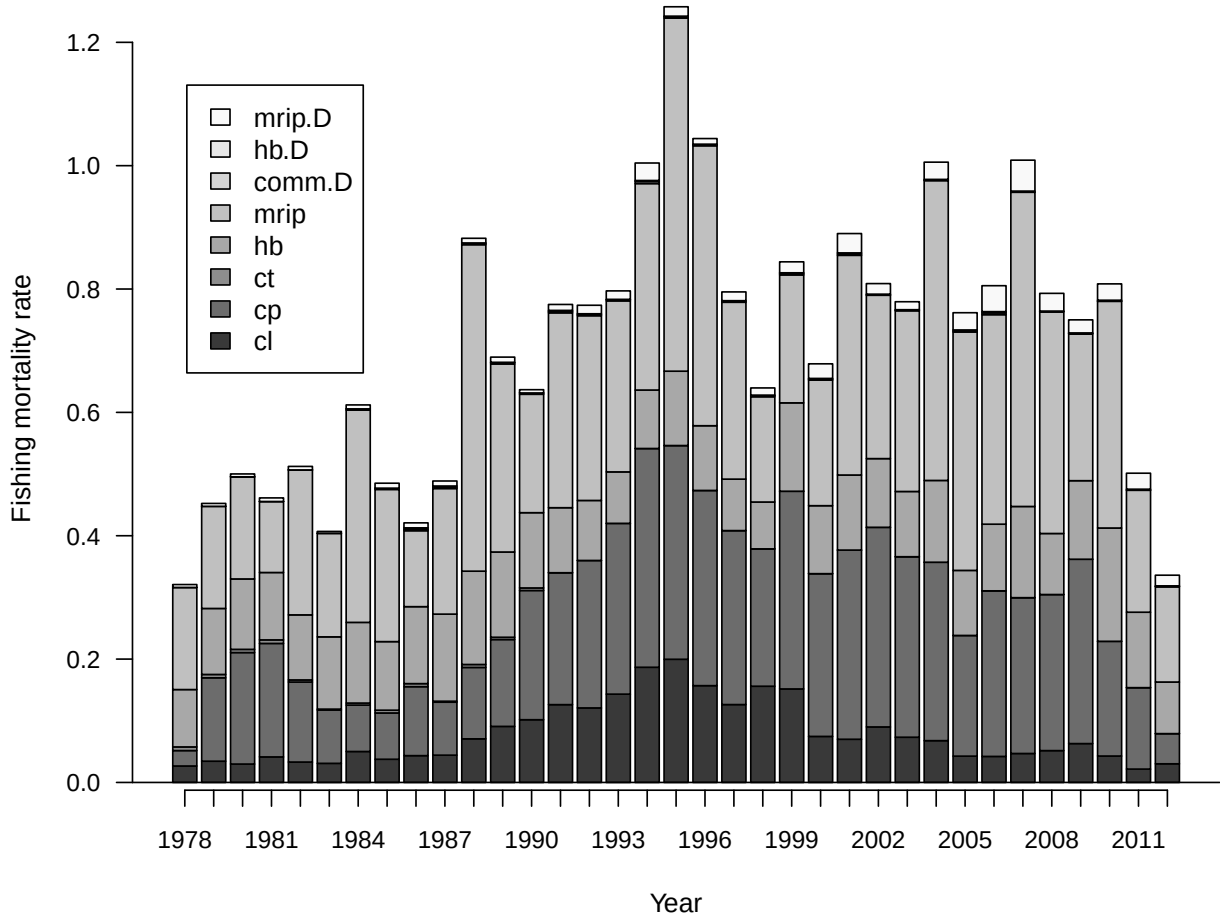


*Figure 28. Estimated landings in numbers by fishery from the catch-age model. cl refers to commercial lines, cp to commercial pots, ct to commercial trawl, hb to headboat, mrip to general recreational.*

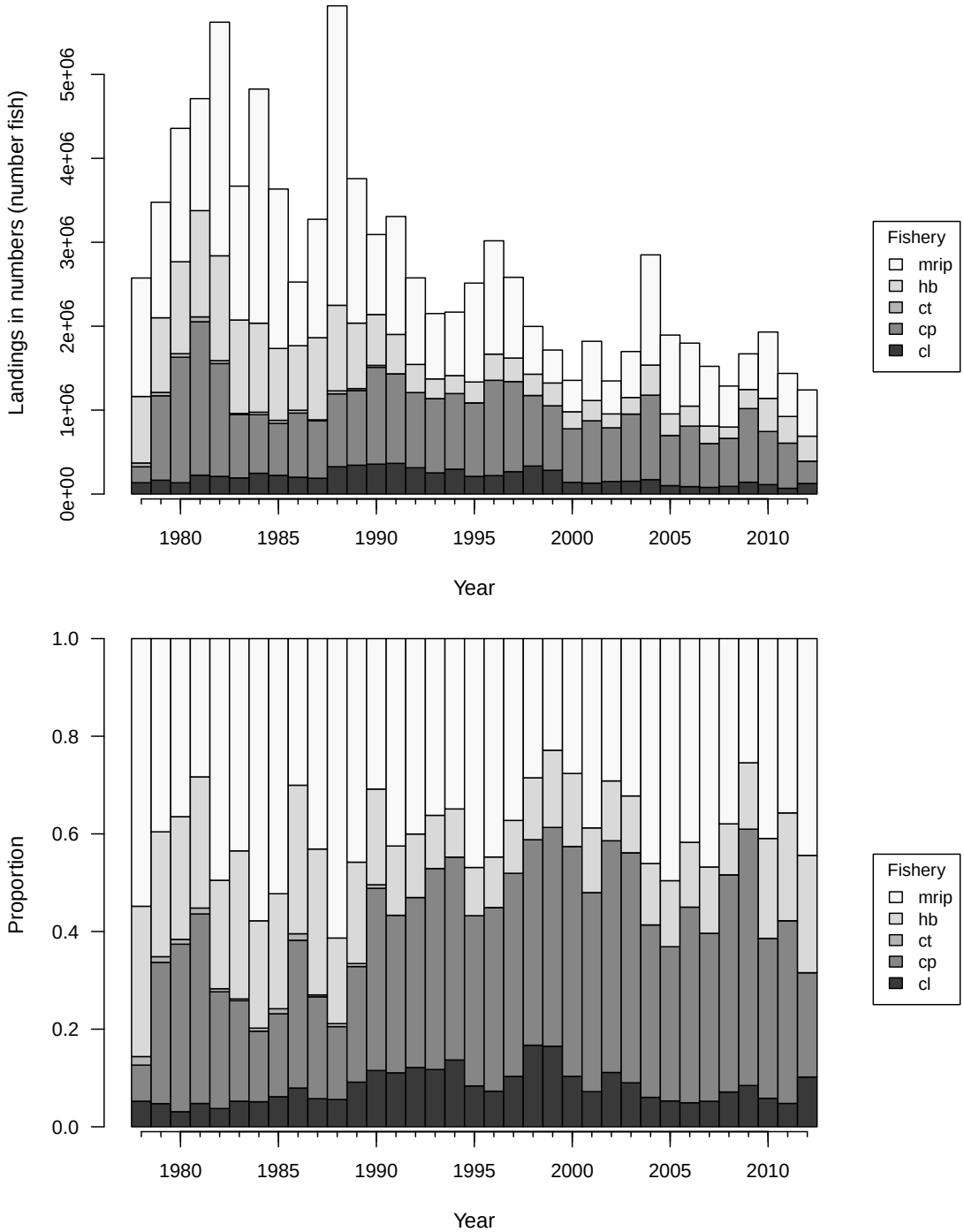


*Figure 29. Estimated landings in whole weight by fishery from the catch-age model. cl refers to commercial lines, cp to commercial pots, ct to commercial trawl, hb to headboat, mrip to general recreational. Horizontal dashed line in the top panel corresponds to the point estimate of MSY.*

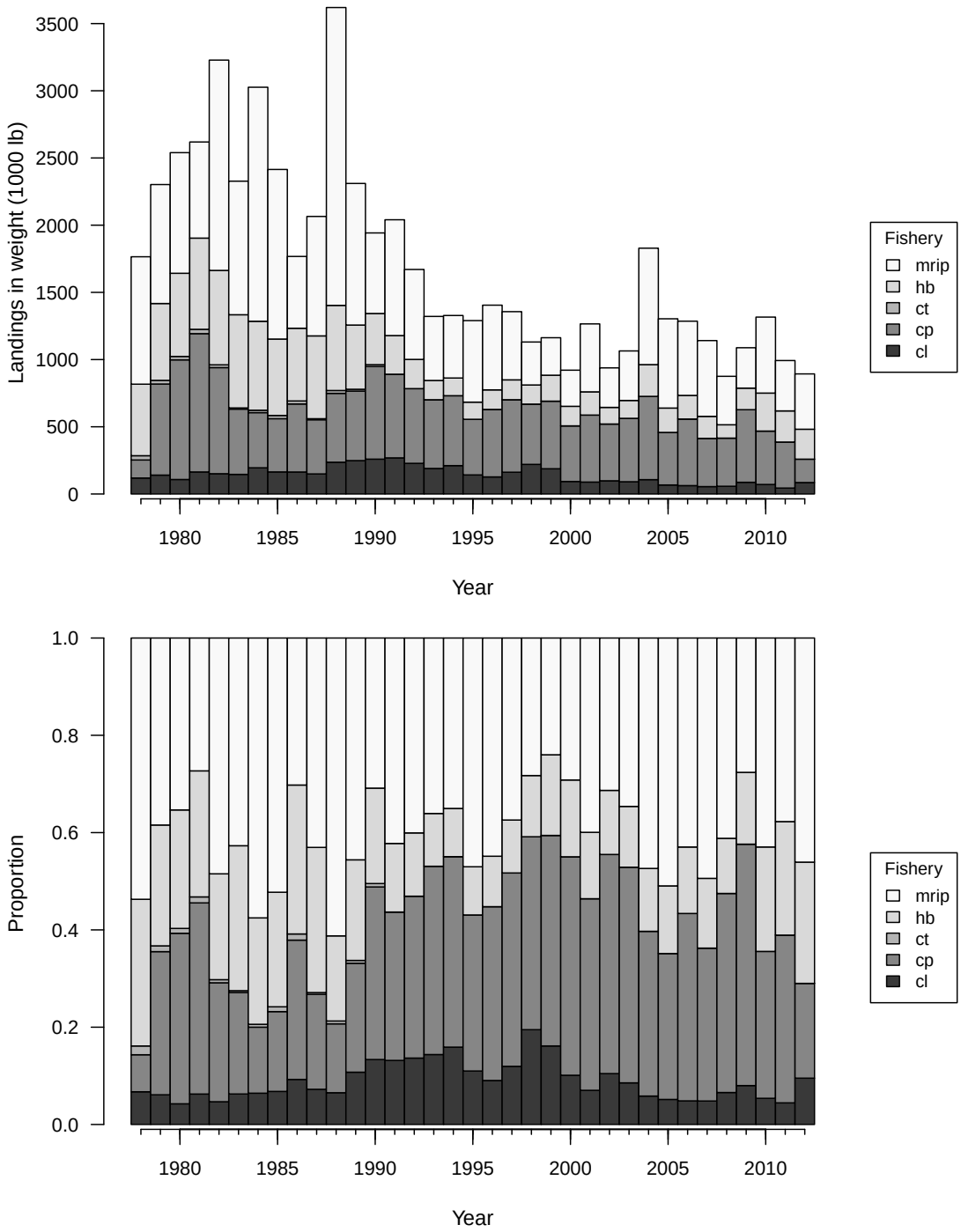


*Figure 30. Estimated discard mortalities by fishery from the catch-age model. comm refers to commercial (lines and pots combined), hb to headboat, mrip to general recreational. Discards from hb were included with mrip prior to 1986.*

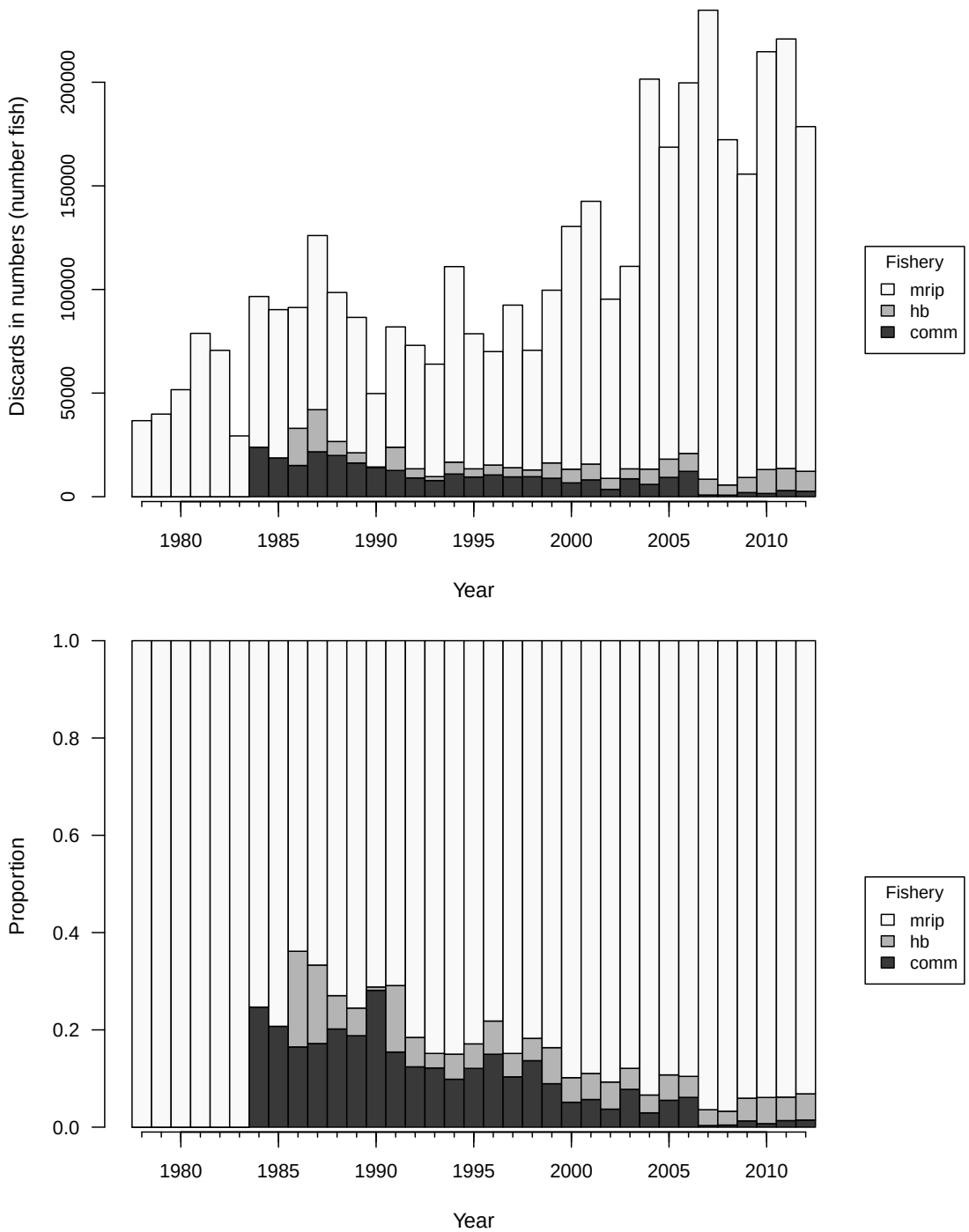


*Figure 31. Top panel: Beverton–Holt spawner-recruit curves, with and without lognormal bias correction. The expected (upper) curve was used for computing management benchmarks. Years within panel indicate year of recruitment generated from spawning biomass. Diagonal line indicates MSY-level replacement. Bottom panel: log of recruits (number age-0 fish) per spawner as a function of spawners.*

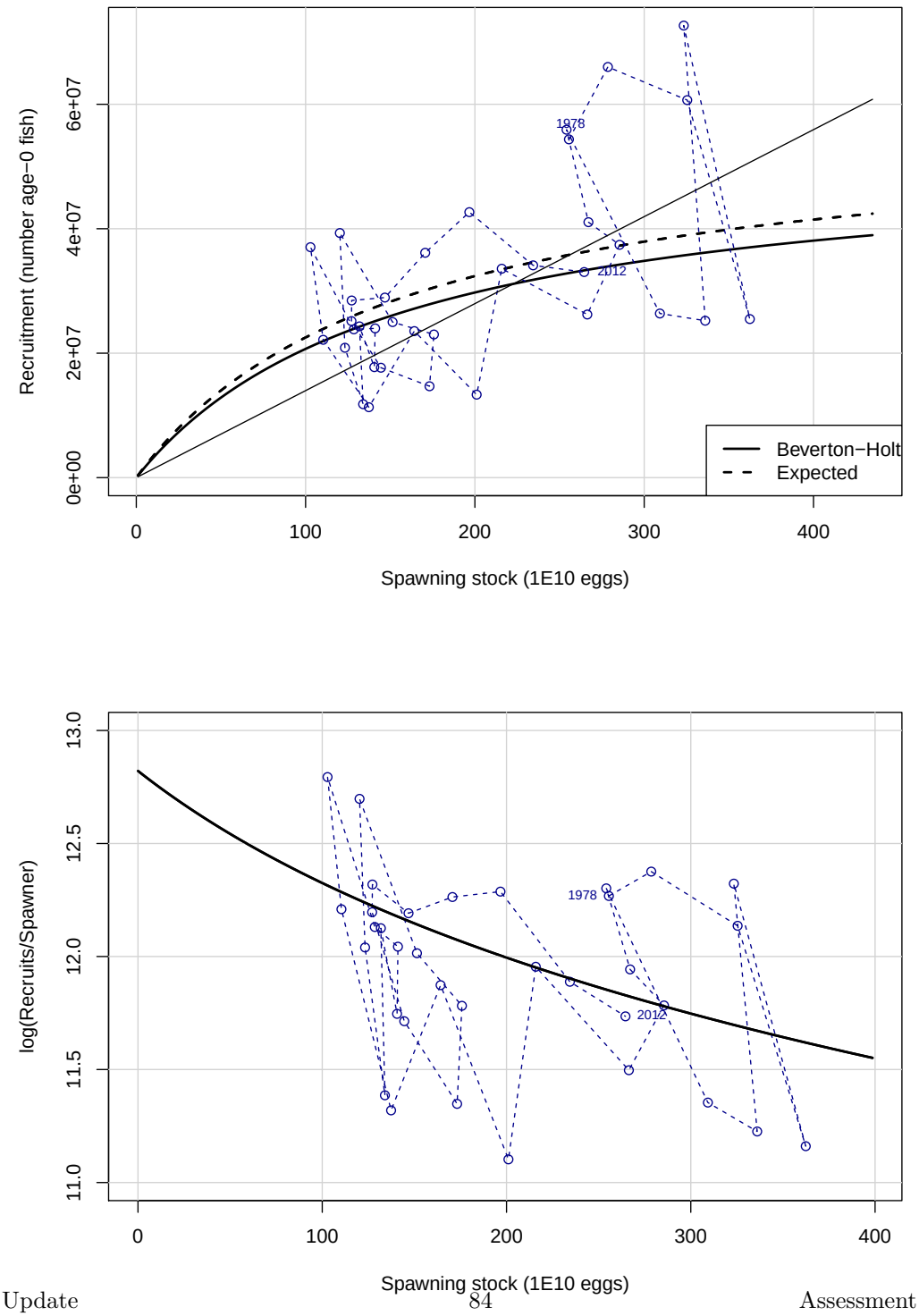


*Figure 32. Probability densities of spawner-recruit quantities R0 (unfished recruitment of age-0 fish), steepness, unfished spawners per recruit, and standard deviation of recruitment residuals in log space. Vertical lines represent point estimates or values from the base run of the Beaufort Assessment Model.*

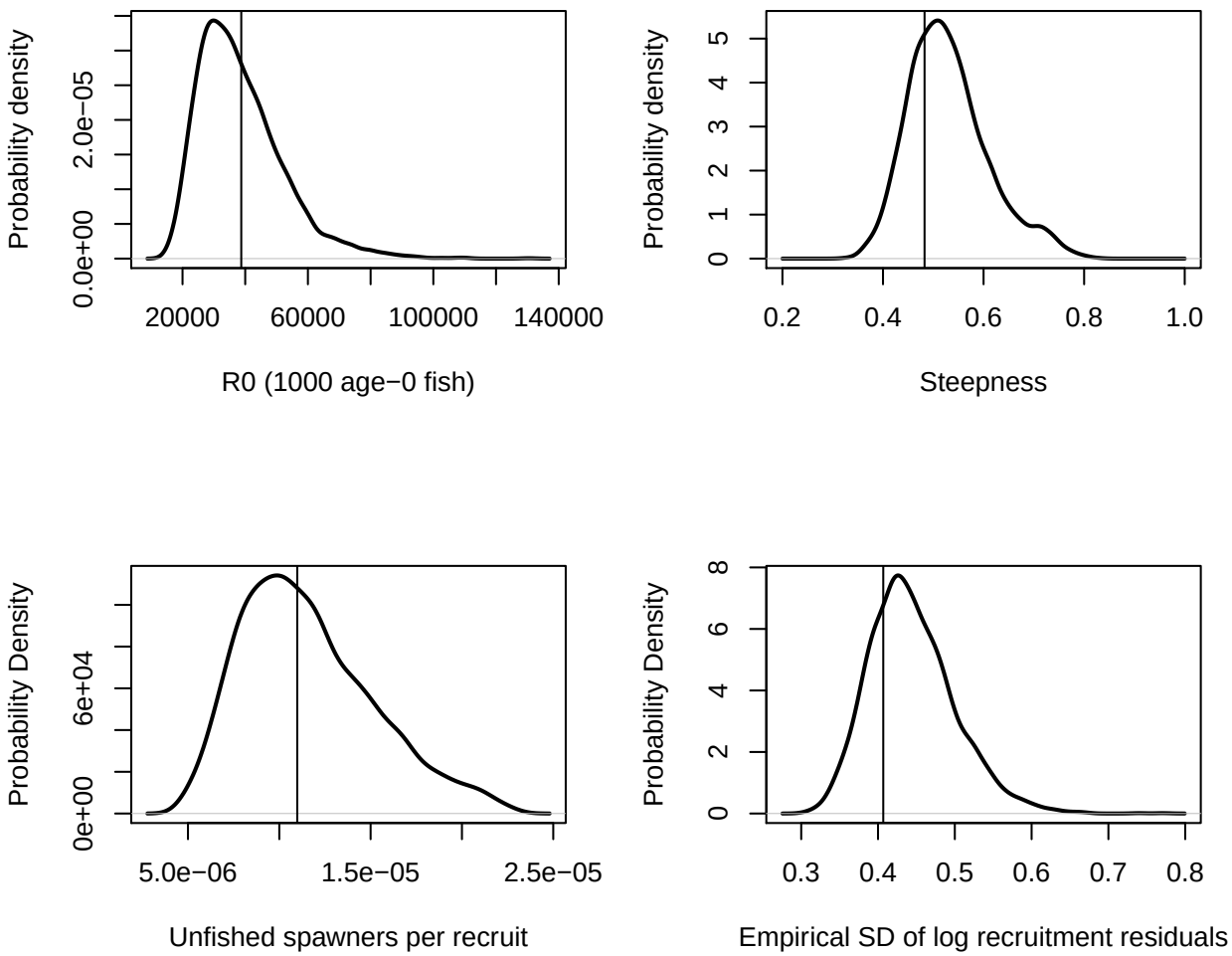


*Figure 33. Top panel: yield per recruit. Bottom panel: spawning potential ratio (spawning biomass per recruit relative to that at the unfished level), from which the X% level of SPR provides $F_{X\%}$. Both curves are based on average selectivity from the end of the assessment period.*

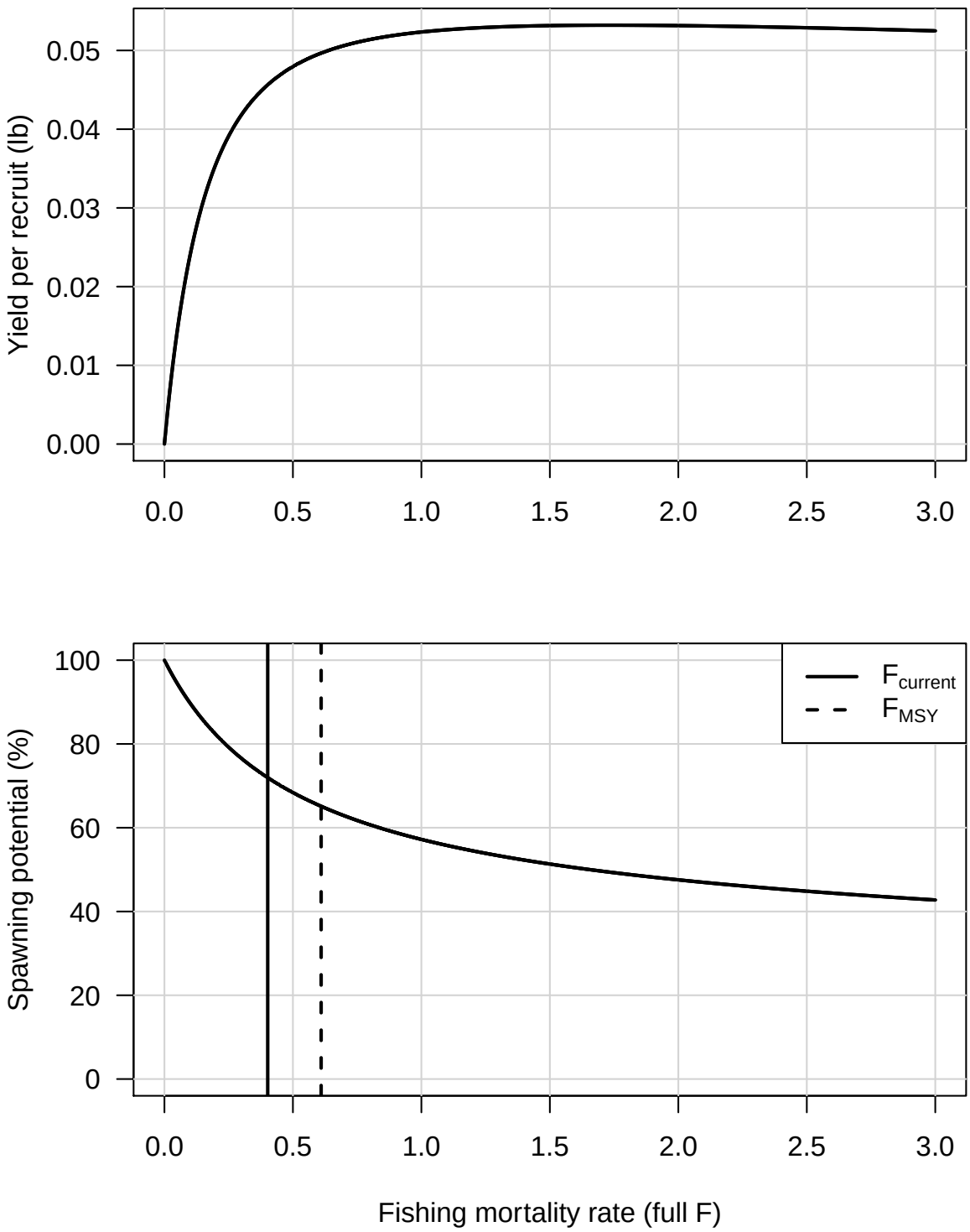


*Figure 34. Top panel: equilibrium landings. The peak occurs where fishing rate is* $F_{\mathrm{MSY}} = 0.610$ *and equilibrium landings are* $\mathrm{MSY} = 1780$ *(1000 lb). Bottom panel: equilibrium spawning biomass. Both curves are based on average selectivity from the end of the assessment period.*

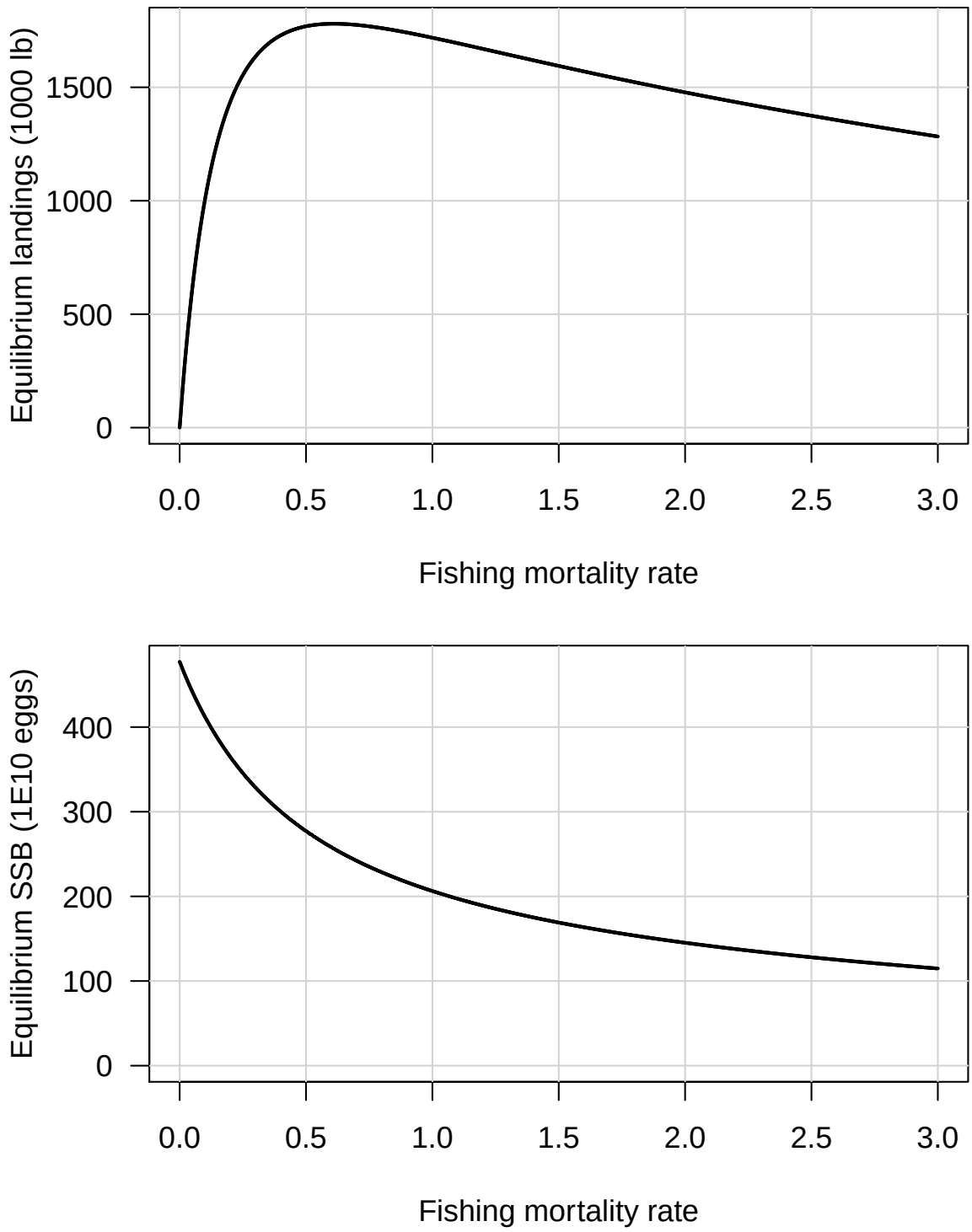


*Figure 35. Top panel: equilibrium landings as a function of equilibrium biomass, which itself is a function of fishing mortality rate. The peak occurs where equilibrium biomass is* $B_{\mathrm{MSY}} = 5617$ *mt and equilibrium landings are* $\mathrm{MSY} = 1780$ *(1000 lb). Bottom panel: equilibrium discard mortality as a function of equilibrium biomass.*

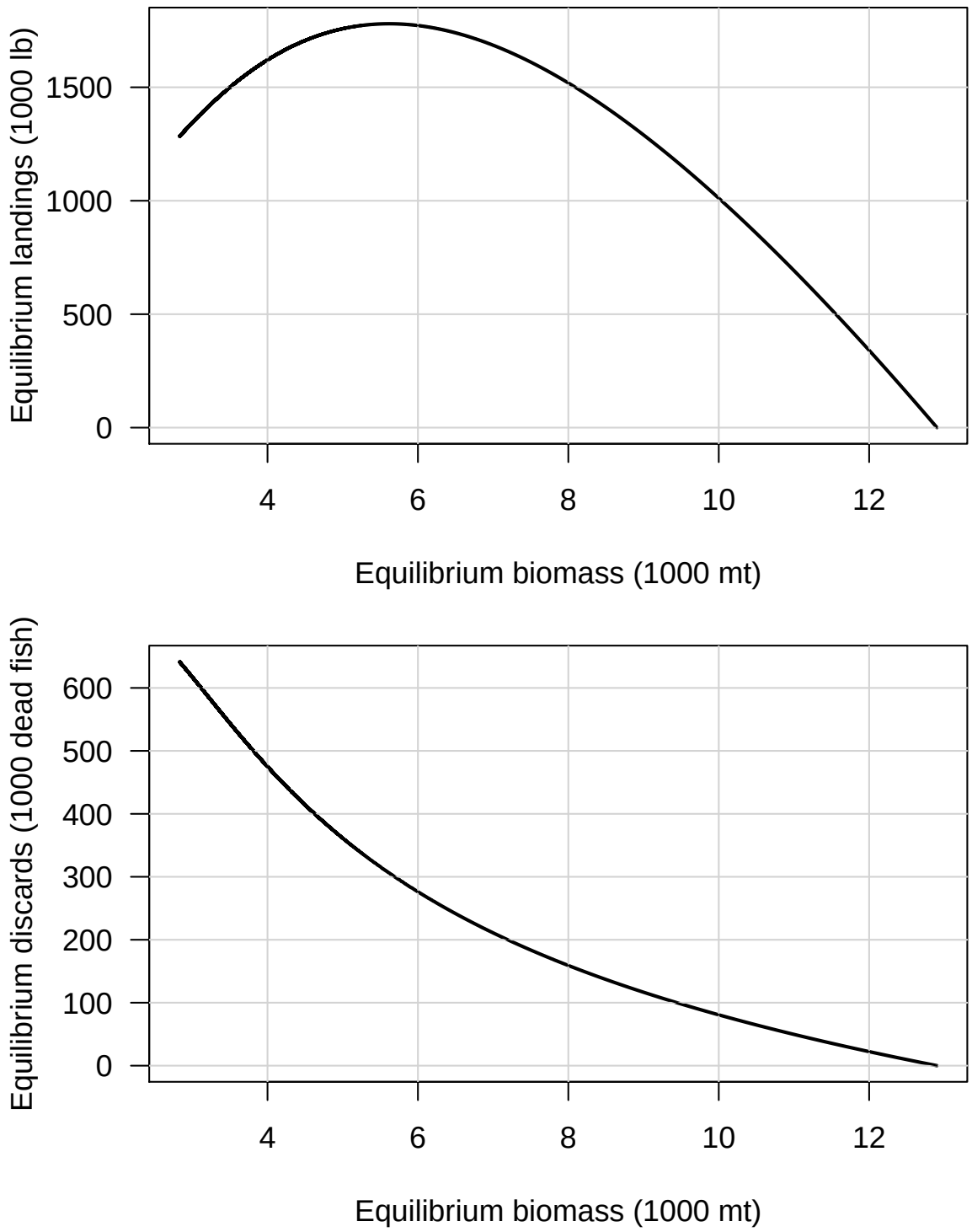


*Figure 36. Probability densities of* MSY*-related benchmarks from MCB analysis of the Beaufort Assessment Model. Vertical lines represent point estimates from the base run.*

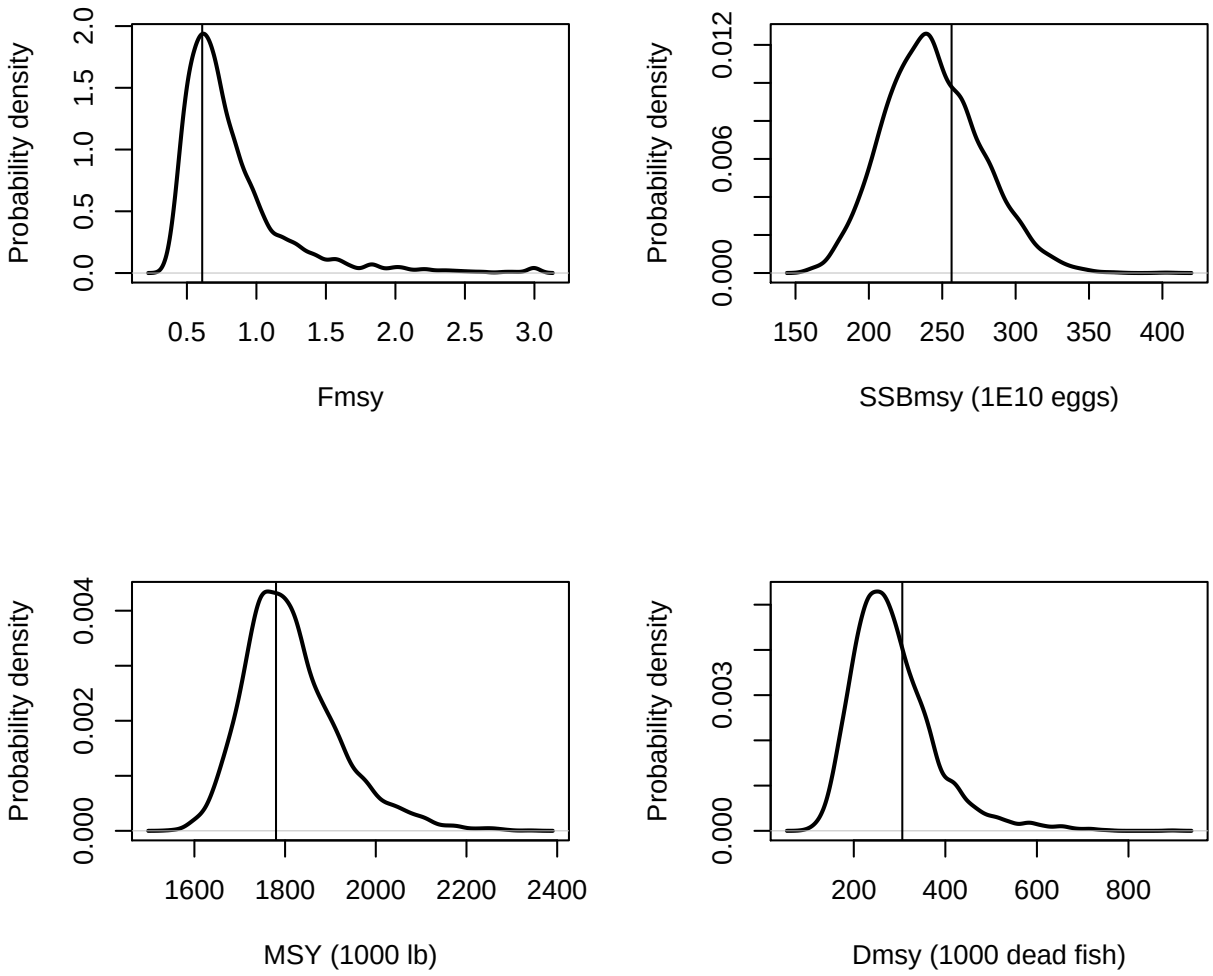


*Figure 37. Estimated time series relative to benchmarks. Solid line indicates estimates from base run of the Beaufort Assessment Model; gray error bands indicate* $5^{th}$ *and* $95^{th}$ *percentiles of the MCB trials. Top panel: spawning biomass relative to the minimum stock size threshold (*MSST*). Middle panel: spawning biomass relative to* $\mathrm{SSB}_{\mathrm{MSY}}$*. Bottom panel: F relative to* $F_{\mathrm{MSY}}$*.*

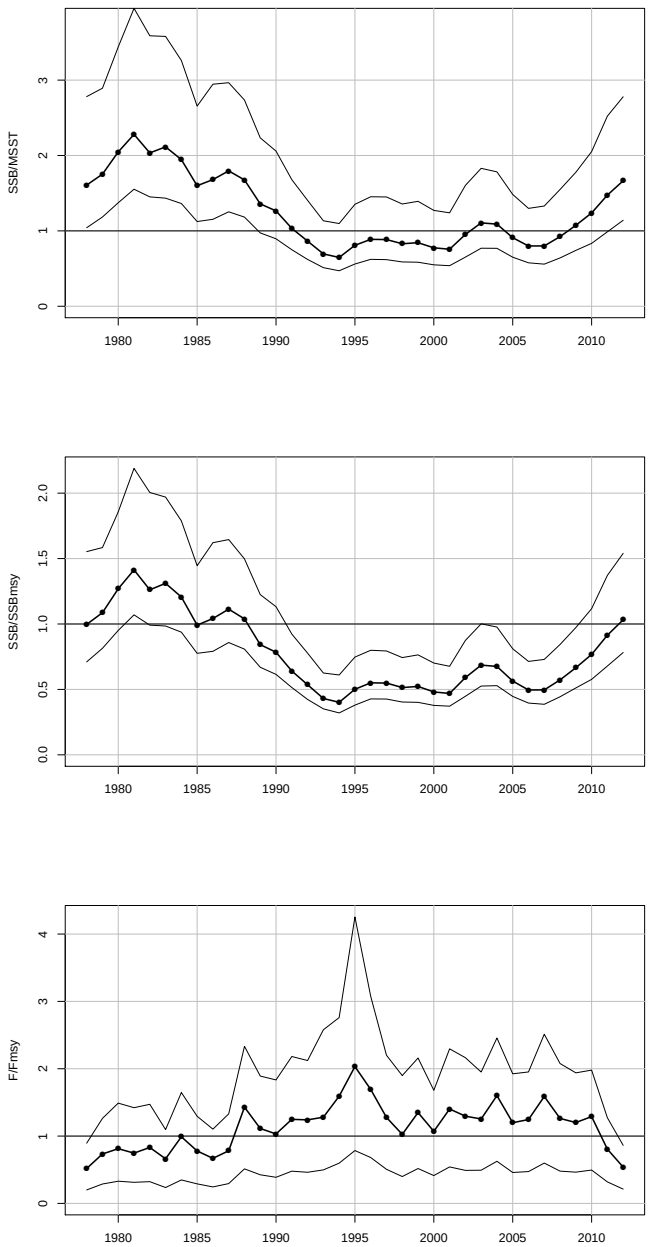


*Figure 38. Probability densities of terminal status estimates from MCB analysis of the Beaufort Assessment Model. Vertical lines represent point estimates from the base run.*

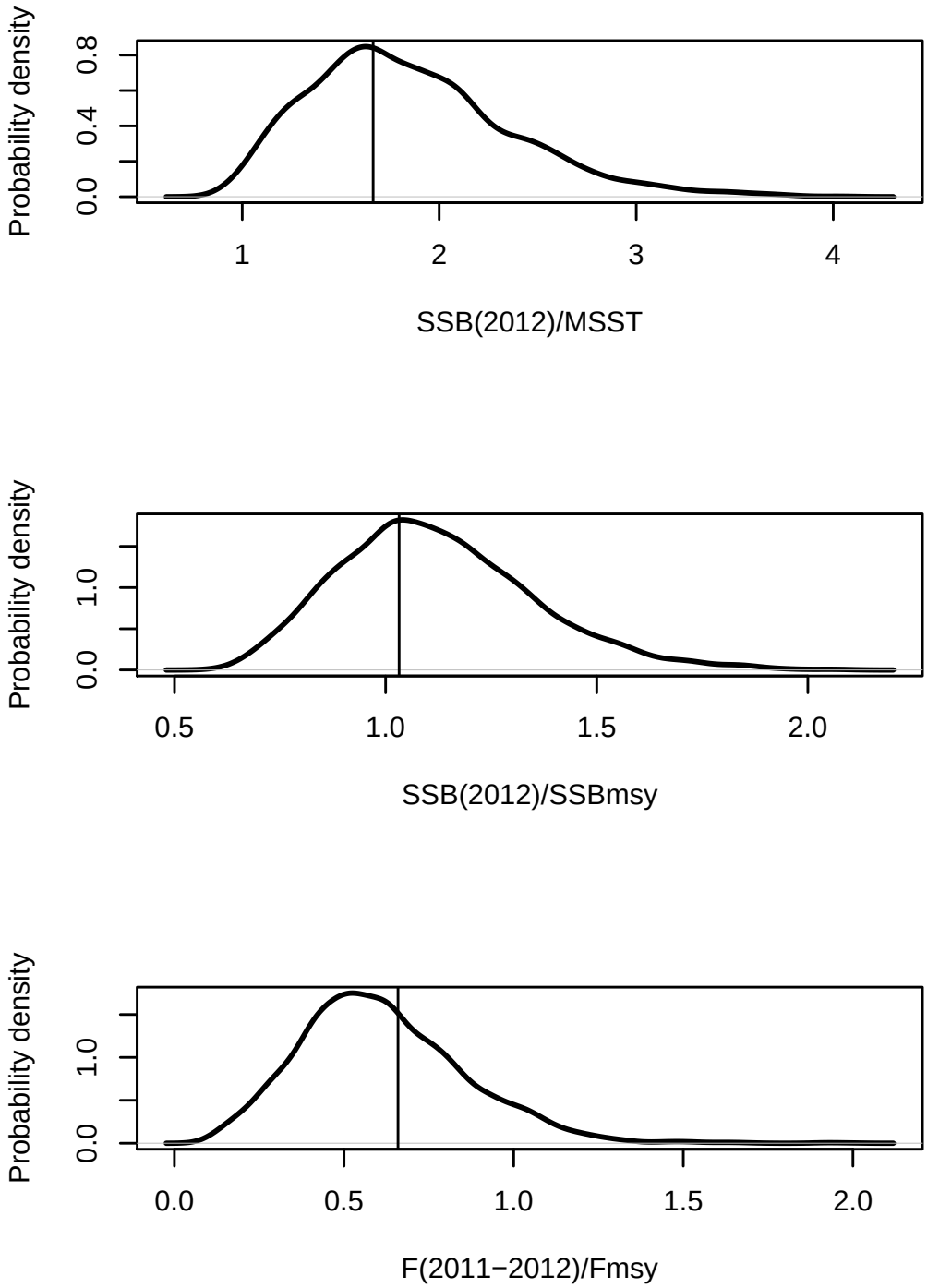
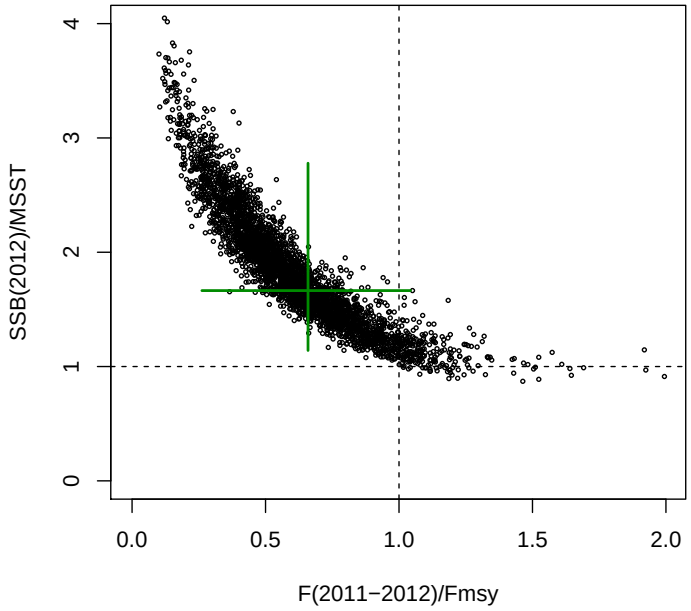


*Figure 39. Phase plot of terminal status estimates from MCB analysis of the Beaufort Assessment Model. The intersection of crosshairs indicates estimates from the base run; lengths of crosshairs defined by $5^{th}$ and $95^{th}$ percentiles.*



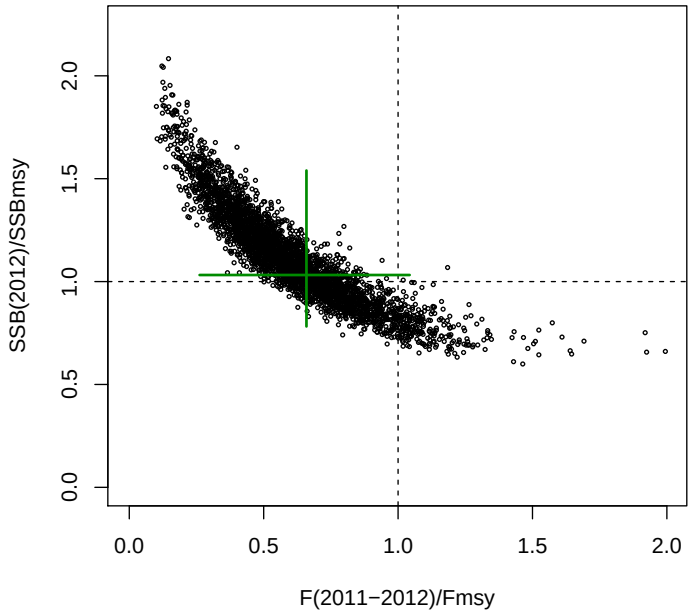



*Figure 40. Age structure relative to the equilibrium expected at* MSY.

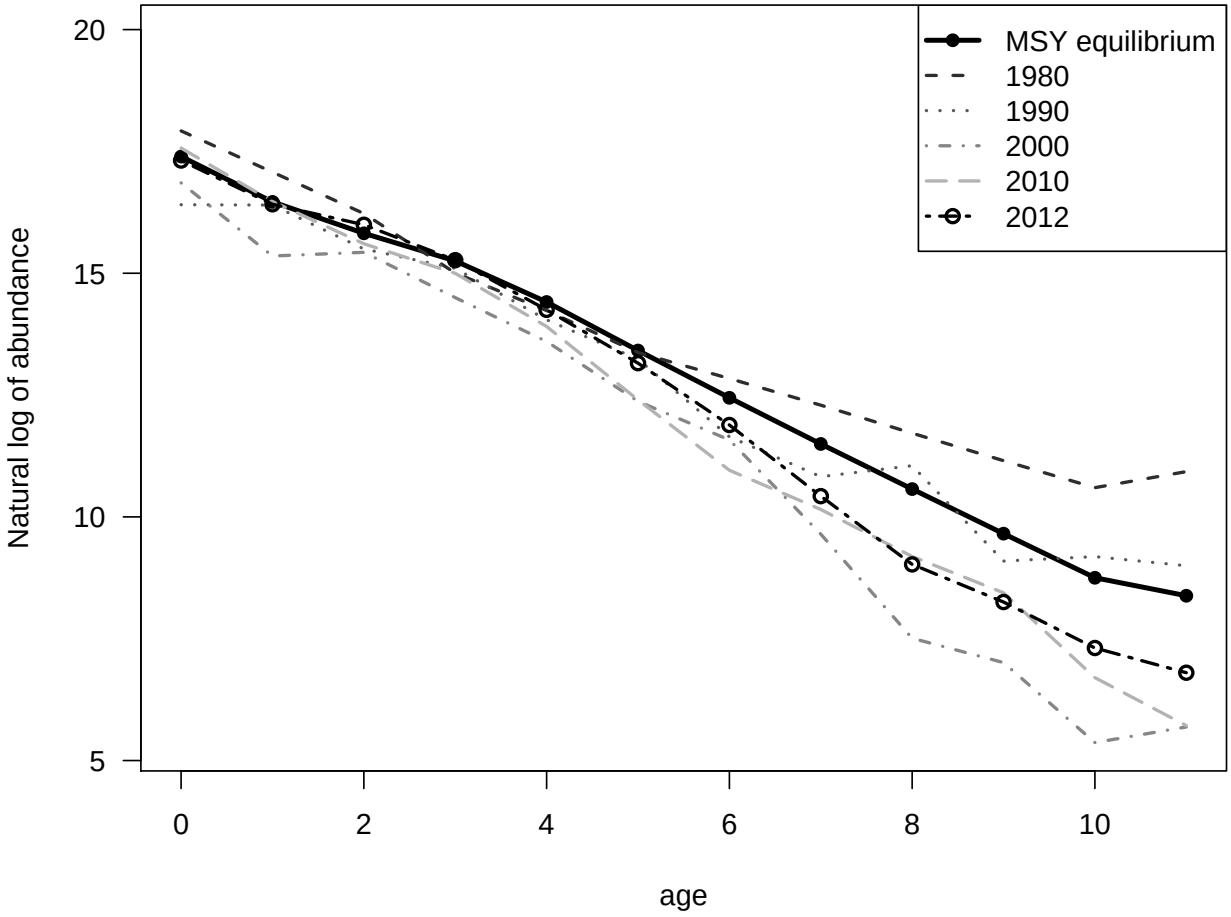


*Figure 41. P*=0.4 Projection results*

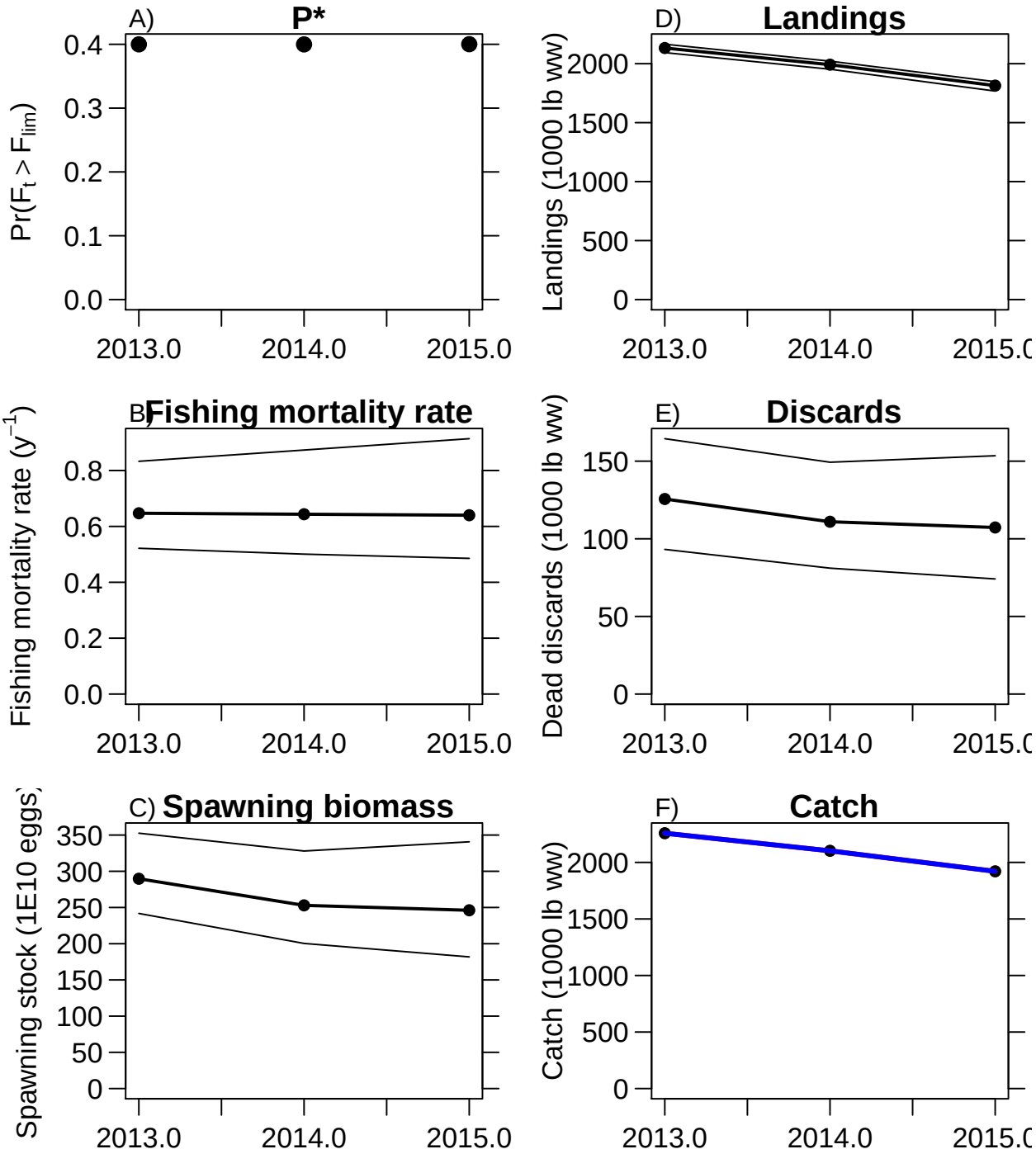


*Figure 42. P*=0.5 Projection results*

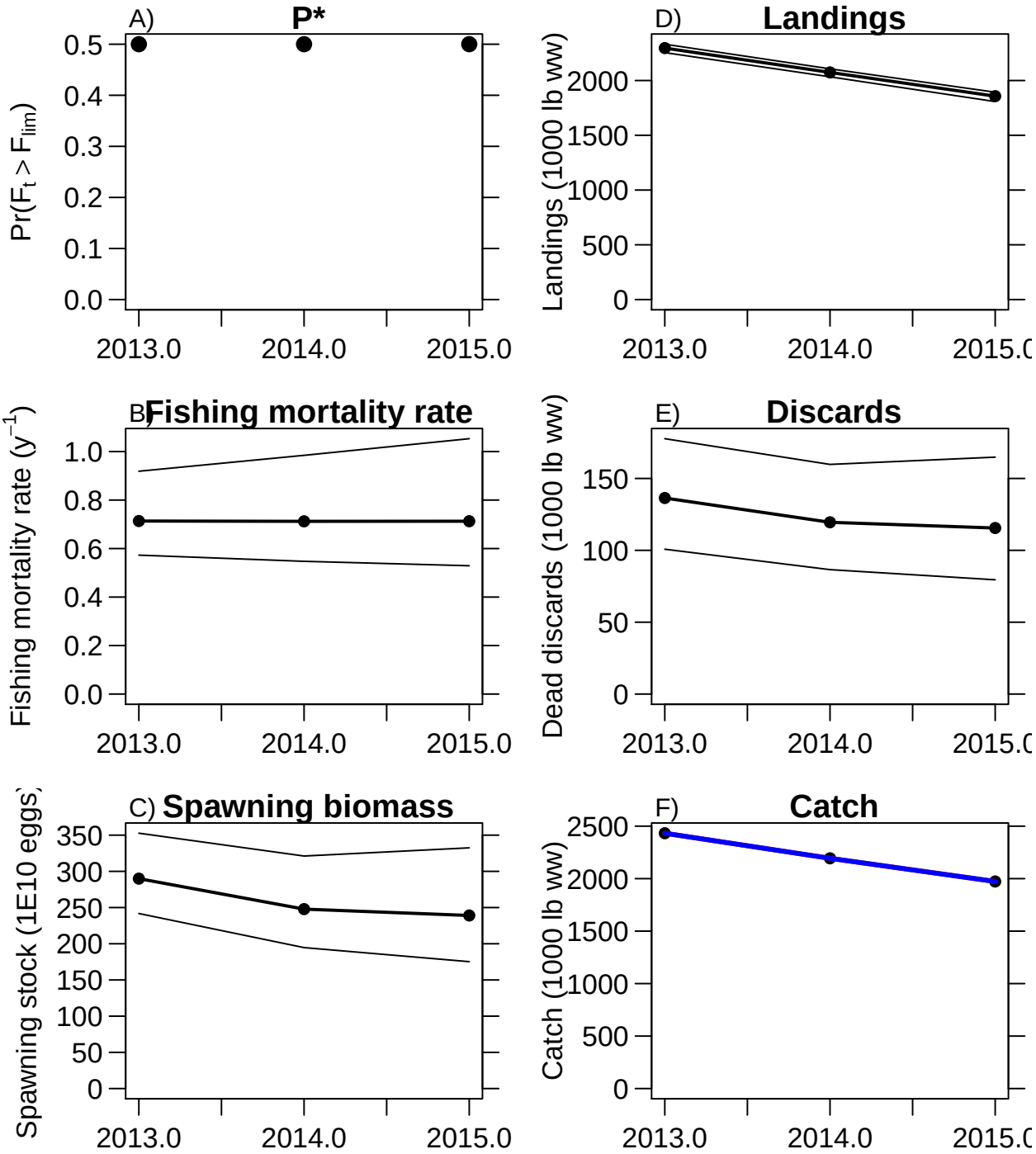
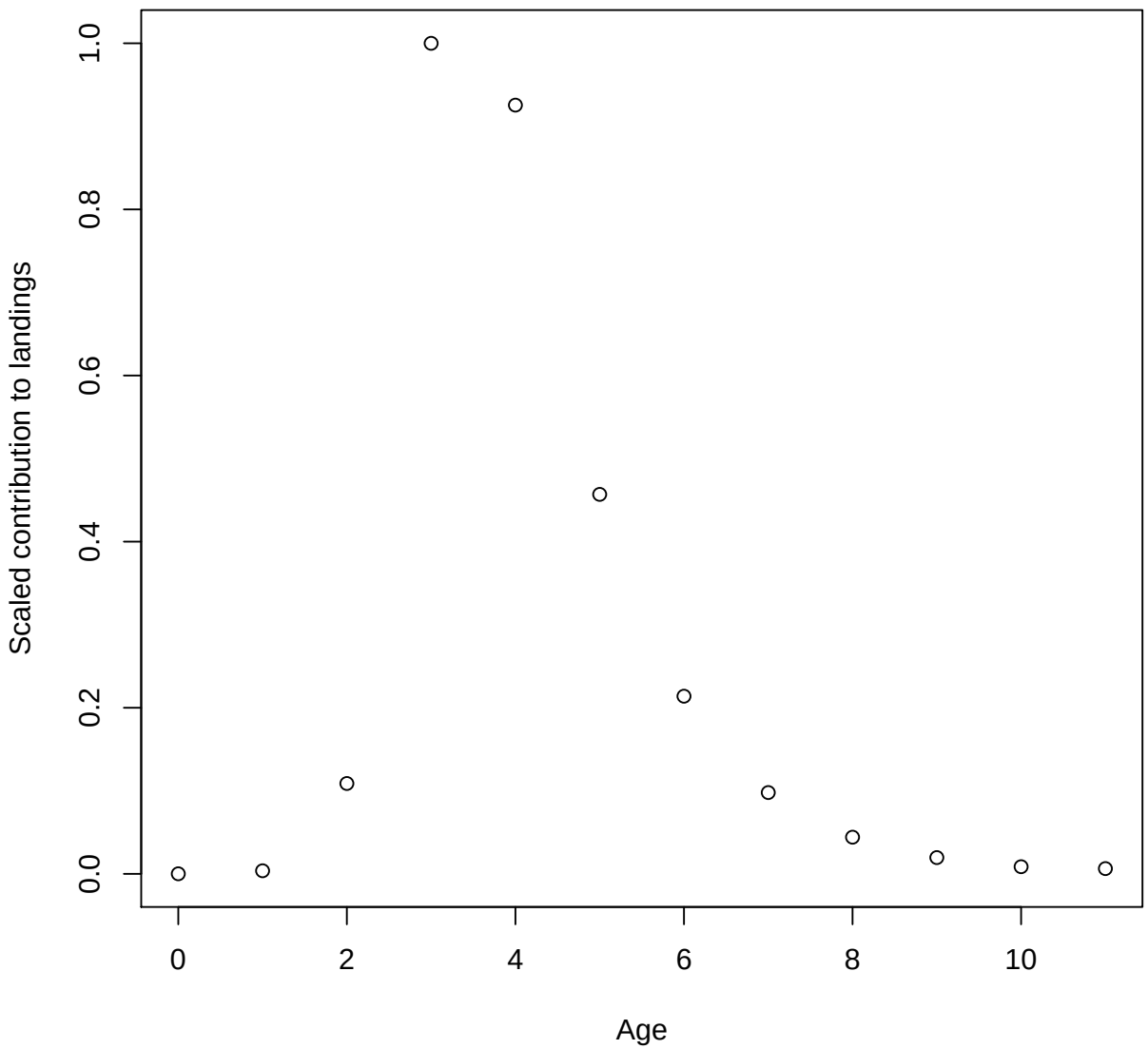


*Figure 43. Scaled contribution to landings by age.*



# Appendix A Abbreviations and symbols

*Table 18. Acronyms and abbreviations used in this report*

| Symbol | Meaning |
|---|---|
| ABC | Acceptable Biological Catch |
| AW | Assessment Workshop (here, for black sea bass) |
| ASY | Average Sustainable Yield |
| $B$ | Total biomass of stock, conventionally on January 1r |
| BAM | Beaufort Assessment Model (a statistical catch-age formulation) |
| CPUE | Catch per unit effort; used after adjustment as an index of abundance |
| CV | Coefficient of variation |
| DW | Data Workshop (here, for black sea bass) |
| $F$ | Instantaneous rate of fishing mortality |
| $F_{\mathrm{MSY}}$ | Fishing mortality rate at which MSY can be attained |
| FL | State of Florida |
| GA | State of Georgia |
| GLM | Generalized linear model |
| $K$ | Average size of stock when not exploited by man; carrying capacity |
| kg | Kilogram(s); 1 kg is about 2.2 lb. |
| klb | Thousand pounds; thousands of pounds |
| lb | Pound(s); 1 lb is about 0.454 kg |
| m | Meter(s); 1 m is about 3.28 feet. |
| $M$ | Instantaneous rate of natural (non-fishing) mortality |
| MARMAP | Marine Resources Monitoring, Assessment, and Prediction Program, a fishery-independent data collection program of SCDNR |
| MCB | Monte Carlo/Bootstrap, an approach to quantifying uncertainty in model results |
| MFMT | Maximum fishing-mortality threshold; a limit reference point used in U.S. fishery management; often based on $F_{\mathrm{MSY}}$ |
| mm | Millimeter(s); 1 inch = 25.4 mm |
| MRFSS | Marine Recreational Fisheries Statistics Survey, a data-collection program of NMFS, predecessor of MRIP |
| MRIP | Marine Recreational Information Program, a data-collection program of NMFS, descended from MRFSS |
| MSST | Minimum stock-size threshold; a limit reference point used in U.S. fishery management. The SAFMC has defined MSST for black sea bass as $(1-M)\mathrm{SSB}_{\mathrm{MSY}} = 0.7\mathrm{SSB}_{\mathrm{MSY}}$. |
| MSY | Maximum sustainable yield (per year) |
| mt | Metric ton(s). One mt is 1000 kg, or about 2205 lb. |
| $N$ | Number of fish in a stock, conventionally on January 1 |
| NC | State of North Carolina |
| NMFS | National Marine Fisheries Service, same as "NOAA Fisheries Service" |
| NOAA | National Oceanic and Atmospheric Administration; parent agency of NMFS |
| OY | Optimum yield; SFA specifies that OY $\leq$ MSY. |
| PSE | Proportional standard error |
| $R$ | Recruitment |
| SAFMC | South Atlantic Fishery Management Council (also, Council) |
| SC | State of South Carolina |
| SCDNR | Department of Natural Resources of SC |
| SDNR | Standard deviation of normalized residuals |
| SEDAR | SouthEast Data Assessment and Review process |
| SEFIS | SouthEast Fishery-Independent Survey |
| SFA | Sustainable Fisheries Act; the Magnuson–Stevens Act, as amended |
| SL | Standard length (of a fish) |
| SPR | Spawning potential ratio |
| SSB | Spawning stock biomass; mature biomass of males and females |
| $\mathrm{SSB}_{\mathrm{MSY}}$ | Level of SSB at which MSY can be attained |
| TIP | Trip Interview Program, a fishery-dependent biodata collection program of NMFS |
| TL | Total length (of a fish), as opposed to FL (fork length) or SL (standard length) |
| VPA | Virtual population analysis, an age-structured assessment |
| WW | Whole weight, as opposed to GW (gutted weight) |
| yr | Year(s) |

# Appendix B Parameter estimates from the Beaufort Assessment Model

```
# Number of parameters = 316  Objective function value = 717.894  Maximum gradient component = 7.54392e-005
# len_cv_val:
0.133752195926
# log_Nage_dev:
 0.0196934974730 0.0638580509740 -0.126292499229 -0.0469840579975 -0.00133174540830 -0.00423330344330 -0.00602861187001
 -0.00718411552430 -0.00595531509254 -0.00374338200309 -0.00735207968399
# log_R0:
17.4723348443
# steep:
0.482620061613
# rec_sigma:
0.412615271432
# log_rec_dev:
 0.498734488305 0.665146517585 0.527899863896 -0.373175137049 0.710120895574 -0.360309385609 -0.288314917081 0.533119359411
 0.205650474490 0.0888694074107 -0.241922347625 0.0883310241814 -0.804540090828 -0.142636702421 -0.784408808705 0.00915790547209
 0.565162300738 -0.00375074016159 -0.0474900841342 -0.346280594029 0.00235901866838 -0.729126897589 -0.112967056369 0.533746370287
 -0.0423769693864 -0.198501395768 -0.640223274424 -0.365796143339 0.0566861222375 0.179662889377 0.119515220036 0.267178665200
 0.367907181593 0.0705728411768 -0.00800000112046
# selpar_L50_Mbft:
2.27818827878
# selpar_slope_Mbft:
4.75654508519
# selpar_L50_Mcvt:
2.56783506327
# selpar_slope_Mcvt:
3.11997811522
# selpar_L50_cL2:
2.60746602265
# selpar_slope_cL2:
3.87880445867
# selpar_L50_cL3:
2.90828572085
# selpar_slope_cL3:
2.28122485936
# selpar_L50_cP2:
2.05978855228
# selpar_slope_cP2:
3.20103529415
# selpar_L50_cP3:
2.47808744984
# selpar_slope_cP3:
3.62602755302
# selpar_L50_HB1:
1.88199650201
# selpar_slope_HB1:
3.74527841913
# selpar_L50_HB2:
2.16881248329
# selpar_slope_HB2:
3.51599277772
# selpar_L50_HB3:
2.74802525389
# selpar_slope_HB3:
4.05498431870
# selpar_L50_HB4:
2.93367035364
# selpar_slope_HB4:
3.80878212790
# selpar_Age0_HB_D_logit:
-6.24925951418
# selpar_Age1_HB_D_logit:
-1.93853895107
# selpar_Age2_HB_D_logit:
1.61185464351
# log_q_Mbft:
-15.6923391123
# log_q_Mcvt:
-14.7685951033
# log_q_cL:
-7.13210862651
# log_q_HB:
-7.89718926236
# log_q_HBD:
-15.6788790900
# q_rate:
0.000000000000
# q_DD_beta:
0.000000000000
# q_RW_log_dev_cL:
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
# q_RW_log_dev_HB:
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
 0.000000000000 0.000000000000 0.000000000000 0.000000000000
# q_RW_log_dev_HBD:
 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000 0.000000000000
# log_avg_F_cL:
```

```
-2.74489352325
# log_F_dev_cL:
 -0.878913014499 -0.623752169176 -0.766656228072 -0.439834159848 -0.664409502362 -0.730031321400 -0.247166588615
 -0.535214633626  -0.391104985457 -0.373584770308 0.0956751479387 0.346626440672 0.459031719530 0.674490758340 0.631527700743
 0.801336852947 1.06687779047 1.13397979996  0.893034115636 0.675382843335 0.887067384954 0.858471049885 0.149648497507
 0.0861289630799 0.336752243408 0.131985511713  0.0531915364596 -0.409831049608 -0.420495264833 -0.314325418536 -0.219238617851
 -0.0196907914461 -0.405612304136 -1.08753336357 -0.753814173241
# log_avg_F_cP:
-1.72099975850
# log_F_dev_cP:
 -1.96835201689 -0.280012518683 0.0103049142075 0.0281059954953 -0.321144183144 -0.727825375563 -0.865863503223 -0.869155798356
 -0.469886061207 -0.733870582694 -0.435260088075 -0.239018643327 0.158083812677 0.178584598108 0.290127532712 0.436864162808
 0.684580804312  0.661259433801 0.570568663594 0.455524211811 0.219081019301 0.583206832442 0.388733431909 0.539115238691
 0.593049577043 0.492180427469  0.480600914982 0.0897794676899 0.406027567921 0.345235303472 0.346930113954 0.513386545212
 0.0390736809528 -0.303639628912 -1.29637585049

# log_avg_F_cT:
-5.55885552941
# log_F_dev_cT:
 0.429043784282 0.347292823879 0.291292684964 0.402191756333 -0.128184289137 -0.932414835792 -0.167820200414 0.157833983089
 0.248207454682 -0.884154979423 0.216058277175 -0.0483498984094 0.0690034387705
# log_avg_F_HB:
-2.17808274731
# log_F_dev_HB:
 -0.197138418167 -0.0568259052580 0.00802652640115 -0.0359789952954 -0.0711977170702 0.0337703253349 0.144212801447 -0.0183591438815
 0.0969117744817  0.220490192356 0.289554718877 0.199170961496 0.0745902824850 -0.0713884197762 -0.152053977916 -0.305645833946
 -0.178451560851  0.0623823958877  -0.0765312167278 -0.305944170724 -0.399490511956 0.235260420106 -0.0273715769866 0.0719470737418
 -0.0167260176826 -0.0682294714172   0.157823538016  -0.0714993527432 -0.0471926815590 0.266683004271 -0.135019673515 0.117113591273
 0.483469218398 0.0768227149887 -0.303184894087

# log_avg_F_mrip:
-1.28883251428
# log_F_dev_mrip:
 -0.872530760387 -0.159254808060 -0.495607303412 0.221951052898 -0.110654879135 -0.805252842087 -0.302362146048 0.652793375520
 0.100913770170   -0.361423077582 0.136711015510 0.0834218260765 0.00613040563602 0.194533202056 0.731093421055 0.499069446101
 0.0398522623158 -0.478983692987    -0.284148693841 -0.302419042577 0.256712977496 -0.0396753004841 0.0611187860774 0.567559098634
  0.338188674139 0.209223448091 0.614441324779   0.266210276363 -0.145891221845 0.288002916046 -0.332000926788 -0.577722583733
# F_init_ratio:
0.654035197104
# log_avg_F_comm_D:
-6.95493175700
# log_F_dev_comm_D:
 0.725522982548 1.23653687227 0.843830912749 0.606179284338 0.596654856973 0.713972600484 0.689623418191 0.348381615361 0.743222026346
 -0.308094563341 0.180995208633 -0.0784572863028 0.595141962683 1.10317210697 -1.62415444748 -1.96842584928 -0.985324605940
 -1.34008457796   -0.873789899586 -1.20490261765
# log_avg_F_HB_D:
-6.88112962519
# log_F_dev_HB_D:
 0.888847861536 0.648706960838 -0.366650992031 -0.483153462832 -2.98660735987 0.590921690112 -0.00510847570473 -0.755059828378
 0.514964587502  -0.103956019239 -0.254649143996 -0.243733564941 -0.450928154186 0.428399552904 0.261426983792 0.607879803225
 0.0256599617314 -0.480756838863  0.0635118868684 0.464300970479 0.680253870241 0.499256229077 -0.196528080849 0.0267955129137
 0.390831128644 0.259869963045 -0.0244950420198


# log_avg_F_mrip_D:
-4.26871840270
# log_F_dev_mrip_D:
 -0.883572130682 -0.898421551930 -1.52455249785 -0.783534736758 -0.558178421891 -0.545801873990 -0.543893756447 -0.614046522631
 -0.508817004744  -0.970650501913 -0.375392165973 -0.0161809632797 -0.0192360304620 0.704939638470 0.0833838359538 -0.428408074039
 0.0145323124674 -0.183910920722 0.239522887195 0.526123517710 0.806517342386 0.202887041451 -0.0799734423377 0.690459820003
 0.690598589505 1.09988442883 1.27625002394  0.718905109108 0.414928471008 0.637833878525 0.616632246942 0.211171452159
```

# Appendix C P* analyses

In the $P^\star$ projections, the first year of new management is assumed to be 2013, which is the earliest year management could react to this assessment. Because the fishery was closed between January 1st and the time of peak spawning, initial (2013) spawning stock was discounted only by natural mortality and release mortality, but no mortality related to landings.

## C.1 Uncertainty of projections

To characterize uncertainty in future stock dynamics, stochasticity was included in replicate projections, each an extension of a single MCB assessment model fit. Thus, projections carry forward uncertainties in steepness, natural mortality, and discard mortality, as well as in estimated quantities such as remaining spawner-recruit parameters, selectivity curves, and in initial (start of 2013) abundance at age.

Initial and subsequent recruitment values were generated with stochasticity using a Monte Carlo procedure, in which the estimated Beverton–Holt model of each MCB fit was used to compute mean annual recruitment values ($\bar{R}_y$). Variability was added to the mean values by choosing multiplicative deviations at random from a lognormal distribution,

$$R_y = \bar{R}_y \exp(\epsilon_y). \tag{5}$$

Here $\epsilon_y$ is drawn from a normal distribution with mean 0 and standard deviation $\sigma_R$, where $\sigma_R$ is the standard deviation from the relevant MCB fit.

The procedure used 10,000 replicate projections of MCB model fits drawn at random (with replacement) from the MCB runs. In cases where the same MCB run was drawn, projections still differed as a result of stochasticity in projected recruitment streams.

## C.2 Results of Projections

The distribution of $F_{\mathrm{MSY}}$ in Figure 36 was used to compute annual ABC (landings plus discard mortalities in 1000 lb whole weight). In general, the ABC tends to increase with higher acceptable probability of overfishing ($P^\star$), whereas stock size tends to decrease. Projected values from this assessment are shown in Tables 19 and 20, and Figures 41 and 42.

Values of ABC were computed for 2013–2015 given uncertainties in $F_{\mathrm{MSY}}$, initial abundance at age (2013), natural mortality, discard mortalities, spawner-recruit parameters, and future recruitment deviations. Management implementation error was not considered for these projections, but could be included for future projections. Thus, these ABC values should be considered as possible catch limits, and implementation uncertainty should be considered when setting annual catch targets (ACTs).

The projection method applied here assumed that the catch taken from the stock was the ABC. If the projection had applied a catch level lower than the ABC, say at ACT $<$ ABC, then the corresponding reduction in applied $F$ would have resulted in higher stock sizes, and higher ABCs in subsequent years.

However, the projection results indicate an ABC that is higher than $\mathrm{MSY}$ for this stock. On further examination, the first year of the projections (2013) coincided with the year when the large 2010 class of recruits became available to the fishery as three year-olds. Figure 43 illustrates an important caveat to the interpretation of these projections. The three and four year-old fish are the main contributors to the weight of the landings, therefore the large three year-old component of the stock in 2013 causes a very high ABC. If there is not another large year class following the 2010 year class, and the fishery is expanded enough to drive down that large year class before they spawn and contribute to future recruitment, the stock will likely fall below $\mathrm{SSB}_{\mathrm{MSY}}$ in subsequent years.

### C.3 Comments on the Projections

The high uncertainty surrounding the effect of that large 2010 year class on the projections prompts a reiteration of the caveats of these projections. Some major considerations are the following:

- In general, projections of fish stocks are highly uncertain, particularly in the long term (e.g., beyond 3–5 years).
- Although these projections included many major sources of uncertainty, they did not include structural (model) uncertainty. That is, projection results are conditional on one set of functional forms used to describe population dynamics, selectivity, recruitment, etc.
- Fisheries were assumed to continue fishing at their estimated current proportions of total effort, using the estimated current selectivity patterns. New management regulations that alter those proportions or selectivities would likely affect projection results.
- These projections did not model any error in implementing regulations. Changes to that assumption will change the results of these projections.
- The projections assumed that the estimated spawner-recruit relationship applies in the future and that past residuals represent future uncertainty in recruitment. If future recruitment is characterized by runs of large or small year classes, possibly due to environmental or ecological conditions, stock trajectories may be affected.
- Projections apply the Baranov catch equation to relate $F$ and landings using a one-year time step, as in the assessment. The catch equation implicitly assumes that mortality occurs throughout the year. This assumption is violated when seasonal closures are in effect, introducing additional and unquantified uncertainty into the projection results.

## Appendix D Results from the P* projections

*Table 19. Acceptable biological catch (ABC) in units of 1000 lb whole weight, based on the annual probability of overfishing $P^\star = 0.4$. F = fishing mortality rate (per yr), SSB = mid-year spawning stock (1E10 eggs), Pr(*SSB > $\mathrm{SSB_{MSY}}$*) = proportion of replicates rebuilt (i.e., SSB above the base-run point estimate of* 256*), R = recruits (1000 age-0 fish), D = discard mortalities (*1000 lb *whole weight), and L = landings (*1000 lb *whole weight). ABC (*1000 lb *whole weight) includes landings and discard mortalities. Annual ABCs are a single quantity while other values presented are medians.*

| Year | F | $P^\star$ | SSB | Pr(SSB > $\mathrm{SSB_{MSY}}$) | R | D(1000 lb) | L(1000 lb) | ABC(1000 lb) |
|---|---|---|---|---|---|---|---|---|
| 2013 | 0.65 | 0.4 | 289.7 | 0.80 | 33230 | 125.6 | 2133 | 2258 |
| 2014 | 0.64 | 0.4 | 253.0 | 0.47 | 31913 | 111.0 | 1992 | 2102 |
| 2015 | 0.64 | 0.4 | 246.2 | 0.43 | 31519 | 107.3 | 1814 | 1921 |

*Table 20. Acceptable biological catch (ABC) in units of 1000 lb whole weight, based on the annual probability of overfishing $P^\star = 0.5$. F = fishing mortality rate (per yr), SSB = mid-year spawning stock (1E10 eggs), Pr(*SSB > $\mathrm{SSB_{MSY}}$*) = proportion of replicates rebuilt (i.e., SSB above the base-run point estimate of* 256*), R = recruits (1000 age-0 fish), D = discard mortalities (*1000 lb *whole weight), and L = landings (*1000 lb *whole weight). ABC (*1000 lb *whole weight) includes landings and discard mortalities. Annual ABCs are a single quantity while other values presented are medians.*

| Year | F | $P^\star$ | SSB | Pr(SSB > $\mathrm{SSB_{MSY}}$) | R | D(1000 lb) | L(1000 lb) | ABC(1000 lb) |
|---|---|---|---|---|---|---|---|---|
| 2013 | 0.71 | 0.5 | 289.9 | 0.80 | 33295 | 136.4 | 2296 | 2433 |
| 2014 | 0.71 | 0.5 | 247.8 | 0.43 | 31685 | 119.5 | 2074 | 2194 |
| 2015 | 0.71 | 0.5 | 239.0 | 0.39 | 31147 | 115.5 | 1857 | 1973 |

## Appendix B. History of Management

### History of Management of the South Atlantic Snapper Grouper Fishery

The snapper grouper fishery is highly regulated; some of the species included in this amendment have been regulated since 1983. The following table summarizes actions in each of the amendments to the original FMP, as well as some events not covered in amendment actions. Summaries of South Atlantic Fishery Management Council (South Atlantic Council) actions and history of management for other FMPs are available online at www.safmc.net.

| Document | All Actions Effective By: | Proposed Rule Final Rule | Major Actions. Note that not all details are provided here. Please refer to Proposed and Final Rules for all impacts of listed documents. |
|---|---|---|---|
| FMP (1983) | 08/31/83 | PR: 48 FR 26843<br>FR: 48 FR 39463 | -12" limit – red snapper, yellowtail snapper, red grouper, Nassau grouper<br>-8" limit – black sea bass<br>-4" trawl mesh size<br>-Gear limitations – poisons, explosives, fish traps, trawls<br>-Designated modified habitats or artificial reefs as Special Management Zones (SMZs) |
| Regulatory Amendment #1 (1987) | 03/27/87 | PR: 51 FR 43937<br>FR: 52 FR 9864 | -Prohibited fishing in SMZs except with hand-held hook-and-line and spearfishing gear.<br>-Prohibited harvest of goliath grouper in SMZs. |
| Amendment #1 (1988a) | 01/12/89 | PR: 53 FR 42985<br>FR: 54 FR 1720 | -Prohibited trawl gear to harvest fish south of Cape Hatteras, NC and north of Cape Canaveral, FL.<br>-Directed fishery defined as vessel with trawl gear and ≥200 lbs s-g on board.<br>-Established rebuttable assumption that vessel with s-g on board had harvested such fish in EEZ. |
| Regulatory Amendment #2 (1988b) | 03/30/89 | PR: 53 FR 32412<br>FR: 54 FR 8342 | -Established 2 artificial reefs off Ft. Pierce, FL as SMZs. |
| Notice of Control Date | 09/24/90 | 55 FR 39039 | -Anyone entering federal wreckfish fishery in the EEZ off S. Atlantic states after 09/24/90 was not assured of future access if limited entry program developed. |
| Regulatory Amendment #3 (1989) | 11/02/90 | PR: 55 FR 28066<br>FR: 55 FR 40394 | -Established artificial reef at Key Biscayne, FL as SMZ. Fish trapping, bottom longlining, spear fishing, and harvesting of Goliath grouper prohibited in SMZ. |
| Amendment #2 (1990a) | 10/30/90 | PR: 55 FR 31406<br>FR: 55 FR 46213 | -Prohibited harvest/possession of goliath grouper in or from the EEZ<br>-Defined overfishing for goliath grouper and other species |

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| Emergency Rule | 8/3/90 | 55 FR 32257 | -Added wreckfish to the FMU<br>-Fishing year beginning 4/16/90<br>-Commercial quota of 2 million pounds<br>-Commercial trip limit of 10,000 pounds per trip |
| Fishery Closure Notice | 8/8/90 | 55 FR 32635 | - Fishery closed because the commercial quota of 2 million pounds was reached |
| Emergency Rule Extension | 11/1/90 | 55 FR 40181 | -extended the measures implemented via emergency rule on 8/3/90 |
| Amendment #3 (1990b) | 01/31/91 | PR: 55 FR 39023<br>FR: 56 FR 2443 | -Added wreckfish to the FMU;<br>-Defined optimum yield and overfishing<br>-Required permit to fish for, land or sell wreckfish;<br>-Required catch and effort reports from selected, permitted vessels;<br>-Established control date of 03/28/90;<br>-Established a fishing year for wreckfish starting April 16;<br>-Established a process to set annual quota, with initial quota of 2 million pounds; provisions for closure;<br>-Established 10,000 pound trip limit;<br>-Established a spawning season closure for wreckfish from January 15 to April 15; and<br>-Provided for annual adjustments of wreckfish management measures; |
| Notice of Control Date | 07/30/91 | 56 FR 36052 | -Anyone entering federal snapper grouper fishery (other than for wreckfish) in the EEZ off S. Atlantic states after 07/30/91 was not assured of future access if limited entry program developed. |

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| Amendment #4 (1991) | 01/01/92 | PR: 56 FR 29922<br>FR: 56 FR 56016 | -Prohibited gear: fish traps except black sea bass traps north of Cape Canaveral, FL; entanglement nets; longline gear inside 50 fathoms; bottom longlines to harvest wreckfish**; powerheads and bangsticks in designated SMZs off S. Carolina.<br>-defined overfishing/overfished and established rebuilding timeframe: red snapper and groupers ≤ 15 years (year 1 = 1991); other snappers, greater amberjack, black sea bass, red porgy ≤ 10 years (year 1 = 1991)<br>-Required permits (commercial & for-hire) and specified data collection regulations<br>-Established an assessment group and annual adjustment procedure (framework)<br>-Permit, gear, and vessel id requirements specified for black sea bass traps.<br>-No retention of snapper grouper spp. caught in other fisheries with gear prohibited in snapper grouper fishery if captured snapper grouper had no bag limit or harvest was prohibited. If had a bag limit, could retain only the bag limit.<br>-8" limit – lane snapper<br>-10" limit – vermilion snapper (recreational only)<br>-12" limit – red porgy, vermilion snapper (commercial only), gray, yellowtail, mutton, schoolmaster, queen, blackfin, cubera, dog, mahogany, and silk snappers<br>-20" limit – red snapper, gag, and red, black, scamp, yellowfin, and yellowmouth groupers.<br>-28" FL limit – greater amberjack (recreational only)<br>-36" FL or 28" core length – greater amberjack (commercial only)<br>-bag limits – 10 vermilion snapper, 3 greater amberjack<br>-aggregate snapper bag limit – 10/person/day, excluding vermilion snapper and allowing no more than 2 red snappers<br>-aggregate grouper bag limit – 5/person/day, excluding Nassau and goliath grouper, for which no retention (recreational & commercial) is allowed<br>-spawning season closure – commercial harvest greater amberjack > 3 fish bag prohibited in April south of Cape Canaveral, FL<br>-spawning season closure – commercial harvest mutton snapper >snapper aggregate prohibited during May and June<br>-charter/headboats and excursion boat possession limits extended |
| Amendment #5 (1992a) | 04/06/92 | PR: 56 FR 57302<br>FR: 57 FR 7886 | -Wreckfish: established limited entry system with ITQs; required dealer to have permit; rescinded 10,000 lb. trip limit; required off-loading between 8 am and 5 pm; reduced occasions when 24-hour advance notice of offloading required for off-loading; established procedure for initial distribution of percentage shares of TAC |

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| Emergency Rule | 8/31/92 | 57 FR 39365 | -Black Sea Bass (bsb): modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips |
| Emergency Rule Extension | 11/30/92 | 57 FR 56522 | -Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips |
| Regulatory Amendment #4 (1992b) | 07/06/93 | FR: 58 FR 36155 | -Black Sea Bass: modified definition of bsb pot; allowed multi-gear trips for bsb; allowed retention of incidentally-caught fish on bsb trips |
| Regulatory Amendment #5 (1992c) | 07/31/93 | PR: 58 FR 13732<br>FR: 58 FR 35895 | -Established 8 SMZs off S. Carolina, where only hand-held, hook-and-line gear and spearfishing (excluding powerheads) was allowed. |
| Amendment #6 (1993) | 07/27/94 | PR: 59 FR 9721<br>FR: 59 FR 27242 | -Set up separate commercial Total Allowable Catch (TAC) levels for golden tilefish and snowy grouper<br>-Established commercial trip limits for snowy grouper, golden tilefish, speckled hind, and warsaw grouper<br>-Included golden tilefish in grouper recreational aggregate bag limits<br>-Prohibited sale of warsaw grouper and speckled hind<br>-100% logbook coverage upon renewal of permit<br>-Creation of the *Oculina* Experimental Closed Area<br>-Data collection needs specified for evaluation of possible future IFQ system |
| Amendment #7 (1994a) | 01/23/95 | PR: 59 FR 47833<br>FR: 59 FR 66270 | -12" FL – hogfish<br>-16" TL – mutton snapper<br>-Required dealer, charter and headboat federal permits<br>-Allowed sale under specified conditions<br>-Specified allowable gear and made allowance for experimental gear<br>-Allowed multi-gear trips in N. Carolina<br>-Added localized overfishing to list of problems and objectives<br>-Adjusted bag limit and crew specs. for charter and head boats<br>-Modified management unit for scup to apply south of Cape Hatteras, NC<br>-Modified framework procedure |
| Regulatory Amendment #6 (1994b) | 05/22/95 | PR: 60 FR 8620<br>FR: 60 FR 19683 | -Established actions which applied only to EEZ off Atlantic coast of FL: Bag limits – 5 hogfish/person/day (recreational only), 2 cubera snapper/person/day > 30" TL; 12" TL – gray triggerfish |
| Notice of Control Date | 04/23/97 | 62 FR 22995 | -Anyone entering federal bsb pot fishery off S. Atlantic states after 04/23/97 was not assured of future access if limited entry program developed. |

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| Amendment #8 (1997) | 12/14/98 | PR: 63 FR 1813<br>FR: 63 FR 38298 | -Established program to limit initial eligibility for snapper grouper fishery: Must demonstrate landings of any species in SG FMU in 1993, 1994, 1995 or 1996; and have held valid SG permit between 02/11/96 and 02/11/97.<br>-Granted transferable permit with unlimited landings if vessel landed ≥ 1,000 lbs. of snapper grouper spp. in any of the years<br>-Granted non-transferable permit with 225 lb. trip limit to all other vessels<br>-Modified problems, objectives, OY, and overfishing definitions<br>-Expanded Council's habitat responsibility<br>-Allowed retention of snapper grouper spp. in excess of bag limit on permitted vessel with a single bait net or cast nets on board<br>-Allowed permitted vessels to possess filleted fish harvested in the Bahamas under certain conditions. |
| Regulatory Amendment #7 (1998a) | 01/29/99 | PR: 63 FR 43656<br>FR: 63 FR 71793 | -Established 10 SMZs at artificial reefs off South Carolina. |
| Interim Rule Request | 1/16/98 | | -Council requested all Amendment 9 measures except black sea bass pot construction changes be implemented as an interim request under MSA |
| Action Suspended | 5/14/98 | | -NMFS informed the Council that action on the interim rule request was suspended |
| Emergency Rule Request | 9/24/98 | | -Council requested Amendment 9 be implemented via emergency rule |
| Request not Implemented | 1/22/99 | | -NMFS informed the Council that the final rule for Amendment 9 would be effective 2/24/99; therefore they did not implement the emergency rule |

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| Amendment #9 (1998b) | 2/24/99 | PR: 63 FR 63276<br>FR: 64 FR 3624 | -Red porgy: 14" length (recreational and commercial); 5 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, in March and April.<br>-Black sea bass: 10" length (recreational and commercial); 20 fish rec. bag limit; required escape vents and escape panels with degradable fasteners in bsb pots<br>-Greater amberjack: 1 fish rec. bag limit; no harvest or possession > bag limit, and no purchase or sale, during April; quota = 1,169,931 lbs; began fishing year May 1; prohibited coring.<br>-Specified size limits for several snapper grouper species (indicated in parentheses in inches TL): including yellowtail snapper (12), mutton snapper (16), red snapper (20); red grouper, yellowfin grouper, yellowmouth grouper, and scamp (20).<br>-Vermilion snapper: 11" length (recreational), 12" length commercial<br>-Gag: 24" length (recreational); no commercial harvest or possession > bag limit, and no purchase or sale, during March and April.<br>-Black grouper: 24" length (recreational and commercial); no harvest or possession > bag limit, and no purchase or sale, during March and April.<br>-Gag and Black grouper: within 5 fish aggregate grouper bag limit, no more than 2 fish may be gag or black grouper (individually or in combination)<br>-All SG without a bag limit: aggregate recreational bag limit 20 fish/person/day, excluding tomtate and blue runners<br>-Vessels with longline gear aboard may only possess snowy, warsaw, yellowedge, and misty grouper, and golden, blueline and sand tilefish. |
| Amendment #9 (1998b) resubmitted | 10/13/00 | PR: 63 FR 63276<br>FR: 65 FR 55203 | -Commercial trip limit for greater amberjack |
| Emergency Interim Rule | 09/08/99, expired 08/28/00 | 64 FR 48324 and 65 FR 10040 | -Prohibited harvest or possession of red porgy. |
| Emergency Action | 9/3/99 | 64 FR 48326 | -Reopened the Amendment 8 permit application process |
| Amendment #10 (1998c) | 07/14/00 | PR: 64 FR 37082 and 64 FR 59152<br>FR: 65 FR 37292 | -Identified EFH and established HAPCs for species in the SG FMU. |

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| Amendment #11 (1998d) | 12/02/99 | PR: 64 FR 27952<br>FR: 64 FR 59126 | -MSY proxy: goliath and Nassau grouper = 40% static SPR; all other species = 30% static SPR<br>-OY: hermaphroditic groupers = 45% static SPR;<br>goliath and Nassau grouper = 50% static SPR;<br>all other species = 40% static SPR<br>-Overfished/overfishing evaluations:<br>BSB: overfished (MSST=3.72 mp, 1995 biomass=1.33 mp); undergoing overfishing (MFMT=0.72, F1991-1995=0.95)<br>Vermilion snapper: overfished (static SPR = 21-27%).<br>Red porgy: overfished (static SPR = 14-19%).<br>Red snapper: overfished (static SPR = 24-32%)<br>Gag: overfished (static SPR = 27%)<br>Scamp: no longer overfished (static SPR = 35%)<br>Speckled hind: overfished (static SPR = 8-13%)<br>Warsaw grouper: overfished (static SPR = 6-14%)<br>Snowy grouper: overfished (static SPR = 5=15%)<br>White grunt: no longer overfished (static SPR = 29-39%)<br>Golden tilefish: overfished (couldn't estimate static SPR)<br>Nassau grouper: overfished (couldn't estimate static SPR)<br>Goliath grouper: overfished (couldn't estimate static SPR)<br>-overfishing level: goliath and Nassau grouper = F>F40% static SPR; all other species: = F>F30% static SPR<br>Approved definitions for overfished and overfishing.<br>MSST = [(1-M) or 0.5 whichever is greater]*$B_{MSY}$.<br>MFMT = $F_{MSY}$ |
| Regulatory Amendment #8 (2000a) | 11/15/00 | PR: 65 FR 41041<br>FR: 65 FR 61114 | -Established 12 SMZs at artificial reefs off Georgia; revised boundaries of 7 existing SMZs off Georgia to meet CG permit specs; restricted fishing in new and revised SMZs |
| Amendment #12 (2000b) | 09/22/00 | PR: 65 FR 35877<br>FR: 65 FR 51248 | -Red porgy: MSY=4.38 mp; OY=45% static SPR; MFMT=0.43; MSST=7.34 mp; rebuilding timeframe=18 years (1999=year 1); no sale of red porgy during Jan-April; 1 fish bag limit; 50 lb. bycatch comm. trip limit May-December; modified management options and list of possible framework actions. |
| Amendment #13A (2003) | 04/26/04 | PR: 68 FR 66069<br>FR: 69 FR 15731 | -Extended for an indefinite period the regulation prohibiting fishing for and possessing snapper grouper spp. within the *Oculina* Experimental Closed Area. |
| Notice of Control Date | 10/14/05 | 70 FR 60058 | -The Council is considering management measures to further limit participation or effort in the commercial fishery for snapper grouper species (excluding Wreckfish). |
| Amendment #13C (2006) | 10/23/06 | PR: 71 FR 28841<br>FR: 71 FR 55096 | - End overfishing of snowy grouper, vermilion snapper, black sea bass, and golden tilefish. Increase allowable catch of red porgy. Year 1 = 2006.<br>1. Snowy Grouper Commercial: Quota (gutted weight) = 151,000 lbs gw in year 1, 118,000 lbs gw in year 2, and 84,000 lbs gw in year 3 onwards. Trip limit = 275 lbs gw |

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| | | | in year 1, 175 lbs gw in year 2, and 100 lbs gw in year 3 onwards.<br>Recreational: Limit possession to one snowy grouper in 5 grouper per person/day aggregate bag limit.<br>2. Golden Tilefish Commercial: Quota of 295,000 lbs gw, 4,000 lbs gw trip limit until 75% of the quota is taken when the trip limit is reduced to 300 lbs gw. Do not adjust the trip limit downwards unless 75% is captured on or before September 1.<br>Recreational: Limit possession to 1 golden tilefish in 5 grouper per person/day aggregate bag limit.<br>3. Vermilion Snapper Commercial: Quota of 1,100,000 lbs gw.<br>Recreational: 12" size limit.<br>4. Black Sea Bass Commercial: Commercial quota (gutted weight) of 477,000 lbs gw in year 1, 423,000 lbs gw in year 2, and 309,000 lbs gw in year 3 onwards. Require use of at least 2" mesh for the entire back panel of black sea bass pots effective 6 months after publication of the final rule. Require black sea bass pots be removed from the water when the quota is met. Change fishing year from calendar year to June 1 – May 31.<br>Recreational: Recreational allocation of 633,000 lbs gw in year 1, 560,000 lbs gw in year 2, and 409,000 lbs gw in year 3 onwards. Increase minimum size limit from 10" to 11" in year 1 and to 12" in year 2. Reduce recreational bag limit from 20 to 15 per person per day. Change fishing year from the calendar year to June 1 through May 31.<br>5. Red Porgy Commercial and recreational:<br>1. Retain 14" TL size limit and seasonal closure (retention limited to the bag limit);<br>2. Specify a commercial quota of 127,000 lbs gw and prohibit sale/purchase and prohibit harvest and/or possession beyond the bag limit when quota is taken and/or during January through April;<br>3. Increase commercial trip limit from 50 lbs ww to 120 red porgy (210 lbs gw) during May through December;<br>4. Increase recreational bag limit from one to three red porgy per person per day. |
| Notice of Control Date | 3/8/07 | 72 FR 60794 | -The Council may consider measures to limit participation in the snapper grouper for-hire fishery |
| Amendment #14 (2007) | 2/12/09 | PR: 73 FR 32281<br>FR: 74 FR 1621 | -Establish eight deepwater Type II marine protected areas (MPAs) to protect a portion of the population and habitat of long-lived deepwater snapper grouper species. |
| Amendment #15A (2008a) | 3/14/08 | 73 FR 14942 | - Establish rebuilding plans and SFA parameters for snowy grouper, black sea bass, and red porgy. |
| Amendment #15B (2008b) | 2/15/10 | PR: 74 FR 30569<br>FR: 74 FR 58902 | -Prohibit the sale of bag-limit caught snapper grouper species.<br>-Reduce the effects of incidental hooking on sea turtles and smalltooth sawfish.<br>-Adjust commercial renewal periods and transferability |

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| | | | requirements.<br>-Implement plan to monitor and assess bycatch,<br>-Establish reference points for golden tilefish.<br>-Establish allocations for snowy grouper (95% com & 5% rec) and red porgy (50% com & 50% rec). |
| Amendment #16 (SAFMC 2009a) | 7/29/09 | PR: 74 FR 6297<br>FR: 74 FR 30964 | - Specify SFA parameters for gag and vermilion snapper.<br>- For gag: Specify interim allocations 51% commercial and 49% recreational; recreational and commercial spawning closure January through April; directed commercial quota=352,940 lbs gw; reduce 5-grouper aggregate to 3-grouper and 2 gag/black to 1 gag/black and exclude captain & crew from possessing bag limit.<br>- For vermilion snapper: Specify interim allocations 68% commercial & 32% recreational; directed commercial quota split January-June=315,523 lbs gw and 302,523 lbs July-December; reduce bag limit from 10 to 5 and a recreational closed season October through May 15. In addition, the NOAA Fisheries regional administrator will set new regulations based on new stock assessment.<br>- Require dehooking tools. |
| Amendment #19 (Comprehensive Ecosystem-based Amendment 1; SAFMC 2009b) | 7/22/10 | PR: 75 FR 14548<br>FR: 75 FR 35330 | -Provide presentation of spatial information for Essential Fish Habitat (EFH) and EFH-Habitat Areas of Particular Concern (EFH-HAPC) designations under the Snapper Grouper FMP<br>- Designation of deepwater coral HAPCs |
| Amendment #17A (SAFMC 2010a) | 12/3/10 red snapper closure; circle hooks March 3, 2011 | PR: 75 FR 49447<br>FR: 75 FR 76874 | - Required use of non-stainless steel circle hooks when fishing for snapper grouper species with hook-and-line gear north of 28 deg. N latitude in the South Atlantic EEZ<br>-Specify an ACL and an AM for red snapper with management measures to reduce the probability that catches will exceed the stocks' ACL<br>-Specify a rebuilding plan for red snapper<br>-Specify status determination criteria for red snapper<br>-Specify a monitoring program for red snapper |
| Emergency Rule | 12/3/10 | 75 FR 76890 | - Delay the effective date of the area closure for snapper grouper species implemented through Amendment 17A |
| Amendment #17B (SAFMC 2010b) | January 31, 2011 | PR: 75 FR 62488<br>FR: 75 FR 82280 | -Specify ACLs, ACTs, and AMs, where necessary, for 9 species undergoing overfishing.<br>-Modify management measures as needed to limit harvest to the ACL or ACT.<br>-Update the framework procedure for specification of total allowable catch.<br>-Prohibited harvest of deepwater species seaward of 240 feet to curb bycatch of speckled hind and warsaw grouper |
| Notice of Control Date | 12/4/08 | 74 FR 7849 | Establishes a control date for the golden tilefish fishery of the South Atlantic |
| Notice of Control Date | 12/4/08 | 74 FR 7849 | - Establishes control date for black sea bass pot fishery of the South Atlantic |

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| Regulatory Amendment #10 (SAFMC 2010c) | 5/31/11 | PR: 76 FR 9530<br>FR: 76 FR 23728 | -Eliminate closed area for snapper grouper species approved in Amendment 17A |
| Regulatory Amendment #9 (SAFMC 2011a) | Bag limit: 6/22/11 Trip limits: 7/15/11 | PR: 76 FR 23930<br>FR: 76 FR 34892 | - Establish trip limit for vermilion snapper and gag, increase trip limit for greater amberjack, and reduce bag limit for black sea bass |
| Regulatory Amendment #11 (2011b) | 5/10/12 | PR: 76 FR 78879<br>FR: 77 FR 27374 | - Eliminate 240 ft closure for six deepwater species. |
| Amendment # 25 (Comprehensive ACL Amendment) (SAFMC 2011c) | 4/16/12 | PR: 76 FR 74757<br>Amended PR: 76 FR 82264<br>FR: 77 FR 15916 | -Establish ABC control rules, establish ABCs, ACLs, and AMs for species not undergoing overfishing<br>-Remove some species from South Atlantic FMU and designate others as Ecosystem Component Species<br>-Specify allocations between the commercial and, recreational sectors for species not undergoing overfishing<br>-Limit the total mortality for federally managed species in the South Atlantic to the ACLs |
| Amendment #24 (SAFMC 2011d) | 7/11/12 | PR: 77 FR 19169<br>FR: 77 FR 34254 | -Specify MSY, rebuilding plan (including ACLs, AMs, and OY), and allocations for red grouper |
| Amendment #23 (Comprehensive Ecosystem-based Amendment 2; SAFMC 2011e) | 1/30/12 | PR: 76 FR 69230<br>FR: 76 FR 82183 | - Designate the Deepwater MPAs as EFH-HAPCs<br>- Limit harvest of snapper grouper species in SC Special Management Zones to the bag limit<br>- Modify sea turtle release gear |
| Amendment #20B | TBD | TBD | -Update wreckfish ITQ according to reauthorized Magnuson-Stevens Act |
| Amendment #18A (SAFMC 2012a) | 7/1/12 | PR: 77 FR 16991<br>FR: 77FR3 2408 | - Limit participation and effort in the black sea bass fishery<br>- Modifications to management of the black sea bass pot fishery<br>- Improve the accuracy, timing, and quantity of fisheries statistics |
| Amendment #20A (SAFMC 2012b) | 10/26/12 | PR: 77 FR 19165<br>FR: 77 FR 59129 | -Redistribute latent shares for the wreckfish ITQ program. |
| Regulatory Amendment #12 (SAFMC 2012c) | 10/9/12 | FR: 77 FR 61295 | -Adjust the Annual Catch Limit (ACL) and Optimum Yield (OY) for golden tilefish<br>-Consider specifying a commercial Annual Catch Target (ACT)<br>-Revise recreational Accountability Measures (AMs) for golden tilefish. |

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| Amendment #18B (SAFMC 2012d) | TBD | TBD | -Limit participation and effort in the golden tilefish fishery through establishment of a longline endorsement<br>-Change the golden tilefish fishing year<br>-Modify trip limits<br>-specify allocations for gear groups (longline and hook and line) |
| Amendment # 26 (Comprehensive Ecosystem-Based Amendment 3) | TBD | TBD | -Modify bycatch and discard reporting for commercial and for-hire vessels |
| Regulatory Amendment #13 (SAFMC 2012e) | TBD | PR: 78 FR 17336 | -Revise the ABCs, ACLs (including sector ACLs), and ACTs implemented by the Comprehensive ACL Amendment (SAFMC 2011c). The revisions may prevent a disjunction between the established ACLs and the landings used to determine if AMs are triggered. |
| Regulatory Amendment #14 | TBD | TBD | - Modify the fishing year for greater amberjack.<br>- Modify the minimum size limit for gray triggerfish and hogfish.<br>- Modify the commercial and recreational fishing years for black sea bass.<br>- Modify the start of the second commercial fishing season for vermilion snapper.<br>- Modify gag trip limit, and aggregate grouper bag limit. |
| Regulatory Amendment #15 (SAFMC 2013b) | TBD | TBD | -Modify the existing specification of optimum yield and annual catch limit for yellowtail snapper in the South Atlantic;<br>-Modify existing regulations for yellowtail snapper in the South Atlantic; and<br>-Modify the existing gag commercial annual catch limit and/or accountability measure for gag that requires a closure of all other shallow water groupers (black grouper, red grouper, scamp, red hind, rock hind, graysby, coney, yellowmouth grouper, and yellowfin grouper) in the South Atlantic when the gag commercial annual catch limit is met or projected to be met. |
| Regulatory Amendment #16 | TBD | TBD | -Address existing derby conditions and lengthen the fishing season for the commercial longline sector of the golden tilefish portion of the snapper grouper fishery. |
| Amendment #27 (SAFMC 2013a) | TBD | TBD | -Establish the South Atlantic Council as the responsible entity for managing Nassau grouper throughout its range including federal waters of the Gulf of Mexico;<br>-Modify the crew member limit on dual-permitted snapper grouper vessels;<br>-Modify the restriction on retention of bag limit quantities of some snapper grouper species by captain and crew of for-hire vessels; |

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| | | | -Minimize regulatory delay when adjustments to snapper grouper species' ABC, ACLs, and ACTs are needed as a result of new stock assessments;<br>-Address harvest of blue runner by commercial fishermen who do not possess a South Atlantic Snapper Grouper Permit. |
| Amendment #28 (SAFMC 2013c) | TBD | TBD | -Establish regulations to allow harvest of red snapper in the South Atlantic. |
| Amendment #30 | TBD | TBD | -Consider requiring Vessel Monitoring Systems (VMS) for commercial snapper grouper vessels in the South Atlantic |

## REFERENCES

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# Appendix C. Bycatch Practicability Analysis

## 1.0 Population Effects for Bycatch Species

## Background

Regulatory Amendment 19 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 19) includes an action to increase the annual catch limits (ACL), recreational annual catch target (ACT), and optimum yield (OY) for black sea bass based on the results of a recent stock assessment, while also implementing a prohibition on the use of black sea bass pot gear during November 1 through April 30 each year.

Black sea bass are predominantly taken with pots; whereas, hook and line gear has been the predominant gear type used to capture other snapper grouper species (**Table C-1**).

**Table C-1.** Percentage of commercial catch by gear based on data from 2005-2011.

| Species | H&L | Pots | Other |
|---|---|---|---|
| Black Sea Bass | 6% | 94% | 1% |

Source: NMFS SEFSC Logbook Program.

During 2007-2011 (the time period for which the most recent recreational catch data are available), the recreational sector dominated landings of black sea bass (**Table C-2**).

**Table C-2.** Percentage of landings among the commercial, for-hire, and private recreational sectors during 2007-2011. Landings provided by the Southeast Fisheries Science Center.

| Species | Commercial | For Hire | Private Recreational |
|---|---|---|---|
| Black Sea Bass | 45% | 23% | 31% |

## Commercial Harvest of Species in the Snapper Grouper FMU

Black sea bass are commonly taken on hook and line trips with species such as white grunt, vermilion snapper, gray triggerfish, red snapper, and red porgy. However, most black sea bass are taken with pots where the species makes up 90% of the catch. Other affected species in black sea bass pots include gray triggerfish and white grunt (SAFMC 2011b). Among these species, commercial harvest has been greatest for vermilion snapper in recent years (**Table C-3**). Species with the greatest number of individuals discarded during 2007-2011 were vermilion snapper, red porgy, and black sea bass (**Table C-3**). Dead discards are estimated by applying the release mortality rates to the total discards portrayed in **Table C-3**. Vermilion snapper (15,098) had the highest estimate of dead discards among the species listed in **Table C-3** during 2007-2011. Despite the high number of black sea bass discarded, the mean number of discarded fish that died during 2007-2011 is estimated to be small (201) due to low release mortality rates.

**Table C-3.** Mean estimates of commercial landings and discards of black sea bass and co-occurring snapper grouper species.

| Species | COMMERCIAL | | |
|---|---|---|---|
| | Landings (lbs whole weight) | Discards (N) | Dead Discards (N) |
| Vermilion snapper | 1,086,090 | 36,825 | 15,098 |
| White Grunt | 149,521 | 564 | unknown |
| Gray Triggerfish | 427,642 | 2,091 | 0 |
| Red Snapper | 148,820 | 19,561 | 9,389 |
| Red Porgy | 179,256 | 27,671 | 9,685 |
| Black sea bass | 489,471 | 20,132 | 201 |

Note: Commercial discard estimates are for vertical line gear only.
Sources: Commercial landings data from SEFSC Commercial ACL Dataset (July 2012) with discard estimates from expanded SEFSC Commercial Discard Logbook (July 2012).

During 2010 and 2011, approximately 20% of snapper grouper-permitted vessels from the Gulf of Mexico and South Atlantic were randomly selected to fill out supplementary logbooks. The average number of trips per year during 2010 and 2011 was 12,820; and fishermen spent an average of 1.66 days at sea per trip (**Table C-4**).

**Table C-4.** Snapper grouper fishery effort for South Atlantic.

| Year | Trips | Days | Days per Trip |
|---|---|---|---|
| 2010 | 13,387 | 22,347 | 1.67 |
| 2011 | 12,253 | 20,289 | 1.66 |
| Mean | 12,820 | 21,318 | 1.66 |

Source: NMFS SEFSC logbook program.

Release mortality estimates for black sea bass and co-occurring species in the commercial sector compiled from the most recent stock assessments (as available) using the Southeast Data, Assessment, and Review (SEDAR) process are: 1% black sea bass (SEDAR 25 2011); 41% vermilion snapper (SEDAR 17 2008; SEDAR 17 Update 2012); 35% red porgy (SEDAR 1 Update 2012); 48% red snapper (SEDAR 24 2010b), and 0% gray triggerfish (SEDAR 9 2006a). The estimated discard mortality for black sea bass is 7% for hook and line, 5% for 1½ inch panel pots, and 1% for 2 inch panel pots (SEDAR 25 2011). See the "Finfish Bycatch Mortality" and "Practicability of Management Measures in Directed Fisheries Relative to their Impact on Bycatch and Bycatch Mortality" sections of this bycatch practicability analysis for more details.

## Recreational Harvest of Species in the Snapper Grouper FMU

For the recreational sector, estimates of the number of recreational discards are available from Marine Recreational Fisheries Statistical Survey (MRFSS)/Marine Recreational Information Program (MRIP) and the National Marine Fisheries Service (NMFS) headboat survey. The MRFSS/MRIP system classifies recreational catch into three categories:

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

The magnitude of discarded fish was greater for black sea bass than any other species. However, it is estimated that only 6% of the total catch of black sea bass was dead discards due to low release mortality rates. Dead discards are estimated by applying the release mortality rates to the total discards portrayed in **Table C-5**.

Release mortality estimates for black sea bass and some co-occurring species in the recreational sector compiled from the most recent SEDAR stock assessments (as available) are: 25% gag (SEDAR 10; 2006b); 7% black sea bass (SEDAR 25; 2011); 38% vermilion snapper (SEDAR 17; 2008); 20% red grouper (SEDAR 19; 2010a); 20% greater amberjack (SEDAR 15; 2008); 8% red porgy (SEDAR 1 Update 2012); and 0% gray triggerfish (SEDAR 9 2006a).

**Table C-5.** Mean headboat, MRIP charter and private, and commercial estimates of landings and discards for species in the snapper grouper fishery management unit in the U.S. southern Atlantic Ocean (2007-2011). Headboat, MRIP charter, and private landings are in numbers of fish (N); commercial landings are in lbs whole weight (lbs ww).

| | HEADBOAT | | | | MRFSS CHARTER | | | | MRFSS PRIVATE | | | | COMMERCIAL | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Species | Catch (N) | Landings (N) | Discards (N) | Discards (%) | Catch (N) | Landings (N) | Discards (N) | Discards (%) | Catch (N) | Landings (N) | Discards (N) | Discards (%) | Landings (lbs) | Discards (N) |
| Black sea bass | 511,148 | 177,627 | 333,521 | 65% | 227,310 | 69,576 | 157,734 | 69% | 2,918,430 | 315,210 | 2,603,220 | 89% | 473,659 | 20,132 |
| Gag | 8,633 | 3,736 | 4,897 | 57% | 13,382 | 3,984 | 9,397 | 70% | 155,114 | 25,116 | 129,998 | 84% | 556,521 | 9,185 |
| Gray triggerfish | 68,648 | 58,654 | 9,995 | 15% | 44,964 | 36,040 | 8,924 | 20% | 261,349 | 120,534 | 140,815 | 54% | 408,113 | 2,091 |
| Greater amberjack | 6,232 | 4,239 | 1,994 | 32% | 29,356 | 21,442 | 7,914 | 27% | 65,318 | 25,071 | 40,247 | 62% | 782,216 | 3,692 |
| Red snapper | 66,807 | 9,835 | 56,972 | 85% | 54,644 | 12,415 | 42,229 | 77% | 242,626 | 42,695 | 199,931 | 82% | 148,818 | 19,561 |
| Scamp | 9,333 | 6,084 | 3,249 | 35% | 3,770 | 2,363 | 1,407 | 37% | 14,391 | 7,714 | 6,676 | 46% | 260,970 | 2,723 |
| Vermilion snapper | 368,271 | 253,588 | 114,683 | 31% | 101,627 | 63,516 | 38,111 | 38% | 220,406 | 93,319 | 127,087 | 58% | 1,039,899 | 36,825 |

Note: Recreational MRIP data includes official MRIP 2004-2011 re-estimates and ratio-estimated MRIP catches (1986-2003).
*Commercial gray triggerfish includes "triggerfishes, unclassified" category. Red snapper landings records are not available for all the years (2007-2011).
Sources: MRIP data from SEFSC Recreational ACL Dataset (October 2012), Headboat data from SEFSC Headboat Logbook CRNF files (expanded; July 2012).

## Finfish Bycatch Mortality

Black sea bass

Release mortality of black sea bass is low. The estimated discard mortality for black sea bass is 7% for hook and line, 5% for 1½ inch panel pots, and 1% for 2 inch panel pots (SEDAR 25 2011). Collins et al. (1999) reported venting of the swim bladder yielded reductions in release mortality of black sea bass, and the benefits of venting increased with capture depth. The same study was analyzed by Wilde (2009) to suggest that venting increased the survival of black sea bass, although this was an exception to the general findings of Wilde's (2009) study. In addition, McGovern and Meister (1999) report a recapture rate of 10.2% for 10,462 black sea bass that were tagged during 1993-1998 suggesting survival of released fish is high.

Co-occurring species

Black sea bass are commonly associated with gray triggerfish, vermilion snapper, gag, red snapper, knobbed porgy, tomtate, red porgy, white grunt, greater amberjack, whitebone porgy, and others (Farmer et al. 2011). Of these species, release mortality rates have not been estimated for knobbed porgy, tomtate, white grunt, and whitebone porgy.

SEDAR 17 (2008) recommended a release mortality rate for vermilion snapper of 41% for the commercial sector and 38% for the recreational sector. SEDAR 10 (2006b) estimated release mortality rates of 40% and 25% for gag taken by commercial and recreational fishermen, respectively. SEDAR 24 (2010b) used release mortality rates of 48% commercial, 41% for-hire, and 39% private recreational for red snapper. SEDAR 15 (2008) estimated a 20% release mortality rate for greater amberjack. In the Gulf of Mexico, SEDAR 9 (2006a) assumes a 0% release mortality rate for gray triggerfish. The 2012 assessment update for red porgy assumes release mortality rates of 0.35 for the commercial handline and headboat sectors and 0.08 for the recreational sector (SEDAR 1 Update 2012).

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

Black Sea Bass Actions

**Tables C-3** and **C-5** list species that co-occur with black sea bass. Amendment 15A to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP; SAFMC 2008) established a 10-year rebuilding plan for black sea bass. The rebuilding strategy associated with the plan held black sea bass catch constant as the stock rebuilt. Amendment 13C to the Snapper-Grouper FMP (SAFMC 2006) specified a commercial quota, and Amendment 17B to the Snapper Grouper FMP (SAFMC 2010b) implemented a recreational annual catch limit (ACL) of 409,000 pounds whole weight (lbs ww), with an accountability measure that prohibited recreational harvest of black sea bass when the ACL was met or projected to be met. Since catch was held constant in the rebuilding strategy, and there

has been a positive response to rebuilding efforts for black sea bass, the commercial and recreational season for black sea bass has been substantially shortened from historical levels. Bycatch of black sea bass is likely occurring when fishermen target co-occurring species; however, survival of released black sea bass is estimated to be very high. An increase in the black sea bass ACL is expected to increase fishing opportunities for black sea bass, and extend the length of the commercial and recreational fishing seasons, which would have the potential to reduce bycatch of black sea bass because black sea bass could be retained during the open season. Bycatch of co-occurring species could increase if the black sea bass seasons are longer compared to recent years and fishing seasons for other species are closed. For example, bycatch of vermilion snapper, a species associated with black sea bass (Farmer et al. 2011) could increase if recreational harvest of black sea bass occurs during the closed vermilion snapper recreational season beginning November 1. However, the South Atlantic Fishery Management Council (South Atlantic Council) has proposed the removal of the closed recreational fishing season in Regulatory Amendment 18 to the Snapper Grouper FMP, which has been approved by the South Atlantic Council. The November 1 through April 30 prohibition of black sea bass harvested with pot gear proposed in Regulatory Amendment 19 is not expected to change bycatch levels of black sea bass or co-occurring species since the pot gear must be returned to shore when fishing with pot gear is prohibited.

Amendment 18A to the Snapper Grouper FMP (Amendment 18A; SAFMC 2011b) contained measures to limit participation and effort in the black sea bass pot segment of the snapper grouper fishery. Amendment 18A established an endorsement program, which enables 32 snapper grouper fishermen that met predetermined qualifying criteria to harvest black sea bass with pots. Prior to the implementation of Amendment 18A, about 50 fishermen regularly used black sea bass pot gear to harvest black sea bass and the number of pots that could be used was not limited as it is now (the limit is 35). Furthermore, regulations implemented through Amendment 18A require that black sea bass pots be returned to shore at the end of a fishing trip. Therefore, Amendment 18A is expected to reduce the risk of large whale entanglements in buoy-line gear associated with black sea bass pots. These actions could also help reduce the incidence of “ghost fishing” by lost pots and reduce interaction of protected species with lines on black sea bass pots. In addition, Amendment 18A included measures to reduce bycatch in the black sea bass pot sector, modify the rebuilding strategy, and other necessary changes to management of black sea bass as a result of a 2011 stock assessment (SEDAR 25 2011).

Actions in Other Amendments

Amendment 13C to the Snapper Grouper FMP (Amendment 13C; SAFMC 2006) increased the mesh size in the back panel of black sea bass pots, which has likely reduced the magnitude of black sea bass regulatory discards in the commercial sector, and Amendment 18A limited effort in the black sea bass pot sector through an endorsement program and other restrictions previously mentioned.

Amendment 14 to the Snapper Grouper FMP (Amendment 14; SAFMC 2009a) established eight marine protected areas (MPAs) from North Carolina to Florida where harvest of snapper grouper species is prohibited. One of the objectives of Amendment 14 was to protect some areas where

spawning of snapper grouper species (e.g., snowy grouper, golden tilefish, speckled hind, red porgy, vermilion snapper, gray triggerfish, red snapper, scamp, gag, red grouper, gray triggerfish, black sea bass, and others) was known to occur. As all harvest of snapper grouper species and use of bottom-tending gear is prohibited in the MPAs, there is no bycatch of snapper grouper species occurring in these areas.

The January-April spawning season closure for all shallow water grouper species (commercial and recreational sectors) implemented through Amendment 16 to the Snapper Grouper FMP (SAFMC 2009b) has likely reduced bycatch mortality of many snapper grouper species since the action has probably resulted in reduced fishing effort during that time period. A longer spawning seasonal closure could enhance the reproductive potential of grouper stocks. Gag are in spawning condition from December through April each year. There is some evidence spawning aggregations may be in place before and after a spawning season (Gilmore and Jones 1992). When aggregated, gag are extremely susceptible to fishing pressure since the locations are often well known by fishermen. Gilmore and Jones (1992) showed that the largest and oldest gag in aggregations are the most aggressive and first to be removed by fishing gear. Since gag change sex, larger and older males can be selectively removed. As a result, a situation could occur where there are not enough males in an aggregation to spawn with the remaining females. Furthermore, the largest, most fecund females could also be selectively removed by fishing gear. Therefore, a spawning season closure for all shallow water grouper species is expected to protect grouper species when they are most vulnerable to capture, reduce bycatch of co-occurring grouper species, increase the percentage of males in grouper populations, enhance reproductive success, and increase the magnitude of recruitment. Other actions in Amendment 16 that could reduce bycatch of snapper grouper species include a reduction in the recreational bag limit to 1 gag or black grouper (combined) per day within a grouper aggregate bag limit of 3 fish and the establishment of a commercial quota for gag.

Unobserved mortality of snapper grouper species due to predation or trauma associated with capture could be substantial (Burns et al. 2002; Rummer and Bennett 2005; St. John and Syers 2005; Parker et al. 2006; Rudershausen et al. 2007; Hannah et al. 2008; Diamond and Campbell 2009). Amendment 16 also required the use of dehooking devices, which could help reduce bycatch mortality of vermilion snapper, black sea bass, gag, red grouper, black grouper, and red snapper. Dehooking devices can allow fishermen to remove hooks with greater ease and more quickly from snapper grouper species without removing the fish from the water. If a fish does need to be removed from the water, dehookers could still reduce handling time in removing hooks, thus increasing survival (Cooke et al. 2001).

In addition to prohibiting the harvest of red snapper, Amendment 17A (SAFMC 2010a) implemented regulations requiring the use of non-stainless circle hooks north of 28 degrees N. latitude, effective March 2, 2011**.** Circle hooks are generally thought to reduce the discard mortality rate for red snapper (SEDAR 7 2005b; Rummer 2007); however, Burns et al. (2004) did not observe a decreased discard mortality rate when comparing recapture rates of red snapper caught on circle and J-hooks. Rummer (2007), and Diamond and Campbell (2009) found that a greater differential between the surface and bottom temperature caused a higher discard mortality rate for red snapper. Amendment 17B to the Snapper Grouper FMP (Amendment 17B; SAFMC

2010b) established ACLs and AMs and addressed overfishing for eight species in the snapper grouper management complex listed at that time as undergoing overfishing. Those species included: snowy grouper; speckled hind; warsaw grouper; black sea bass; gag; and red grouper; in addition to black grouper, golden tilefish, and vermilion snapper. Amendment 24 to the Snapper Grouper FMP (Amendment 24; SAFMC 2011c) established a rebuilding plan for red grouper, which is overfished and undergoing overfishing. Amendment 24 also established ACLs and AMs for red grouper that could help to reduce bycatch of red grouper and co-occurring species such as vermilion snapper and red porgy.

The Comprehensive ACL Amendment (SAFMC 2011a) implemented ACLs and AMs for species not undergoing overfishing in four fishery management plans, in addition to other actions such as allocations and establishing ACTs for the recreational sector. The Comprehensive ACL Amendment also specified additional measures to reduce bycatch in the snapper grouper fishery with the establishment of species complexes based on biological, geographic, economic, taxonomic, technical, social, and ecological factors. ACLs were assigned to these species complexes, and when the ACL for the complex is met or projected to be met, fishing for species included in the species complex is prohibited for the remainder of the fishing year. ACLs and AMs will likely reduce bycatch of target species and species complexes as well as incidentally caught snapper grouper species.

Amendment 18B to the Snapper Grouper FMP (Amendment 18B; SAFMC 2012 includes an action to establish an endorsement program for the commercial golden tilefish longline sector, which could have positive effects for habitat and protected species.

Other amendments are currently under development, which could reduce bycatch of snapper grouper species. Regulatory Amendment 14 to the Snapper Grouper FMP includes actions that could adjust management measures for a number of snapper grouper species, some of which could reduce the magnitude of discards. Regulatory Amendment 15 to the Snapper Grouper FMP, which has been approved by the South Atlantic Council, includes actions for yellowtail snapper and gag that are expected to reduce bycatch of snapper grouper species. Regulatory Amendment 17 to the Snapper Grouper FMP includes actions that affect MPAs, and could reduce bycatch of many snapper grouper species, especially speckled hind and warsaw grouper.

## 2.1 Ecological Effects Due to Changes in the Bycatch

The ecological effects of bycatch mortality are the same as fishing mortality from directed fishing efforts. If not properly managed and accounted for, either form of mortality could potentially reduce stock biomass to an unsustainable level. Many of the species in the snapper grouper fishery management unit have spatial and temporal coincidence with black sea bass and the benefits could be shared among them.

The action in Regulatory Amendment 19 is not likely to result in significant ecological effects due to changes in bycatch. Raising the current ACLs has the potential to reduce bycatch of black sea bass as the commercial and recreational fishing seasons are expected to be extended.

Bycatch of co-occurring species could increase if the black sea bass seasons are longer compared to recent years, and fishing seasons for other species are closed. For example, bycatch of vermilion snapper, a species associated with black sea bass (Farmer et al. 2011), could increase if recreational harvest of black sea bass occurs during the closed vermilion snapper recreational season beginning November 1. However, the South Atlantic Council has proposed the removal of the closed recreational fishing season. The November 1 through April 30 prohibition of black sea bass harvested with pot gear proposed in Regulatory Amendment 19 is not expected to change bycatch levels of black sea bass or co-occurring species, since the pot gear must be returned to shore when fishing with pot gear is prohibited.

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

Raising the current ACLs has the potential to reduce bycatch of black sea bass because the commercial and recreational fishing seasons are expected to be extended, and black sea bass could be retained during the open season. Bycatch of co-occurring species could increase if the black sea bass seasons are longer compared to recent years, fishing seasons for co-occurring species are closed, and directed fishing effort for black sea bass increases. However, in the commercial sector there is not much bycatch associated with black sea bass pots (SAFMC 2011b), which dominates the commercial harvest of the species. **Alternatives 2**, **3,** and **Preferred Alternative 4** in Regulatory Amendment 19 would prohibit the use of black sea bass pots from November 1 through April 30 to prevent interactions with right whales. It is possible that some of the 32 black sea bass pot endorsement holders might use vertical line gear to target black sea bass during the prohibition; however, the magnitude of the increase is likely to be small. Additionally, there could be increased targeting of black sea bass by other snapper grouper commercial fishermen who do not possess black sea bass pot endorsements due to an increase in the ACL. However, vertical line gear catch of black sea bass has historically been small (**Table C-1**). Furthermore, black sea bass are taken in shallower water than many other snapper grouper species, where release mortality is low. Therefore, incidental mortality of other snapper grouper species that might be taken by some black sea bass pot endorsement holders during the November-April prohibition on the use of black sea bass pot gear or by other snapper grouper commercial fishermen using vertical hook-and-line gear would be expected to be small.

In the recreational sector, fishermen are more opportunistic and often do not target any particular species. Thus, bycatch of co-occurring species associated with any targeting of black sea bass may remain the same despite an increase in the length of the fishing season. In addition, fishing for black sea bass occurs in fairly shallow water where release mortality of many fish species is high. Furthermore, the South Atlantic Council has approved Regulatory Amendment 18, which would increase commercial and recreational ACLs for vermilion snapper. The increase in the ACLs for vermilion snapper, which is one of the top co-occurring species with black sea bass, is expected to extend the fishing seasons of vermilion snapper. In addition, Regulatory Amendment 18 would remove a 5-month recreational closure for vermilion snapper, which would further reduce bycatch of the species. The November 1 through April 30 prohibition of black sea bass harvested with pot gear is not expected to change bycatch levels of black sea bass or co-occurring species as the pot gear must be returned to shore when fishing with the gear is

prohibited. Further, a possible increase in the use of vertical line gear by black sea bass endorsement holders during the November-April prohibition on the use of trap gear or by other snapper grouper fishermen using hook-and-line gear to target black sea bass is not expected to result in a large increase in the mortality of other snapper grouper species.

## 2.3 Effects on Marine Mammals and Birds

Under Section 118 of the Marine Mammal Protection Act (MMPA), NMFS must publish, at least annually, a List of Fisheries (LOF) that places all U.S. commercial fisheries into one of three categories based on the level of incidental serious injury and mortality of marine mammals that occurs in each fishery. Of the gear utilized within the snapper grouper fishery, only the black sea bass pot is considered to pose an entanglement risk to marine mammals. The southeast U.S. Atlantic black sea bass pot sector is included in the grouping of the Atlantic mixed species trap/pot fisheries, which the proposed rule for the 2013 LOF classifies as a Category II (78 FR 23708; April 22, 2013). Gear types used in these sectors are determined to have occasional incidental mortality and serious injury of marine mammals. For the South Atlantic snapper grouper fishery, the best available data on protected species interactions are from the SEFSC Supplementary Discard Data Program (SDDP) initiated in July of 2001. The SDDP sub-samples 20% of the vessels with an active permit. Since August 2001, only three interactions with marine mammals have been documented in the snapper grouper fishery; each was taken by handline gear and each released alive (McCarthy SEFSC database). The longline and hook-and-line gear components of the snapper grouper fishery in the South Atlantic are classified in the 2013 LOF (78 FR 23708; April 22, 2013) as Category III fisheries. Category II means that there is a remote likelihood or no known incidental mortality and serious injuries of marine mammals.

Although the black sea bass pot sector can pose an entanglement risk to large whales due to their distribution and occurrence, sperm, fin, sei, and blue whales are unlikely to overlap with the black sea bass pot sector operated within the snapper grouper fishery since it is executed primarily off North Carolina and South Carolina in waters ranging from 70-120 feet deep (21.3-36.6 meters) and these whales generally occur further offshore. However, the proposed November 1 through April 30 closure to the pot sector will further reduce the potential risk to protected species as this is the calving season for right whales in the South Atlantic. In addition, the potential risk to protected species has likely been reduced with implementation of Amendment 18A to the Snapper Grouper FMP, which established 32 black sea bass pot endorsements, limited the number of pots that can be fished to 35, and required that pots be returned to shore at the conclusion of a trip. There are no documented interactions between the black sea bass pot sector and large whales. NMFS' biological opinion on the continued operation of the South Atlantic snapper grouper fishery determined that possible adverse effects resulting from the fishery are extremely unlikely.

The Bermuda petrel and roseate tern occur within the action area. Bermuda petrels are occasionally seen in the waters of the Gulf Stream off the coasts of North and South Carolina during the summer. Sightings are considered rare and only occurring in low numbers (Alsop 2001). Roseate terns occur widely along the Atlantic coast during the summer but in the southeast region, they are found mainly off the Florida Keys (unpublished U.S. Fish and Wildlife

Service data). Interaction with fisheries has not been reported as a concern for either of these species.

Fishing effort reductions have the potential to reduce the amount of interactions between the fishery and marine mammals and birds. Although, the Bermuda petrel and roseate tern occur within the action area, these species are not commonly found and neither has been described as associating with vessels or having had interactions with the snapper grouper fishery. Thus, it is believed that the snapper grouper fishery is not likely to negatively affect the Bermuda petrel and the roseate tern.

## 2.4 Changes in Fishing, Processing, Disposal, and Marketing Costs

Actions in Regulatory Amendment 19 would be expected to affect the cost of fishing operations. It is likely that all four states (NC, SC, GA, & FL) would be affected by actions in the amendment if implemented through rulemaking. Additionally, factors such as waterfront property values, availability of less expensive imports, etc. may affect economic decisions made by recreational and commercial fishermen.

## 2.5 Changes in Fishing Practices and Behavior of Fishermen

Actions proposed in Regulatory Amendment 19 could result in a modification of fishing practices by commercial and recreational fishermen in the black sea bass component of the snapper grouper fishery, thereby affecting the magnitude of discards. However, it is difficult to quantify any of the measures in terms of reducing discards until the magnitude of bycatch in relation to the action in this amendment has been monitored over several years. Overall, it is expected that measures contained within Regulatory Amendment 19 would reduce bycatch of black sea bass as the ACLs would be higher and the season projected to be longer.

## 2.6 Changes in Research, Administration, and Enforcement Costs and Management Effectiveness

Research and monitoring is ongoing to understand the effectiveness of proposed management measures and their effect on bycatch. In 1990, the SEFSC initiated a logbook program for vessels with federal permits in the snapper grouper fishery from the Gulf of Mexico and South Atlantic. Approximately 20% of commercial fishermen are asked to fill out discard information in logbooks; however, a greater percentage of fishermen could be selected with emphasis on individuals that dominate landings. Recreational discards are obtained from the Marine Recreational Information Program (MRIP) and logbooks from the NMFS headboat program.

Additional data collection activities for the recreational sector are being considered by the South Atlantic Council that could allow for a better monitoring of snapper grouper bycatch in the future. The SEFSC is developing electronic logbooks, which could be used to enable fishery managers to obtain information on species composition, size distribution, geographic range,

disposition, and depth of fishes that are released. Some observer information has been provided by Marine Fisheries Initiative and Cooperative Research Programs (CRP), but more is desired for the snapper grouper fishery. In December 2012, the Southeast Region Headboat Survey underwent a transition from paper logbooks to electronic logbooks, which is expected to improve the quality of data in that sector. As of January 1, 2013, the paper logbook form has been replaced by a new electronic logbook. The form is available through a password protected Web site on the internet, which can be accessed by personal computer, computer tablet, or "smart phone". The South Atlantic Council approved an amendment at their March 2013 meeting, which if implemented, would require weekly electronic reporting. Further, the South Atlantic Council is developing an amendment that could require vessel monitoring systems (VMS) for snapper grouper vessels, which would be expected to improve data quality.

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

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

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

Additional administrative and enforcement efforts would help to implement and enforce fishery regulations. The South Atlantic Council is considering requiring VMS on all commercial snapper grouper vessels that would greatly improve enforcement. NMFS established the South East Fishery-Independent Survey in 2010 to strengthen fishery-independent sampling efforts in southeast U.S. waters, addressing both immediate and long-term fishery-independent data needs, with an overarching goal of improving fishery-independent data utility for stock assessments. Meeting these data needs is critical to improving scientific advice to the management process, ensuring overfishing does not occur, and successfully rebuilding overfished stocks on schedule.

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

Preferred management measures, including those that are likely to increase or decrease discards could result in social and/or economic impacts as discussed in **Section 4**.

## 2.8 Changes in the Distribution of Benefits and Costs

Measures proposed in Regulatory Amendment 19 could help to reduce bycatch and affect the cost of fishing operations. Limiting effort in the black sea bass pot fishery through a seasonal closure would have different economic effects on participants from various states. Alternatively, raising the ACLs could result in net benefits to the fishing community.

## 2.10 Social Effects

The social effects of all the management measures, including those most likely to reduce bycatch, are described in **Section 4**.

# 3.0 Conclusion

This section evaluates the practicability of taking additional action to minimize bycatch and bycatch mortality using the ten factors provided at 50 C.F.R. §600.350(d)(3)(i). In summary, raising the current ACLs has the potential to reduce bycatch of black sea bass as the commercial and recreational fishing seasons are expected to be extended. Bycatch of co-occurring species could increase if the black sea bass seasons are longer compared to recent years and directed fishing effort for black sea bass increases. However, in the commercial sector there is not much bycatch associated with black sea bass pots (SAFMC 2011b), which dominates the commercial harvest of the species. It is possible that some of the 32 black sea bass pot endorsement holders might use vertical line gear to target black sea bass during the prohibition; however, the magnitude of the increase is likely to be small. Additionally, there could be increased targeting of black sea bass by other snapper grouper commercial fishermen who do not possess black sea bass pot endorsements due to an increase in the ACL. However, vertical line gear catch of black sea bass has historically been small (**Table C-1**). Furthermore, black sea bass are taken in shallower water than many other species grouper species, where release mortality is low. Therefore, incidental mortality of other snapper grouper species that might be taken by some black sea bass pot endorsement holders during the November-April prohibition on the use of black sea bass pot gear or by other snapper grouper commercial fishermen using vertical hook-and-line gear would be expected to be small.

In the recreational sector, fishermen are more opportunistic and often do not target any particular species. Thus, bycatch of co-occurring species associated with any targeting of black sea bass may remain the same despite an increase in the length of the fishing season. In addition, fishing for black sea bass occurs in fairly shallow water where release mortality of many fish species is high. Furthermore, the South Atlantic Council has approved Regulatory Amendment 18, which

would increase commercial and recreational ACLs for vermilion snapper. The increase in the ACLs for vermilion snapper, which is one of the top co-occurring species with black sea bass, is expected to extend the fishing seasons of vermilion snapper. In addition, Regulatory Amendment 18 would remove a 5-month recreational closure for vermilion snapper, which would further reduce bycatch of vermilion snapper because the species could be retained during the open season. The November 1 through April 30 prohibition of black sea bass of harvested with pot gear is not expected to change bycatch levels of black sea bass or co-occurring species as the pot gear as pot gear must be returned to shore when fishing with the gear is prohibited.

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# Appendix D. Regulatory Impact Review

The National Marine Fisheries Service (NMFS) requires a Regulatory Impact Review (RIR) for all regulatory actions that are of public interest. The RIR does three things: (1) It provides a comprehensive review of the level and incidence of impacts associated with a regulatory action; (2) it provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives which could be used to solve the problem; and (3) it ensures that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost effective way.

The RIR also serves as the basis for determining whether any proposed regulations are a "significant regulatory action" under certain criteria provided in Executive Order 12866 (E.O. 12866) and whether the approved regulations will have a "significant economic impact on a substantial number of small business entities" in compliance with the Regulatory Flexibility Act of 1980 (RFA).

## 1.1 Problems and Objectives

The purpose and need, issues, problems, and objectives of this action are presented in **Chapter 1** of Regulatory Amendment 19 to the Snapper Grouper Fishery of the South Atlantic Region, and are incorporated herein by reference.

## 1.2 Methodology and Framework for Analysis

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

## 1.3 Description of the Fishery

A description of the South Atlantic snapper grouper fishery is contained in **Chapter 3** of Regulatory Amendment 13 and is incorporated herein by reference.

## 1.4 Effects of the Management Measures

**Action 1, Preferred Alternative 4.** In the future it is expected that the increased commercial ACL will be landed because in the most recent years it has been met quickly each season. The increase of 415,400 lbs ww in the commercial ACL from 2012 to 2013 through 2015 each year will result in an additional $938,804 per year in ex-vessel value based on the average price per pound of $2.26 (2011 dollars; **Table 3.4.1, Table 4.1.4**). The season that starts in 2016 will see commercial ACL decrease from a total of 780,020 lbs ww in 2013 through 2015 to 755,274 lbs ww, or an increase of 390,654 lbs ww over 2012, and $882,878 (2011 dollars) annual ex-vessel value each year. From 2013 through 2015, the increased ex-vessel value added to the commercial fishery would be $2,816,412 (2011 dollars). It is expected the recreational fishery will have a consumer surplus of $35,329,000 (2011 dollars) using a 5% discount rate based on the total number of pounds to be added to the recreational ACL from 2013 through 2015. The combined expected direct positive economic effect is expected to be $38,145,412 (2011 dollars) from 2013 through 2015.

## 1.5 Public and Private Costs of Regulations

The preparation, implementation, enforcement, and monitoring of this or any Federal action involves the expenditure of public and private resources, which can be expressed as costs associated with the regulations. Costs associated with this action include, but are not limited to Council costs of document preparation, meeting, and other costs; NMFS administration costs of document preparation, meetings and review, and annual law enforcement costs. A preliminary estimate is up to $150,000 before annual law enforcement costs.

## 1.6 Determination of Significant Regulatory Action

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

# Appendix E. Initial Regulatory Flexibility Analysis

## Introduction

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

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

Additional information on the description of affected entities may be found in **Section 3.4,** and additional information on the expected economic effects of the proposed action may be found in **Chapter 4**.

## Statement of Need for, Objectives of, and Legal Basis for the Rule

The purpose and need, issues, problems, and objectives of the proposed rule are presented in **Section 1.3**. The purpose of this proposed rule is to modify the annual catch limits (ACL), recreational annual catch target (ACT), and optimum yield (OY) for black sea bass.

The need for this proposed rule is to (1) ensure black sea bass management benchmarks are based upon the best available science, (2) ensure overfishing of black sea bass does not occur, (3)

enhance socioeconomic benefits to fishermen and fishing communities that utilize the black sea bass portion of the snapper grouper fishery, and (4) prevent interactions between black sea bass pot gear and ESA-listed whales during large whale migrations and right whale calving season off the southeastern coast (approximately November 1 through April 30).

The Magnuson-Stevens Fishery Conservation and Management Act, as amended, provides the statutory basis for this proposed rule.

**Identification of All Relevant Federal Rules Which May Duplicate, Overlap or Conflict with the Proposed Rule**

No duplicative, overlapping, or conflicting Federal rules have been identified with this proposed rule.

**Description and Estimate of the Number of Small Entities to Which the Proposed Rule will Apply**

This proposed rule is expected to directly affect commercial fishermen and for-hire operators. The Small Business Administration established size criteria for all major industry sectors in the U.S. including fish harvesters and for-hire operations. A business involved in fish harvesting is classified as a small business if independently owned and operated, is not dominant in its field of operation (including its affiliates), and its combined annual receipts are not in excess of $4.0 million (NAICS code 114111, finfish fishing) for all of its affiliated operations worldwide. For for-hire vessels, other qualifiers apply and the annual receipts threshold is $7.0 million (NAICS code 713990, recreational industries).

During 2007-2011, an annual average of 240 vessels with valid permits to operate in the commercial snapper-grouper fishery landed at least one pound of black sea bass. These vessels generated dockside revenues of approximately $4.0 million (2011 dollars) from all species caught in the same trips as black sea bass, of which about $1.0 million (2011 dollars) were from black sea bass. Each vessel, therefore, generated an average of approximately $17,000 in gross revenues, of which $4,000 were from black sea bass. Based on revenue information, all commercial vessels affected by the rule can be considered small entities.

During 2007-2012, an annual average of 1,855 vessels had valid permits to operate in the for-hire sector of the snapper-grouper fishery. As of April 23, 2013, 1,485 vessels held South Atlantic for-hire snapper grouper permits and about 75 are estimated to have operated as headboats in 2013. The for-hire fleet consists of charter boats, which charge a fee on a vessel basis, and headboats, which charge a fee on an individual angler (head) basis. Average annual revenues (2011 dollars) for charter boats are estimated to be $126,032 for Florida vessels, $53,443 for Georgia vessels, $100,823 for South Carolina vessels, and $101,959 for North Carolina vessels. For headboats, the corresponding estimates are $209,507 for Florida vessels and $153,848 for vessels in the other states. Based on these average revenue figures, all for-hire operations that would be affected by the rule can be considered small entities.

**Description of the projected reporting, record-keeping and other compliance requirements of the proposed rule, including an estimate of the classes of small entities which will be subject to the requirement and the type of professional skills necessary for the preparation of the report or records**

The proposed rule would not introduce any changes to reporting, record-keeping, and other compliance requirements which are currently required.

**Substantial Number of Small Entities Criterion**

The proposed rule is expected to directly affect all federally permitted commercial vessels harvesting black sea bass and for-hire vessels that operate in the South Atlantic snapper-grouper fishery. All directly affected entities have been determined, for the purpose of this analysis, to be small entities. Therefore, it is determined that the proposed action will affect a substantial number of small entities.

**Significant Economic Impact Criterion**

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

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

All entities that are expected to be affected by this proposed rule are considered small entities, so the issue of disproportional effects on small versus large entities does not presently arise.

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

The proposed rule would change the overall black sea bass ACL from its current level of 847,000 lbs whole weight (ww) to 1,814,000 lbs ww in 2013through 2015 and to 1,756,450 lbs ww in 2016 and beyond. In addition, the proposed rule would prohibit the retention, possession, and fishing for black sea bass using black sea bass pot gear, annually, from November 1 through April 30.

Increasing the overall ACL would also increase the commercial and recreational ACLs based on the current allocation rate of 43% for the commercial sector and 57% for the recreational sector. Current modeling projections suggest that, even with relatively large increases in the ACL, commercial fishing for black sea bass would close before the normal end of the fishing season. Given that all ACL increases would be fully taken, the commercial sector would be expected to generate additional revenues (in 2011 dollars) of about $939,000 each year in 2013-2015 and about $883,000 in 2016 and every year thereafter. Over the three-year period (2013-2015), the net present value of increased revenues would be approximately $2.5 million using a 7% discount rate. As a result of relatively large increases in revenues, profits to commercial vessels would likely increase. The prohibition on the use of black sea bass pot for harvesting black sea

bass would constrain the revenue increases of 32 commercial vessels that possess the black sea bass pot endorsement. This endorsement system, together with a cap of 35 black sea bass pot per vessel per trip, was recently established under Amendment 18A (SAFMC 2012a). On the other hand, the black sea bass pot prohibition would greatly benefit vessels using vertical lines, particularly that their fishing season would be extended. Considering that, even with the black sea bass pot prohibition, the commercial season would still close before the normal end of the fishing year, revenues forgone by vessels using black sea bass pots would likely be gained by vessels using vertical lines. The commercial industry as a whole would still generate additional revenues from the ACL increases.

The proposed ACL increases would also result in revenue and profit increases for for-hire vessels. Modeling projections suggest that even with large ACL increases the recreational sector would be expected to experience fishing closures in 2013, 2014, and 2015 and beyond. The likely closure month would be December each fishing year. However, the recreational season would be longer with the ACL increases, allowing for-hire vessels to take more fishing trips. These additional trips would be expected to generate for-hire vessel profit (in 2011 dollars) increases of about $354,000 each year starting in 2013, of which about $234,000 would be by headboats and $120,000 by charter boats. Over a three-year period (2013-2015) and using a 7% discount rate, the net present value of these profit increases would be approximately $930,000, of which $614,000 would be by headboats and $316,000 by charter boats.

The proposed ACL increase is accompanied by a prohibition on the use of black sea bass pot from November 1 through April 30 each fishing year. The intent of this prohibition is to prevent interactions between black sea bass pot gear and whales listed under the Endangered Species Act (ESA) during large whale migrations and right whale calving season off the southeastern coast. This prohibition would be expected to negatively affect the revenues and profits of 32 vessels that currently possess a black sea bass pot endorsement. At the same time, this prohibition would tend to benefit vessels using other gear types, such as vertical lines, particularly because the fishing season would be longer with the prohibition in place. Despite the proposed ACL increases, closures to commercial (and recreational) harvest of black sea bass are still projected to occur. Given this, revenues forgone by vessels using black sea bass pot in November 1- April 30 would likely be gained by vessels using other gear types. Thus, the black sea bass pot prohibition would mainly have distributional effects with the overall industry revenues and likely profits still expected to increase.

Another feature of the proposed ACL alternative is the revision of the recreational ACT level. The formula for calculating the ACT from the ACL would not change, but because the ACL is increased the recreational ACT would also increase. The recreational ACT has been used mainly to monitor recreational harvest and not as a decision tool to trigger accountability measures (AM). The proposed action would not change this, thus the revised ACT would be expected to have no effects on the revenues and profits of for-hire vessels. If, in the future, the ACT is used to trigger AMs, the ACT increase accompanying the proposed ACL increase will lower the probability of triggering any AM.

**Description of Significant Alternatives**

Four alternatives, including the preferred alternative, were considered for revising the ACL for black sea bass. The first alternative, the no action alternative, would retain the current ACL of 847,000 lbs ww. In principle, this alternative would have no effects on the revenues and profits of commercial and for-hire vessels. With the developing derby attitude in the commercial and recreational harvest of black sea bass, both the commercial and recreational fishing seasons would continue to become shorter over time, eventually adversely affecting the revenues and profits of commercial and for-hire vessels. Moreover, this alternative would result in forgoing the economic benefits expected of the preferred alternative.

The second alternative would increase the ACL from its current level to 2,133,000 lbs ww in 2103, 1,992,000 lbs ww in 2014, and 1,814,000 lbs ww in 2015 and beyond. This alternative would also increase the recreational ACT. Accompanying this alternative is the prohibition on the use of black sea bass pots for the same dates as the preferred alternative. This alternative would result in higher revenues and profits for commercial and for-hire vessels than the preferred alternative mainly because it would provide for higher ACLs in 2013 and 2014. Although the effects of this alternative on users of black sea bass pots would be the same as those of the preferred alternative, the effects on users of other gear types would be different. With the prohibition in place, the 2013 and 2014 fishing seasons for users of other gear types would be longer, thus affording them higher revenues and profits than the preferred alternative. A major downside of this alternative is its higher likelihood (relative to the preferred alternative) of overfishing the stock over time. In 2013 for example, this alternative would have an 80% probability of the stock being above the spawning stock biomass at maximum sustainable yield. Although overfishing could occur sometime in the future that would prompt the imposition of more restrictive measures, it would have some short-term consequences. Under the threat of more restrictive regulations in the future, commercial and recreational resource users could adopt strategic behavior to hedge against such eventuality. This could be in the form of exacerbating the emergent derby that appears to currently characterize the fishery. Fishing seasons could become shorter and fishing closures be imposed with their attendant adverse economic effects on resource users. As with the preferred alternative, the revised recreational ACT would have no effects on the revenues and profits of for-hire vessels.

The third alternative would increase the ACL from its current level to 1,756,450 lbs ww in 2013 and beyond. This alternative would also increase the recreational ACT. Also accompanying this alternative is the prohibition on the use of black sea bass pots for the same dates as the preferred alternative. This alternative has a similar ACL structure as the preferred alternative but it would provide for lower ACL levels. Thus, this alternative would be expected to result in lower revenues and profits than the preferred alternative, although its revenue and profit increases would be substantial relative to the no action alternative. With the prohibition on the use of black sea bass pots, the fishing season for users of other gear types would be shorter than that under the preferred alternative, resulting in lower revenues and profits than the preferred alternative. As with the preferred alternative, the revised recreational ACT level would have no direct effects on the revenues and profits of for-hire vessels.

# Appendix F. Other Applicable Law

## Administrative Procedure Act

All federal rulemaking is governed under the provisions of the Administrative Procedures Act (APA) (5 U.S.C. Subchapter II), which establishes a "notice and comment" procedure to enable public participation in the rulemaking process. Under the APA, NMFS is required to publish notification of proposed rules in the *Federal Register* and to solicit, consider, and respond to public comment on those rules before they are finalized. The APA also establishes a 30-day wait period from the time a final rule is published until it takes effect, with some exceptions. This amendment complies with the provisions of the APA through the South Atlantic Fishery Management Council's (South Atlantic Council) extensive use of public meetings, requests for comments and consideration of comments. The proposed rule associated with this amendment will have request for public comments, which complies with the APA.

## Information Quality Act

The Information Quality Act (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001 (Public Law 106-443)) which took effect October 1, 2002, directed the Office of Management and Budget (OMB) to issue government-wide guidelines that "provide policy and procedural guidelines to federal agencies for ensuring and maximizing the quality, objectivity, utility, and integrity of information disseminated by federal agencies." OMB directed each federal agency to issue its own guidelines, establish administrative mechanisms allowing affected persons to seek and obtain correction of information that does not comply with OMB guidelines, and report periodically to OMB on the number and nature of complaints.

The NOAA Section 515 Information Quality Guidelines require a series of actions for each new information product subject to the Information Quality Act (IQA). This document has used the best available information and made a broad presentation thereof. The process of public review of this document provides an opportunity for comment and challenge to this information, as well as for the provision of additional information.

The information contained in this document was developed using best available scientific information. Therefore, Regulatory Amendment 19 to the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Regulatory Amendment 19) and Environmental Assessment are in compliance with the IQA.

## Coastal Zone Management Act

Section 307(c)(1) of the federal Coastal Zone Management Act (CZMA) of 1972 requires that all federal activities that directly affect the coastal zone be consistent with approved state coastal zone management programs to the maximum extent practicable. While it is the goal of the South Atlantic Council to have management measures that complement those of the states, federal and state administrative procedures vary and regulatory

changes are unlikely to be fully instituted at the same time. Based on the analysis of the environmental consequences of the proposed actions in **Section 4.0**, the South Atlantic Council has concluded this amendment would improve federal management of the black sea bass portion of the snapper grouper fishery and is consistent to the maximum extent practicable with the Coastal Zone Management Plans of Florida, Georgia, South Carolina, and North Carolina.

**Endangered Species Act**

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

NMFS completed a biological opinion (NMFS 2006) in 2006 evaluating the impacts of the continued authorization of the South Atlantic snapper grouper fishery under the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region (Snapper Grouper FMP) and Amendment 13C (SAFMC 2006) to the Snapper Grouper FMP on ESA-listed species (see **Section 3.0**). The opinion stated the fishery was not likely to adversely affect North Atlantic right whale critical habitat or marine mammals (see NMFS 2006 for discussion on these species). However, the opinion did state that the snapper grouper fishery would adversely affect sea turtles and smalltooth sawfish, but would not jeopardize their continued existence. An incidental take statement was issued for green, hawksbill, Kemp's ridley, leatherback, and loggerhead sea turtles, as well as smalltooth sawfish. Reasonable and prudent measures to minimize the impact of these incidental takes were specified, along with terms and conditions to implement them. The anticipated number of sea turtle takes over consecutive 3-year periods is shown in **Table F-1**.

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

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

Source: NMFS 2006.

Regulations implemented through snapper-grouper Amendment 15B (SAFMC 2008) (74 FR 31225; June 30, 2009) and updated in Comprehensive Ecosystem-Amendment 2 (SAFMC 2011) (76 FR 82183; December 30, 2011) required all commercial or charter/headboat vessels with a South Atlantic snapper grouper permit, carrying hook-and-line gear on board, to possess required literature and release gear to aid in the safe release of incidentally caught sea turtles and smalltooth sawfish. These regulations are thought to decrease the mortality associated with accidental interactions with sea turtles and smalltooth sawfish.

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

Additionally, on September 22, 2011, NMFS and the U.S. Fish and Wildlife Service determined the loggerhead sea turtle population consists of nine distinct population segments (DPSs) (76 FR 58868). Previously, loggerhead sea turtles were listed as threatened species throughout their global range. The snapper-grouper fishery interacts with loggerhead sea turtles from what is now considered the Northwest Atlantic (NWA) DPS, which remains listed as threatened.

Five DPSs of Atlantic sturgeon were also listed since the completion of the 2006 biological opinion. In a consultation memorandum dated February 15, 2012, NMFS concluded the continued authorization of the South Atlantic snapper-grouper fishery is not likely to adversely affect the Atlantic sturgeon. The February 15, 2012, memorandum also stated that because the 2006 biological opinion had evaluated the impacts of the fishery on the loggerhead subpopulations now wholly contained within the NWA DPS, the opinion's conclusion that the fishery is not likely to jeopardize the

continued existence of loggerhead sea turtles remains valid.

### Executive Order 12612: Federalism

E.O. 12612 requires agencies to be guided by the fundamental federalism principles when formulating and implementing policies that have federalism implications. The purpose of the Order is to guarantee the division of governmental responsibilities between the Federal government and the States, as intended by the framers of the Constitution. No federalism issues have been identified relative to the actions proposed in this amendment and associated regulations. Therefore, preparation of a Federalism assessment under E.O. 13132 is not necessary.

### Executive Order 12866: Regulatory Planning and Review

E.O. 12866, signed in 1993, requires federal agencies to assess the costs and benefits of their proposed regulations, including distributional impacts, and to select alternatives that maximize net benefits to society. To comply with E.O. 12866, NMFS prepares a Regulatory Impact Review (RIR) for all fishery regulatory actions that implement a new FMP or that significantly amend an existing plan (**Appendix D**). RIRs provide a comprehensive analysis of the costs and benefits to society associated with proposed regulatory actions, the problems and policy objectives prompting the regulatory proposals, and the major alternatives that could be used to solve the problems. The reviews also serve as the basis for the agency's determinations as to whether proposed regulations are a "significant regulatory action" under the criteria provided in E.O. 12866 and whether proposed regulations will have a significant economic impact on a substantial number of small entities in compliance with the RFA. A regulation is significant if it is likely to result in an annual effect on the economy of at least $100,000,000 or if it has other major economic effects.

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

### Executive Order 12962: Recreational Fisheries

E.O. 12962 requires Federal agencies, in cooperation with States and Tribes, to improve the quantity, function, sustainable productivity, and distribution of U.S. aquatic resources for increased recreational fishing opportunities through a variety of methods including, but not limited to, developing joint partnerships; promoting the restoration of recreational

fishing areas that are limited by water quality and habitat degradation; fostering sound aquatic conservation and restoration endeavors; and evaluating the effects of federally-funded, permitted, or authorized actions on aquatic systems and recreational fisheries, and documenting those effects. Additionally, the order establishes a seven member National Recreational Fisheries Coordination Council responsible for, among other things, ensuring that social and economic values of healthy aquatic systems that support recreational fisheries are considered by Federal agencies in the course of their actions, sharing the latest resource information and management technologies, and reducing duplicative and cost-inefficient programs among federal agencies involved in conserving or managing recreational fisheries. The South Atlantic Council also is responsible for developing, in cooperation with Federal agencies, States and Tribes, a Recreational Fishery Resource Conservation Plan - to include a five-year agenda. Finally, the Order requires NOAA Fisheries Service and the U.S. Fish and Wildlife Service to develop a joint agency policy for administering the ESA.

The alternatives considered in this amendment are consistent with the directives of E.O. 12962.

**Executive Order 13089: Coral Reef Protection**

E.O. 13089, signed by President William Clinton on June 11, 1998, recognizes the ecological, social, and economic values provided by the Nation's coral reefs and ensures that federal agencies are protecting these ecosystems. More specifically, the Order requires federal agencies to identify actions that may harm U.S. coral reef ecosystems, to utilize their program and authorities to protect and enhance the conditions of such ecosystems, and to ensure that their actions do not degrade the condition of the coral reef ecosystem.

The alternatives considered in this amendment are consistent with the directives of E.O. 13089.

**Executive Order 13158: Marine Protected Areas**

E.O. 13158 was signed on May 26, 2000, to strengthen the protection of U.S. ocean and coastal resources through the use of Marine Protected Areas (MPAs). The E.O. defined MPAs as "any area of the marine environment that has been reserved by Federal, State, territorial, tribal, or local laws or regulations to provide lasting protection for part or all of the natural and cultural resources therein." It directs federal agencies to work closely with state, local and non-governmental partners to create a comprehensive network of MPAs "representing diverse U.S. marine ecosystems, and the Nation's natural and cultural resources".

The alternatives considered in this amendment are consistent with the directives of E.O. 13158.

## Marine Mammal Protection Act

The Marine Mammal Protection Act (MMPA) established a moratorium, with certain exceptions, on the taking of marine mammals in U.S. waters and by U.S. citizens on the high seas. It also prohibits the importing of marine mammals and marine mammal products into the United States. Under the MMPA, the Secretary of Commerce (authority delegated to NOAA Fisheries Service) is responsible for the conservation and management of cetaceans and pinnipeds (other than walruses). The Secretary of the Interior is responsible for walruses, sea otters, polar bears, manatees, and dugongs.

Part of the responsibility that NOAA Fisheries Service has under the MMPA involves monitoring populations of marine mammals to make sure that they stay at optimum levels. If a population falls below its optimum level, it is designated as "depleted." A conservation plan is then developed to guide research and management actions to restore the population to healthy levels.

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

Under the MMPA, to legally fish in a Category I and/or II fishery, a fisherman must take certain steps. For example, owners of vessels or gear engaging in a Category I or II fishery, are required to obtain a marine mammal authorization by registering with the Marine Mammal Authorization Program (50 CFR 229.4). They are also required to accommodate an observer if requested (50 CFR 229.7(c)) and they must comply with any applicable take reduction plans.

The commercial hook-and-line components of the South Atlantic snapper grouper fishery (i.e., bottom longline, bandit gear, and handline) are listed as part of a Category III fishery under the 2012 List of Fisheries (76 FR 73912; November 29, 2011) because there have been no documented interactions between these gear and marine mammals.

## Migratory Bird Treaty Act and Executive Order 13186

The Migratory Bird Treaty Act (MBTA) implemented several bilateral treaties for bird conservation between the United States and Great Britain, the United States and Mexico, the United States and Japan, and the United States and the former Union of Soviet Socialists Republics. Under the MBTA, it is unlawful to pursue, hunt, take, capture, kill,

possess, trade, or transport any migratory bird, or any part, nest, or egg of a migratory bird, included in treaties between the, except as permitted by regulations issued by the Department of the Interior (16 U.S.C. 703-712). Violations of the MBTA carry criminal penalties. Any equipment and means of transportation used in activities in violation of the MBTA may be seized by the United States government and, upon conviction, must be forfeited to it.

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

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

The alternatives considered in this amendment are consistent with the directives of E.O. 13186.

**National Environmental Policy Act**

Regulatory Amendment 19 has been written and organized in a manner that meets National Environmental Policy Act (NEPA) requirements, and thus is a consolidated NEPA document, including a draft Environmental Assessment as described in NOAA Administrative Order (NAO) 216-6, Section 6.03.a.2.

Purpose and Need for Action

The purpose and need for this action are described in **Section 1.3.**

Alternatives

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

Affected Environment

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

Impacts of the Alternatives

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

## Paperwork Reduction Act

The purpose of the Paperwork Reduction Act (PRA) is to minimize the burden on the public. The PRA is intended to ensure that the information collected under the proposed action is needed and is collected in an efficient manner (44 U.S.C. 3501 (1)). The authority to manage information collection and record keeping requirements is vested with the Director of the Office of OMB. This authority encompasses establishment of guidelines and policies, approval of information collection requests, and reduction of paperwork burdens and duplications. PRA requires NOAA Fisheries Service to obtain approval from the OMB before requesting most types of fishery information from the public. No data collection programs are included in Regulatory Amendment 19.

## Regulatory Flexibility Act

The Regulatory Flexibility Act (RFA) of 1980 (5 U.S.C. 601 et seq.) requires federal agencies to assess the impacts of regulatory actions implemented through notice and comment rulemaking procedures on small businesses, small organizations, and small governmental entities, with the goal of minimizing adverse impacts of burdensome regulations and record-keeping requirements on those entities. Under the RFA, NOAA Fisheries Service must determine whether a proposed fishery regulation would have a significant economic impact on a substantial number of small entities. If not, a certification to this effect must be prepared and submitted to the Chief Counsel for Advocacy of the Small Business Administration. Alternatively, if a regulation is determined to significantly impact a substantial number of small entities, the Act requires the agency to prepare an initial and final Regulatory Flexibility Analysis to accompany the proposed and final rule, respectively. These analyses, which describe the type and number of small businesses, affected, the nature and size of the impacts, and alternatives that minimize these impacts while accomplishing stated objectives, must be published in the *Federal Register* in full or in summary for public comment and submitted to the chief counsel for advocacy of the Small Business Administration. Changes to the RFA in June 1996 enable small entities to seek court review of an agency's compliance with the Act's provisions. The RFA is included as **Appendix E**.

## Small Business Act

Enacted in 1953, the Small Business Act requires that agencies assist and protect small-business interests to the extent possible to preserve free competitive enterprise. The objectives of the act are to foster business ownership by individuals who are both socially and economically disadvantaged; and to promote the competitive viability of such firms by providing business development assistance including, but not limited to, management and technical assistance, access to capital and other forms of financial assistance, business training, and counseling, and access to sole source and limited competition federal contract opportunities, to help firms achieve competitive viability. Because most businesses associated with fishing are considered small businesses, NOAA Fisheries Service, in implementing regulations, must make an assessment of how those regulations will affect small businesses.

**Public Law 99-659: Vessel Safety**

Public Law 99-659 amended the Magnuson-Stevens Fishery Conservation and Management Act to require that a fishery management plan (FMP) or FMP amendment must consider, and may provide for, temporary adjustments (after consultation with the U.S. Coast Guard and persons utilizing the fishery) regarding access to a fishery for vessels that would be otherwise prevented from participating in the fishery because of safety concerns related to weather or to other ocean conditions.

No vessel would be forced to participate in South Atlantic fisheries under adverse weather or ocean conditions as a result of the imposition of management regulations proposed in this amendment.

No concerns have been raised by South Atlantic fishermen or by the U.S. Coast Guard that the proposed management measures directly or indirectly pose a hazard to crew or vessel safety under adverse weather or ocean conditions. Therefore, this amendment proposes neither procedures for making management adjustments due to vessel safety problems nor procedures to monitor, evaluate, or report on the effects of management measures on vessel or crew safety under adverse weather or ocean conditions.

## REFERENCES

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SAFMC (South Atlantic Fishery Management Council). 2011. Comprehensive Ecosystem Based Amendment 2, Final Environmental Assessment, Regulatory Flexibility Analysis/Regulatory Impact Review, and Social Impact Assessment/Fishery Impact Statement for the Fishery Management Plan for the Snapper Grouper Fishery of the South Atlantic Region. (Amendment 23 to the Snapper Grouper FMP). South Atlantic Fishery Management Council, 4055 Faber Place, Ste 201, North Charleston, S.C. 29405.

# Appendix G. Glossary

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

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

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

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

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

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

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

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

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

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

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

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

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

**Discards:** Fish captured, but released at sea.

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

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

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

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

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

**F:** Fishing mortality.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Head Boat:** A fishing boat that charges individual fees per recreational angler onboard.

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

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

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

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

**Marine Recreational Fisheries Statistics Survey (MRFSS):** Survey operated by NMFS in cooperation with states that collects marine recreational data.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

**Recruitment Overfishing:** The rate of fishing above which the recruitment to the exploitable stock becomes significantly reduced. This is characterized by a greatly reduced spawning stock, a decreasing proportion of older fish in the catch, and generally very low recruitment year after year.

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

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

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

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

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

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

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

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

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

## Appendix H. Summary of public Comments on Regulatory Amendment 19:

- 54 written comments were received
- 25 comments directly supported Alternative 2
- 4 comments supported Alternative 3
- Rest of comments did not explicitly support either alternative

Other comments not directly in support of either alternative:

- Several commenters suggested an increase in the minimum size limit but there was also support for maintaining the current limits.
- A few also suggested an increase in the bag limit is needed.
- The commercial allocation should be increased and the recreational allocation decreased until both approach 50%.
- One fisherman expressed concern over Florida continuing to allow fishing for BSB in state waters after federal waters are closed.
- The Black Sea Bass season should be open year round in South Carolina. The fishery has always been primarily a winter fishery, and this would allow charter boats to have a constant source of income.
- Non-stainless circle hooks should be required for bsb.
- Recreational fishermen should be polled via South Carolina saltwater fishing licenses in March 2014 to report twelve months catch by month.
- Suggestions to prohibit the use of bsb pots permanently in order for the fishery to take place year-round.
- A fisherman in Georgia stated that he frequently catches bsb inshore, something that was not a common occurrence. He attributes this to changes in management, specifically increases in the size limits, reductions in the daily bag limit, and closing down the season. He is concerned about the effects that these changes will have on other inshore species.
- Current bag limit should be effective in keeping the season open year round sine there are significantly fewer fishermen who are targeting them.
- The Council should consider establishing regional seasons for black sea bass.
- Consider an alternative that would set the ACL at the median of the three years (2013-2015) ABC. This would allow for more poundage than an ACL using the yield at 75% of MSY.
- The Beaufort Assessment Model (BAM) model is extremely conservative as a result of data limitations and produces some of the most restrictive results of any assessment models available to the NMFS toolbox.
- One fisherman stated the following in support of Alternative 2: The estimated habitat area for BSB is enormous but the area of scientific sampling and areas fished for harvest are small in comparison. The areas that are untouched and that have never been fished for harvest provide more

than enough biological buffer to give the fishing industry sectors the full annual catch limit (ACL) as projected by the SSC.

- One comment is support of the proposed Nov 1-Apr 30 closure: Though it is not always possible to determine the origin of line entangling whales, where the gear could be identified, rope associated with trap/pot gear was more frequently found on entangled right whales than rope associated with gillnets.
- There has been increasing evidence of right whales outside of the restricted area also using the waters of North Carolina for calving. Also recent reports of newborn whales off NC.
- Off NC, the bsb season needs to be opened earlier than June 1st.
- Some AP members felt that the AP did not engage in sufficient discussion before making a recommendation for Alternative 3. In response Council staff send the transcript of that discussion to all AP and Council members.
- Focus on limiting waste while keeping the fishery open as long as possible and enhancing habitat with artificial reefs to increase fish biomass. In addition consider the following:
    - Remove the size limit or revert back to eight inches.
    - Allow a minimum of one fish and up to 10% of a catch to be undersized or over the limit.
    - Set aside a portion of the 45,000 pounds allocated to dead discards along with 10% of the commercial quota for a 100-pound bycatch allowance.
    - Align the opening date for Black Sea Bass with the shallow-water grouper opening on May 1st to avoid excessive regulatory discards.
    - Set up a way for recreational fishermen to voluntarily submit fishing reports online.
    - Issue some ethical angling tips on how to handle fish that must be discarded and discouraging high-grading or catch and release fishing for species with high discard mortality rates.
    - Follow Alabama's model for allowing the public to place artificial reefs in areas of sandy barren bottom to increase the total biomass of fish an area can support.
- Allocate portion of the total ACL to NC based on landings 5-10 years ago.
- One fisherman stated that the assessment of BSB in the SA is even more conservative than the assessment in the Mid Atlantic, yet alternative 3 would reduce the ABC by 17%. He asks: How can one branch of the NMFS increase the ABC of a species by 22% because they think an assessment is too conservative and another branch, reduce it by 17% when they are both using the "best available science" in both assessments?
- Until management decisions are made based on the conditions off the states, no plan will be fair to all segments of the angling community.

- One fisherman is concerned that the overabundance of bsb could be hurting other species. Go back to higher limits and longer seasons to get the ecosystem back in balance.
- The hook and line sector should be allowed to harvest enough bsb to extend fishery to January 1st so for-hire boats can operate. When landings are within 20K pounds of reaching the commercial ACL, prohibit the use of pots.
- A few commenters expressed concern over the accuracy of the stock assessment.
- Many of the comments stated that the results of the stock assessment do not reflect what fishermen have been seeing on the water.
- Consider changing the recreational fishing year to start on April 1.
- Consider a recreational season for bsb and shallow water grouper between May 1 and Nov 30 at the current size and bag limits.
- Reduce commercial fishing and only allow recreational fishing.
- Concern over high mortality of young fish due to poor dehooking practices. A slot limit as was done with red drum would minimize the problem.
- Population of black sea bass is out of control and they are consuming young of other important species like red snapper and gray triggerfish.
- Closure to protect right whales should be from November 15 to April 15, as is currently specified by the Atlantic Right Whale Take Reduction Team. There should also be a commercial start date of April 16 through November 14 each year, as long as the commercial BSB ACL is uncaught. The remaining commercial ACL could then be landed using hook and line by commercial fishermen with a Snapper Grouper permit during November 15-April 15 each year. Regulations implemented in Amendment 18A have diminished the possibility of any interactions with protected whales.
- Return to a 12" size limit and 15 fish creel and keep the recreational fishery open year round.
- There are so many bsb that I am seeing less and less juvenile Snapper and Grouper. Long term closures could be negatively affecting other fisheries.

# SUBCHAPTER A—GENERAL PROVISIONS [RESERVED]
# SUBCHAPTER B—NORTH PACIFIC COMMERCIAL FISHERIES [RESERVED]
# SUBCHAPTER C—MARINE MAMMALS

## PART 228—NOTICE AND HEARING ON SECTION 103(d) REGULATIONS


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228.21 Assistant Administrator's decision.


AUTHORITY: 16 U.S.C. 1361 *et seq.*

SOURCE: 65 FR 39560, June 27, 2000, unless otherwise noted.

### § 228.1 Basis and purpose.

(a) Sections 101(a)(2), 101(a)(3)(A), and 101(b) of the Marine Mammal Protection Act of 1972 (16 U.S.C. 1371(a)(2), 1371(a)(3)(A), and 1371(b)) and these regulations authorize the Assistant Administrator of the National Marine Fisheries Service, to:

(1) Impose regulations governing the taking of marine mammals incidental to commercial fishing operations;

(2) Waive the moratorium and to adopt regulations with respect to the taking and importing of animals from each species of marine mammals under the Assistant Administrator's jurisdiction;

(3) Prescribe regulations governing the taking of depleted marine mammals by any Indian, Aleut or Eskimo, respectively. In prescribing regulations to carry out the provisions of said sections, the Act refers the Assistant Administrator to section 103 (16 U.S.C. 1373). In accordance with section 103(d), regulations must be made on the record after opportunity for an agency hearing on such regulations and, in the case of a waiver, on the determination by the Assistant Administrator to waive the moratorium pursuant to section 101(a)(3)(A) of the Act (16 U.S.C. 1371(a)(3)(A)).

(b) The purpose of this part is to establish rules of practice and procedure for all hearings conducted pursuant to section 103(d) of the Act.

### § 228.2 Definitions.

(a) *Party* means, for the purposes of this subpart:

(1) The Assistant Administrator or the Assistant Administrator's representative;

(2) A person who has notified the Assistant Administrator by specified dates of his or her intent to participate in the hearing pursuant to §§ 228.5 and 228.14(b).

(b) *Witness* means, for the purpose of this part, any person who submits written direct testimony on the proposed regulations. A person may be both a party and a witness.

### § 228.3 Scope of regulations.

The procedural regulations in this part govern the practice and procedure in hearings held under section 103(d) of the Act. These hearings will be governed by the provisions of 5 U.S.C. 556 and section 557 of the Administrative Procedure Act. The regulations shall be construed to secure the just, speedy and inexpensive determination of all issues raised with respect to any waiver or regulation proposed pursuant to section 103(d) of the Act with full protection for the rights of all persons affected thereby.

### § 228.4 Notice of hearing.

(a) A notice of hearing on any proposed regulations shall be published in the FEDERAL REGISTER, together with the Assistant Administrator's proposed determination to waive the moratorium pursuant to section 101(a)(3)(A) of the Act (16 U.S.C. 1371(a)(3)(A)), where applicable.

(b) The notice shall state:

(1) The nature of the hearing;

(2) The place and date of the hearing. The date shall not be less than 60 days after publication of notice of the hearing;

(3) The legal authority under which the hearing is to be held;

(4) The proposed regulations and waiver, where applicable, and a summary of the statements required by section 103(d) of the Act (16 U.S.C. 1373(d));

(5) Issues of fact which may be involved in the hearing;

(6) If a draft Environmental Impact Statement is required, the date of publication of the draft and the place(s) where the draft and comments thereon may be viewed and copied;

(7) Any written advice received from the Marine Mammal Commission;

(8) The place(s) where records and submitted direct testimony will be kept for public inspection;

(9) The final date for filing with the Assistant Administrator a notice of intent to participate in the hearing pursuant to § 228.5;

(10) The final date for submission of direct testimony on the proposed regulations and waiver, if applicable, and the number of copies required;

(11) The docket number assigned to the case which shall be used in all subsequent proceedings; and

(12) The place and date of the prehearing conference.

### § 228.5 Notification by interested persons.

Any person desiring to participate as a party shall notify the Assistant Administrator, by certified mail, on or before the date specified in the notice.

### § 228.6 Presiding officer.

(a) Upon publication of the notice of hearing pursuant to § 228.4, the Assistant Administrator shall appoint a presiding officer pursuant to 5 U.S.C. 3105. No individual who has any conflict of interest, financial or otherwise, shall serve as presiding officer in such proceeding.

(b) The presiding officer, in any proceeding under this subpart, shall have power to:

(1) Change the time and place of the hearing and adjourn the hearing;

(2) Evaluate direct testimony submitted pursuant to these regulations, make a preliminary determination of the issues, conduct a prehearing conference to determine the issues for the hearing agenda, and cause to be published in the FEDERAL REGISTER a final hearing agenda;

(3) Rule upon motions, requests and admissibility of direct testimony;

(4) Administer oaths and affirmations, question witnesses and direct witnesses to testify;

(5) Modify or waive any rule (after notice) when determining that no party will be prejudiced;

(6) Receive written comments and hear oral arguments;

(7) Render a recommended decision; and

(8) Do all acts and take all measures, including regulation of media coverage, for the maintenance of order at and the efficient conduct of the proceeding.

(c) In case of the absence of the original presiding officer or the original presiding officer's inability to act, the powers and duties to be performed by the original presiding officer under this subpart in connection with a proceeding may, without abatement of the proceeding, be assigned to any other presiding officer unless otherwise ordered by the Assistant Administrator.

(d) The presiding officer may upon the presiding officer's own motion withdraw as presiding officer in a proceeding if the presiding officer deems himself or herself to be disqualified.

(e) A presiding officer may be requested to withdraw at any time prior to the recommended decision. Upon the filing by an interested person in good faith of a timely and sufficient affidavit alleging the presiding officer's personal bias, malice, conflict of interest or other basis which might result in prejudice to a party, the hearing shall

recess. The Assistant Administrator shall immediately determine the matter as a part of the record and decision in the proceeding, after making such investigation or holding such hearings, or both, as the Assistant Administrator may deem appropriate in the circumstances.

### § 228.7 Direct testimony submitted as written documents.

(a) Unless otherwise specified, all direct testimony, including accompanying exhibits, must be submitted to the presiding officer in writing no later than the dates specified in the notice of the hearing (§ 228.4), the final hearing agenda (§ 228.12), or within 15 days after the conclusion of the prehearing conference (§ 228.14) as the case may be. All direct testimony shall be in affidavit form and exhibits constituting part of such testimony, referred to in the affidavit and made a part thereof, must be attached to the affidavit. Direct testimony submitted with exhibits must state the issue to which the exhibit relates; if no such statement is made, the presiding officer shall determine the relevance of the exhibit to the issues published in the FEDERAL REGISTER.

(b) The direct testimony submitted shall contain:

(1) A concise statement of the witness' interest in the proceeding and his position regarding the issues presented. If the direct testimony is presented by a witness who is not a party, the witness shall state the witness' relationship to the party; and

(2) Facts that are relevant and material.

(c) The direct testimony may propose issues of fact not defined in the notice of the hearing and the reason(s) why such issues should be considered at the hearing.

(d) Ten copies of all direct testimony must be submitted unless the notice of the hearing specifies otherwise.

(e) Upon receipt, direct testimony shall be assigned a number and stamped with that number and the docket number.

(f) Contemporaneous with the publication of the notice of hearing, the Assistant Administrator's direct testimony in support of the proposed regulations and waiver, where applicable, shall be available for public inspection as specified in the notice of hearing. The Assistant Administrator may submit additional direct testimony during the time periods allowed for submission of such testimony by witnesses.

### § 228.8 Mailing address.

Unless otherwise specified in the notice of hearing, all direct testimony shall be addressed to the Presiding Officer, c/o Assistant Administrator, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910. All affidavits and exhibits shall be clearly marked with the docket number of the proceedings.

### § 228.9 Inspection and copying of documents.

Any document in a file pertaining to any hearing authorized by this subpart or any document forming part of the record of such a hearing may be inspected and/or copied in the Office of the Assistant Administrator, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910–unless the file is in the care and custody of the presiding officer, in which case the presiding officer shall notify the parties as to where and when the record may be inspected.

### § 228.10 Ex parte communications.

(a) After notice of a hearing is published in the FEDERAL REGISTER, all communications, whether oral or written, involving any substantive or procedural issue and directed either to the presiding officer or to the Assistant Administrator, Deputy Assistant Administrator, or Chief of the Marine Mammal Division, National Marine Fisheries Service, without reference to these rules of procedure, shall be deemed ex parte communications and are not to be considered part of the record for decision.

(b) A record of oral conversations shall be made by the persons who are contacted. All communications shall be available for public viewing at the place(s) specified in the notice of hearing.

(c) The presiding office shall not consult any person or party on any fact in issue or on the merits of the matter

unless notice and opportunity is given for all parties to participate.

### § 228.11 Prehearing conference.

(a) After an examination of all the direct testimony submitted pursuant to § 228.7, the presiding officer shall make a preliminary determination of issues of fact which may be addressed at the hearing.

(b) The presiding officer's preliminary determination shall be made available at the place or places provided in the notice of the hearing (§ 228.4(b)(8)) at least 5 days before the prehearing conference.

(c) The purpose of the prehearing conference shall be to enable the presiding officer to determine, on the basis of the direct testimony submitted and prehearing discussions:

(1) Whether the presiding officer's preliminary determination of issues of fact for the hearing has omitted any significant issues;

(2) What facts are not in dispute;

(3) Which witnesses may appear at the hearing; and

(4) The nature of the interest of each party and which parties' interests are adverse.

(d) Only parties may participate in the hearing conference and a party may appear in person or be represented by counsel.

(e) Parties who do not appear at the prehearing conference shall be bound by the conference's determinations.

### § 228.12 Final agenda of the hearing.

(a) After the prehearing conference, the presiding officer shall prepare a final agenda which shall be published in the FEDERAL REGISTER within 10 days after the conclusion of the conference. A copy of the final agenda shall be mailed to all parties.

(b) The final agenda shall list:

(1) All the issues which the hearing shall address, the order in which those issues shall be presented, and the direct testimony submitted which bears on the issues; and

(2) A final date for submission of direct testimony on issues of fact not included in the notice of hearing if such issues are presented. The final agenda may also specify a final date for submission of direct testimony to rebut testimony previously submitted during the time specified in the notice of the hearing.

(c) The presiding officer shall publish with the final agenda a list of witnesses who may appear at the hearing, a list of parties, the nature of the interest of each party, and which parties' interests are adverse on the issues presented.

### § 228.13 Determination to cancel the hearing.

(a) If the presiding officer concludes that no issues of fact are presented by the direct testimony submitted, the presiding officer shall publish such conclusion and notice in the FEDERAL REGISTER that a hearing shall not be held and shall also publish a date for filing written comments on the proposed regulations. Written comments may include proposed findings and conclusions, arguments or briefs.

(b) A person need not be a party to submit any written comments.

(c) Promptly after expiration of the period for receiving written comments, the presiding officer shall make a recommended decision based on the record, which in this case shall consist of the direct testimony and written comments submitted. He shall transfer to the Assistant Administrator his recommended decision, the record and a certificate stating that the record contains all the written direct testimony and comments submitted. The Assistant Administrator shall then make a final decision in accordance with these regulations (§ 228.21).

### § 228.14 Rebuttal testimony and new issues of fact in final agenda.

(a) Direct testimony to rebut testimony offered during the time period specified in the notice of hearing may be submitted pursuant to these regulations within fifteen days after the conclusion of the prehearing conference unless the presiding officer otherwise specifies in the final agenda.

(b) If the final agenda presents issues not included in the notice of the hearing published pursuant to § 228.4:

(1) Any person interested in participating at the hearing on such issues presented shall notify the Assistant Administrator by certified mail of an

intent to participate not later than 10 days after publication of the final agenda. Such person may present direct testimony or cross-examine witnesses only on such issues presented unless that person previously notified the Assistant Administrator pursuant to § 228.5; and

(2) Additional written direct testimony concerning such issues may be submitted within the time provided in the final agenda. Such direct testimony will comply with the requirements of § 228.7.

### § 228.15 Waiver of right to participate.

Persons who fail to notify the Assistant Administrator pursuant to §§ 228.5 and 228.14 shall be deemed to have waived their right to participate as parties in any part of the hearing.

### § 228.16 Conduct of the hearing.

(a) The hearing shall be held at the time and place fixed in the notice of the hearing, unless the presiding officer changes the time or place. If a change occurs, the presiding officer shall publish the change in the FEDERAL REGISTER and shall expeditiously notify all parties by telephone or by mail: Provided, that if that change in time or place of hearing is made less than 5 days before the date previously fixed for the hearing, the presiding officer shall also announce, or cause to be announced, the change at the time and place previously fixed for the hearing.

(b) The presiding officer shall, at the commencement of the hearing, introduce into the record: the notice of hearing as published in the FEDERAL REGISTER; all subsequent documents published in the FEDERAL REGISTER; the draft Environmental Impact Statement if it is required and the comments thereon and agency responses to the comments; and a list of all parties. Direct testimony shall then be received with respect to the matters specified in the final agenda in such order as the presiding officer shall announce. With respect to direct testimony submitted as rebuttal testimony or in response to new issues presented by the prehearing conference, the presiding officer shall determine the relevancy of such testimony.

(c) The hearing shall be publicly conducted and reported verbatim by an official reporter.

(d) If a party objects to the admission or rejection of any direct testimony or to any other ruling of the presiding officer during the hearing, he or she shall state briefly the grounds of such objection, whereupon an automatic exception will follow if the objection is overruled by the presiding officer. The transcript shall not include argument or debate thereon except as ordered by the presiding officer. The ruling by the presiding officer on any objection shall be a part of the transcript and shall be subject to review at the same time and in the same manner as the Assistant Administrator's final decision. Only objections made before the presiding officer may subsequently be relied upon in the proceedings.

(e) All motions and requests shall be addressed to, and ruled on by, the presiding officer, if made prior to his certification of the transcript or by the Assistant Administrator if made thereafter.

### § 228.17 Direct testimony.

(a) Only direct testimony submitted by affidavit as provided in these regulations and introduced at the hearing by a witness shall be considered part of the record. Such direct testimony shall not be read into evidence but shall become a part of the record subject to exclusion of irrelevant and immaterial parts thereof;

(b) The witness introducing direct testimony shall:

(1) State his or her name, address and occupation;

(2) State qualifications for introducing the direct testimony. If an expert, the witness shall briefly state the scientific or technical training which qualifies the witness as an expert;

(3) Identify the direct testimony previously submitted in accordance with these regulations; and

(4) Submit to appropriate cross and direct examination. Cross-examination shall be by a party whose interests are adverse on the issue presented, to the witness', if the witness is a party, or to the interests of the party who presented the witness.

(c) A party shall be deemed to have waived the right to introduce direct testimony if such party fails to present a witness to introduce the direct testimony.

(d) Official notice may be taken of such matters as are judicially noticed by the courts of the United States: Provided, that parties shall be given adequate notice, by the presiding officer, at the hearing, of matters so noticed and shall be given adequate opportunity to show that such facts are inaccurate or are erroneously noticed.

**§ 228.18 Cross-examination.**

(a) The presiding officer may:

(1) Require the cross-examiner to outline the intended scope of the cross-examination;

(2) Prohibit parties from cross-examining witnesses unless the presiding officer has determined that the cross-examiner has an adverse interest on the facts at issue to the party-witness or the party presenting the witness. For the purposes of this subsection, the Assistant Administrator's or his or her representative's interest shall be considered adverse to all parties;

(3) Limit the number of times any party or parties having a common interest may cross-examine an ''adverse'' witness on the same matter; and

(4) Exclude cross-examination questions that are immaterial, irrelevant or unduly repetitious.

(b) Any party shall be given an opportunity to appear, either in person or through an authorized counsel or representative, to cross-examine witnesses. Before cross-examining a witness, the party or counsel shall state his or her name, address and occupation. If counsel cross-examines the witness, counsel shall state for the record the authority to act as counsel. Cross-examiners shall be assumed to be familiar with the direct testimony.

(c) Any party or party's counsel who fails to appear at the hearing to cross-examine an ''adverse'' witness shall be deemed to have waived the right to cross-examine that witness.

(d) Scientific, technical or commercial publications may only be utilized for the limited purposes of impeaching witnesses under cross-examination unless previously submitted and introduced in accordance with these regulations.

**§ 228.19 Oral and written arguments.**

(a) The presiding officer may, in his or her discretion, provide for oral argument at the end of the hearing. Such argument, when permitted, may be limited by the presiding officer to the extent necessary for the expeditious disposition of the proceeding.

(b) The presiding officer shall announce at the hearing a reasonable period of time within which any interested person may file with the presiding officer any written comments on the proposed regulations and waiver, including proposed findings and conclusions and written arguments or briefs, which are based upon the record and citing where practicable the relevant page or pages of the transcript. If a party filing a brief desires the presiding officer to reconsider any objection made by such party to a ruling of the presiding officer, the party shall specifically identify such rulings by reference to the pertinent pages of the transcript and shall state their arguments thereon as a part of the brief.

(c) Oral or written arguments shall be limited to issues arising from direct testimony on the record.

**§ 228.20 Recommended decision, certification of the transcript and submission of comments on the recommended decision.**

(a) Promptly after expiration of the period for receiving written briefs, the presiding officer shall make a recommended decision based on the record and transmit the decision to the Assistant Administrator. The recommended decision shall include:

(1) A statement containing a description of the history of the proceedings;

(2) Findings on the issues of fact with the reasons therefor; and

(3) Rulings on issues of law.

(b) The presiding officer shall also transmit to the Assistant Administrator the transcript of the hearing, the original and all copies of the direct testimony, and written comments. The presiding officer shall attach to the original transcript of the hearing a certificate stating that, to the best of his knowledge and belief, the transcript is

a true transcript of the testimony given at the hearing except in such particulars as are specified.

(c) Immediately after receipt of the recommended decision, the Assistant Administrator shall give notice thereof in the FEDERAL REGISTER, send copies of the recommended decision to all parties, and provide opportunity for the submission of comments. The recommended decision may be reviewed and/or copied in the office of the Assistant Administrator, National Marine Fisheries Service, 1315 East-West Highway, Silver Spring, MD 20910.

(d) Within 20 days after the notice of receipt of the recommended decision has been published in the FEDERAL REGISTER, any interested person may file with the Assistant Administrator any written comments on the recommended decision. All comments, including recommendations from or consultation with the Marine Mammal Commission, must be submitted during the 20-day period to the Assistant Administrator at the previously mentioned address.

### § 228.21 Assistant Administrator's decision.

(a) Upon receipt of the recommended decision and transcript and after the 20-day period for receiving written comments on the recommended decision has passed, the Assistant Administrator shall make a final decision on the proposed regulations and waiver, where applicable. The Assistant Administrator's decision may affirm, modify, or set aside, in whole or in part, the recommended findings, conclusions and decision of the presiding officer. The Assistant Administrator may also remand the hearing record to the presiding officer for a fuller development of the record.

(b) The Assistant Administrator's decision shall include:

(1) A statement containing a description of the history of the proceeding;

(2) Findings on the issues of fact with the reasons therefor; and

(3) Rulings on issues of law.

(4) The Assistant Administrator's decision shall be published in the FEDERAL REGISTER. If the waiver is approved, the final adopted regulations shall be promulgated with the decision.

# PART 229—AUTHORIZATION FOR COMMERCIAL FISHERIES UNDER THE MARINE MAMMAL PROTECTION ACT OF 1972

## Subpart A—General Provisions

Sec.
229.1 Purpose and scope.
229.2 Definitions.
229.3 Prohibitions.
229.4 Requirements for Category I and II fisheries.
229.5 Requirements for Category III fisheries.
229.6 Reporting requirements.
229.7 Monitoring of incidental mortalities and serious injuries.
229.8 Publication of List of Fisheries.
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229.12 Consultation with the Secretary of the Interior.

## Subpart B—Takes of Endangered and Threatened Marine Mammals

229.20 Issuance of permits.

## Subpart C—Take Reduction Plan Regulations and Emergency Regulations

229.30 Basis.
229.31 Pacific Offshore Cetacean Take Reduction Plan.
229.32 Atlantic large whale take reduction plan regulations.
229.33 Harbor Porpoise Take Reduction Plan Regulations—New England.
229.34 Harbor Porpoise Take Reduction Plan—Mid-Atlantic.
229.35 Bottlenose Dolphin Take Reduction Plan.
229.36 Atlantic Pelagic Longline Take Reduction Plan (PLTRP).

FIGURE 1 TO PART 229—DRIFT GILLNET PINGER CONFIGURATION AND EXTENDER REQUIREMENTS

AUTHORITY: 16 U.S.C. 1361 *et seq.*; § 229.32(f) also issued under 16 U.S.C. 1531 *et seq.*

SOURCE: 60 FR 45100, Aug. 30, 1995, unless otherwise noted.

## Subpart A—General Provisions

### § 229.1 Purpose and scope.

(a) The regulations in this part implement sections 101(a)(5)(E) and 118 of the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1371(a)(5)(E) and 1387) that provide for exceptions

for the taking of marine mammals incidental to certain commercial fishing operations from the Act's general moratorium on the taking of marine mammals.

(b) Section 118 of the Act, rather than sections 103 and 104, governs the incidental taking of marine mammals in the course of commercial fishing operations by persons using vessels of the United States, other than vessels fishing for yellowfin tuna in the eastern tropical Pacific Ocean purse seine fishery, and vessels that have valid fishing permits issued in accordance with section 204(b) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1824(b)).

(c) The regulations of Subpart B also govern the incidental taking by commercial fishers of marine mammals from species or stocks designated under the Act as depleted on the basis of their listing as threatened species or endangered species under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*).

(d) The regulations of this part do not apply to the incidental taking of California sea otters or to Northwest treaty Indian tribal members exercising treaty fishing rights.

(e) Authorizations under subpart A of this part are exemptions only from the taking prohibitions under the Act and not those under the Endangered Species Act of 1973. To be exempt from the taking prohibitions under the Endangered Species Act, specific authorization under subpart B of this part is required.

(f) Authorizations under this part do not apply to the intentional lethal taking of marine mammals in the course of commercial fishing operations except as provided for under §§ 229.4(k) and 229.5(f).

(g) The purposes of the regulations in this part are to:

(1) Reduce the incidental mortality or serious injury of marine mammals occurring in the course of commercial fishing operations below the potential biological removal level for a particular stock, and

(2) Reduce the incidental mortality or serious injury of marine mammals occurring in the course of commercial fishing operations to insignificant levels approaching a zero mortality and serious injury rate by the statutory deadline of April 30, 2001.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9086, Feb. 24, 1999]

### § 229.2 Definitions.

In addition to the definitions contained in the Act and § 216.3 of this chapter, and unless otherwise defined in this chapter, the terms in this chapter have the following meaning:

*Act* or *MMPA* means the Marine Mammal Protection Act of 1972, as amended (16 U.S.C. 1361 *et seq.*).

*American lobster or lobster* means *Homarus americanus*.

*Anchored gillnet* means any gillnet gear, including an anchored float gillnet, sink gillnet or stab net, that is set anywhere in the water column and which is anchored, secured, or weighted to the bottom of the sea. Also called a set gillnet.

*Assistant Administrator* means the Assistant Administrator for Fisheries of the National Oceanic and Atmospheric Administration.

*Authorization Certificate* means a document issued by the Assistant Administrator, or designee, under the authority of section 118 of the Act that authorizes the incidental, but not intentional, taking of marine mammals in Category I or II fisheries.

*Bitter end* means the end of a line that detaches from a weak link.

*Bottom portion of the line* means, for buoy lines, the portion of the line in the water column that is closest to the fishing gear.

*Breaking strength* means the highest tensile force which an object can withstand before breaking.

*Bridle* means the lines connecting a gillnet to an anchor or buoy line.

*Buoy line* means a line connecting fishing gear in the water to a buoy at the surface of the water.

*Category I fishery* means a commercial fishery determined by the Assistant Administrator to have frequent incidental mortality and serious injury of marine mammals. A commercial fishery that frequently causes mortality or serious injury of marine mammals is one that is by itself responsible for the annual removal of 50 percent or

more of any stock's potential biological removal level.

*Category II fishery* means a commercial fishery determined by the Assistant Administrator to have occasional incidental mortality and serious injury of marine mammals. A commercial fishery that occasionally causes mortality or serious injury of marine mammals is one that, collectively with other fisheries, is responsible for the annual removal of more than 10 percent of any marine mammal stock's potential biological removal level and that is by itself responsible for the annual removal of between 1 and 50 percent, exclusive, of any stock's potential biological removal level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator will determine whether the incidental serious injury or mortality is ''occasional'' by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area, or at the discretion of the Assistant Administrator. Eligible commercial fisheries not specifically identified in the list of fisheries are deemed to be Category II fisheries until the next list of fisheries is published.

*Category III fishery* means a commercial fishery determined by the Assistant Administrator to have a remote likelihood of, or no known incidental mortality and serious injury of marine mammals. A commercial fishery that has a remote likelihood of causing incidental mortality and serious injury of marine mammals is one that collectively with other fisheries is responsible for the annual removal of:

(1) Ten percent or less of any marine mammal stock's potential biological removal level, or

(2) More than 10 percent of any marine mammal stock's potential biological removal level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's potential biological removal level. In the absence of reliable information indicating the frequency of incidental mortality and serious injury of marine mammals by a commercial fishery, the Assistant Administrator will determine whether the incidental serious injury or mortality is ''remote'' by evaluating other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, qualitative data from logbooks or fisher reports, stranding data, and the species and distribution of marine mammals in the area or at the discretion of the Assistant Administrator.

*Commercial fishing operation* means the catching, taking, or harvesting of fish from the marine environment (or other areas where marine mammals occur) that results in the sale or barter of all or part of the fish harvested. The term includes licensed commercial passenger fishing vessel (as defined in § 216.3 of this chapter) activities and aquaculture activities.

*Depleted species* means any species or population that has been designated as depleted under the Act and is listed in § 216.15 of this chapter or part 18, subpart E of this title, or any endangered or threatened species of marine mammal.

*Driftnet, drift gillnet, or drift entanglement gear* means a gillnet or gillnets that is/are unattached to the ocean bottom and not anchored, secured or weighted to the bottom, regardless of whether attached to a vessel.

*Fisher or fisherman* means the vessel owner or operator, or the owner or operator of gear in a nonvessel fishery.

*Fishery* has the same meaning as in section 3 of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1802).

*Fishing or to fish* means any commercial fishing operation activity that involves:

(1) The catching, taking, or harvesting of fish;

(2) The attempted catching, taking, or harvesting of fish;

(3) Any other activity that can reasonably be expected to result in the catching, taking, or harvesting of fish; or

(4) Any operations at sea in support of, or in preparation for, any activity

described in paragraphs (1), (2), or (3) of this definition.

*Fishing trip* means any time spent away from port actively engaged in commercial fishing operations. The end of a fishing trip will be the time of a fishing vessel's return to port or the return of a fisher from tending gear in a nonvessel fishery.

*Fishing vessel* or *vessel* means any vessel, boat, ship, or other craft that is used for, equipped to be used for, or of a type normally used for, fishing.

*Float-line* means the rope at the top of a gillnet from which the mesh portion of the net is hung.

*Gillnet* means fishing gear consisting of a wall of webbing (meshes) or nets, designed or configured so that the webbing (meshes) or nets are placed in the water column, usually held approximately vertically, and are designed to capture fish by entanglement, gilling, or wedging. The term ''gillnet'' includes gillnets of all types, including but not limited to sink gillnets, other anchored gillnets (e.g., anchored float gillnets, stab, and set nets), and drift gillnets. Gillnets may or may not be attached to a vessel.

*Groundline*, with reference to trap/pot gear, means a line connecting traps in a trap trawl, and, with reference to gillnet gear, means a line connecting a gillnet or gillnet bridle to an anchor or buoy line.

*Incidental* means, with respect to an act, a non-intentional or accidental act that results from, but is not the purpose of, carrying out an otherwise lawful action.

*Injury* means a wound or other physical harm. Signs of injury to a marine mammal include, but are not limited to, visible blood flow, loss of or damage to an appendage or jaw, inability to use one or more appendages, asymmetry in the shape of the body or body position, noticeable swelling or hemorrhage, laceration, puncture or rupture of eyeball, listless appearance or inability to defend itself, inability to swim or dive upon release from fishing gear, or signs of equilibrium imbalance. Any animal that ingests fishing gear, or any animal that is released with fishing gear entangling, trailing or perforating any part of the body will be considered injured regardless of the absence of any wound or other evidence of an injury.

*Insignificance threshold* means the upper limit of annual incidental mortality and serious injury of marine mammal stocks by commercial fisheries that can be considered insignificant levels approaching a zero mortality and serious injury rate. An insignificance threshold is estimated as 10 percent of the Potential Biological Removal level for a stock of marine mammals. If certain parameters (e.g., maximum net productivity rate or the recovery factor in the calculation of the stock's potential biological removal level) can be estimated or otherwise modified from default values, the Assistant Administrator may use a modification of the number calculated from the simple formula for the insignificance threshold. The Assistant Administrator may also use a modification of the simple formula when information is insufficient to estimate the level of mortality and serious injury that would have an insignificant effect on the affected population stock and provide a rationale for using the modification.

*Interaction* means coming in contact with fishing gear or catch. An interaction may be characterized by a marine mammal entangled, hooked, or otherwise trapped in fishing gear, regardless of whether injury or mortality occurs, or situations where marine mammals are preying on catch. Catch means fish or shellfish that has been hooked, entangled, snagged, trapped or otherwise captured by commercial fishing gear.

*Large mesh gillnet* means a gillnet constructed with a mesh size of 7 inches (17.78 cm) to 18 inches (45.72 cm).

*Lead-line* means the rope, weighted or otherwise, to which the bottom edge of a gillnet is attached.

*List of Fisheries* means the most recent final list of commercial fisheries published in the FEDERAL REGISTER by the Assistant Administrator, categorized according to the likelihood of incidental mortality and serious injury of marine mammals during commercial fishing operations.

*Mesh size* means the distance between inside knot to inside knot. Mesh size is

measured as described in § 648.80(f)(1) of this title.

*Mid-Atlantic coastal waters* means waters bounded by the line defined by the following points: The southern shoreline of Long Island, New York at 72°30′W, then due south to 33°51′N lat., thence west to the North Carolina/South Carolina border.

*Minimum population estimate* means an estimate of the number of animals in a stock that:

(1) Is based on the best available scientific information on abundance, incorporating the precision and variability associated with such information; and

(2) Provides reasonable assurance that the stock size is equal to or greater than the estimate.

*Negligible impact* has the same meaning as in § 216.103 of this chapter.

*Net productivity rate* means the annual per capita rate of increase in a stock resulting from additions due to reproduction, less losses due to mortality.

*Night* means any time between one half hour before sunset and one half hour after sunrise.

*NMFS* means the National Marine Fisheries Service.

*Nonvessel fishery* means a commercial fishing operation that uses fixed or other gear without a vessel, such as gear used in set gillnet, trap, beach seine, weir, ranch, and pen fisheries.

*Observer* means an individual authorized by NMFS, or a designated contractor, to record information on marine mammal interactions, fishing operations, marine mammal life history information, and other scientific data, and collect biological specimens during commercial fishing activities.

*Operator*, with respect to any vessel, means the master, captain, or other individual in charge of that vessel.

*Potential biological removal level* means 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 optimum sustainable population. The potential biological removal level is the product of the following factors:

(1) The minimum population estimate of the stock;

(2) One-half the maximum theoretical or estimated net productivity rate of the stock at a small population size; and

(3) A recovery factor of between 0.1 and 1.0.

*Qualified individual* means an individual ascertained by NMFS to be reasonably able, though training or experience, to identify a right whale. Such individuals include, but are not limited to, NMFS staff, U.S. Coast Guard and Navy personnel trained in whale identification, scientific research survey personnel, whale watch operators and naturalists, and mariners trained in whale species identification through disentanglement training or some other training program deemed adequate by NMFS.

*Regional Fishery Management Council* means a regional fishery management council established under section 302 of the Magnuson Fishery Conservation and Management Act.

*Reliable report* means a credible right whale sighting report based upon which a DAM zone would be triggered.

*Seine* means a net that fishes vertically in the water, is pulled by hand or by power, and captures fish by encirclement and confining fish within itself or against another net, the shore or bank as a result of net design, construction, mesh size, webbing diameter, or method in which it is used. In some regions, the net is typically constructed with a capture bag in the center of the net which concentrates the fish as the net is closed.

*Serious injury* means any injury that will likely result in mortality.

*Sink gillnet* or *stab net* means any gillnet, anchored or otherwise, that is designed to be, or is fished on or near the bottom in the lower third of the water column.

*Sinking line* means, for both groundlines and buoy lines, line that has a specific gravity greater than or equal to 1.030, and, for groundlines only, does not float at any point in the water column.

*Small mesh gillnet* means a gillnet constructed with a mesh size of greater than 5 inches (12.7 cm) to less than 7 inches (17.78 cm).

*Spotter plane* means a plane that is deployed for the purpose of locating

schools of target fish for a fishing vessel that intends to set fishing gear on them.

*Stowed* means traps/pots and gillnets that are unavailable for immediate use and further, all gillnets are stored in accordance with the following:

(1) All nets are covered with canvas or other similar material and lashed or otherwise securely fastened to the deck, rail, or drum, and all buoys larger than 6 inches (15.24 cm) in diameter, high flyers, and anchors are disconnected; and

(2) Any other method of stowage authorized in writing by the Regional Administrator and subsequently published in the FEDERAL REGISTER.

*Strategic stock* means a marine mammal stock:

(1) For which the level of direct human-caused mortality exceeds the potential biological removal level;

(2) Which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the Endangered Species Act of 1973 within the foreseeable future;

(3) Which is listed as a threatened species or endangered species under the Endangered Species Act of 1973; or

(4) Which is designated as depleted under the Marine Mammal Protection Act of 1972, as amended.

*Sunrise* means the time of sunrise as determined for the date and location in The Nautical Almanac, prepared by the U.S. Naval Observatory.

*Sunset* means the time of sunset as determined for the date and location in The Nautical Almanac, prepared by the U.S. Naval Observatory.

*Take Reduction Plan* means a plan developed to reduce the incidental mortality and serious injury of marine mammals during commercial fishing operations in accordance with section 118 of the Marine Mammal Protection Act of 1972, as amended.

*Take Reduction Team* means a team established to recommend methods of reducing the incidental mortality and serious injury of marine mammals due to commercial fishing operations, in accordance with section 118 of the Marine Mammal Protection Act of 1972, as amended.

*Tended gear or tend* means fishing gear that is physically attached to a vessel in a way that is capable of harvesting fish, or to fish with gear attached to the vessel.

*Tie-down* refers to twine used between the floatline and the lead line as a way to create a pocket or bag of netting to trap fish alive.

*Tie loops* means the loops on a gillnet panel used to connect net panels to the buoy line, groundline, bridle or each other.

*Trap/Pot* means any structure or other device, other than a net or longline, that is placed, or designed to be placed, on the ocean bottom and is designed for or is capable of, catching species including but not limited to lobster, crab (red, Jonah, rock, and blue), hagfish, finfish (black sea bass, scup, tautog, cod, haddock, pollock, redfish (ocean perch), and white hake), conch/whelk, and shrimp.

*Trap/pot trawl* means two or more trap/pots attached to a single groundline.

*Up and down line* means the line that connects the float-line and lead-line at the end of each gillnet net panel.

*U.S. waters* means both state and Federal waters to the outer boundaries of the U.S. exclusive economic zone along the east coast of the United States from the Canadian/U.S. border southward to a line extending eastward from the southernmost tip of Florida on the Florida shore.

*Vessel owner or operator* means the owner or operator of:

(1) A fishing vessel that engages in a commercial fishing operation; or

(2) Fixed or other commercial fishing gear that is used in a nonvessel fishery.

*Vessel of the United States* has the same meaning as in section 3 of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1802).

*Weak link* means a breakable component of gear that will part when subject to a certain tension load.

[60 FR 45100, Aug. 30, 1995, as amended at 62 FR 39183, July 22, 1997; 63 FR 66487, Dec. 2, 1998; 64 FR 7551, Feb. 16, 1999; 64 FR 9086, Feb. 24, 1999; 65 FR 80377, Dec. 21, 2000; 67 FR 1141, Jan. 9, 2002; 67 FR 1313, Jan. 10, 2002; 69 FR 6584, Feb. 11, 2004; 69 FR 43345, July 20, 2004; 71 FR 24796, Apr. 26, 2006; 72 FR 34642, June 25, 2007; 72 FR 57180, Oct. 5, 2007; 73 FR 51241, Oct. 2, 2008; 75 FR 7396, Feb. 19, 2010]

**§ 229.3 Prohibitions.**

(a) It is prohibited to take any marine mammal incidental to commercial fishing operations except as otherwise provided in part 216 of this chapter or in this part 229.

(b) It is prohibited to assault, harm, harass (including sexually harass), oppose, impede, intimidate, impair, or in any way influence or interfere with an observer, or attempt the same. This prohibition includes, but is not limited to, any action that interferes with an observer's responsibilities, or that creates an intimidating, hostile, or offensive environment.

(c) It is prohibited to provide false information when registering for an Authorization Certificate, applying for renewal of the Authorization Certificate, reporting the injury or mortality of any marine mammal, or providing information to any observer.

(d) It is prohibited to tamper with or destroy observer equipment in any way.

(e) It is prohibited to retain any marine mammal incidentally taken in commercial fishing operations unless authorized by NMFS personnel, by designated contractors or an official observer, or by a scientific research permit that is in the possession of the vessel operator.

(f) It is prohibited to intentionally lethally take any marine mammal in the course of commercial fishing operations unless imminently necessary in self-defense or to save the life of a person in immediate danger, and such taking is reported in accordance with the requirements of § 229.6.

(g) It is prohibited to violate any regulation in this part or any provision of section 118 of the Act.

(h) It is prohibited to fish with or possess trap/pot gear in the areas and during the times specified in § 229.32 (c)(2) through (c)(9) unless the trap/pot gear complies with the marking requirements, closures, modifications, and restrictions specified in § 229.32(b)(2)(ii), (b)(2)(iii), and (c)(1) through (c)(9), or unless the gear is stowed as specified in § 229.2.

(i) It is prohibited to fish with or possess anchored gillnet gear in the areas and during the times specified in § 229.32(d)(2) through (d)(7) unless that gillnet gear complies with the marking requirements, closures, modifications, and restrictions specified in § 229.32(b)(2)(ii), (b)(2)(iii), and (d)(1) through (d)(7), or unless the gear is stowed as specified in § 229.2.

(j) It is prohibited to fish with or possess drift gillnet gear in the areas and during the times specified in § 229.32(e)(1) through (e)(6) unless the drift gillnet gear complies with the marking requirements, closures, modifications, and restrictions specified in § 229.32(b)(2)(ii), (b)(2)(iii), and (e)(1) through (e)(6), or unless the gear is stowed as specified in § 229.2.

(k) It is prohibited to fish with or possess gillnet gear in the areas and during the times specified in § 229.32(f)(1) and (g)(1) unless the gillnet gear complies with the marking requirements, closures, modifications, and restrictions specified in § 229.32(b)(2)(ii), (b)(2)(iii), (f)(2)(ii), (f)(2)(iv), (f)(2)(v), and (g)(3), or for (g)(3) unless the gear is stowed as specified in § 229.2.

(l) It is prohibited to fish with or possess shark gillnet gear (i.e. gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh) in the areas and during the times specified in § 229.32(f)(1), (g)(1) and (h)(1) unless the gear complies with the marking requirements, closures, modifications, and restrictions specified in § 229.32(b)(2)(i), (b)(2)(iii), (f)(2)(ii), (f)(2)(iii), (f)(2)(v), (g)(2), and (h)(2), or for the gear marking requirements for (h)(2) unless the gear is stowed as specified in § 229.2.

(m) It is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the areas and for the times specified in § 229.33(a)(1), (a)(3), (a)(6), and (a)(8). This prohibition also applies to areas where pingers are required, unless the vessel owner or operator complies with the pinger provisions specified in § 229.33 (a)(2) through (a)(5) and (a)(7). This prohibition does not apply to vessels fishing with a single pelagic gillnet (as described and used as set forth in § 648.81(f)(2)(ii) of this title).

(n) It is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove gillnet gear from the areas and for the times as specified in § 229.34 (b)(1)(i), (b)(2)(i), (b)(3)(i), or (b)(4)(i).

(o) It is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh or small mesh gillnet gear from the areas and for the times specified in § 229.34(b) unless the gear complies with the specified gear restrictions set forth in the provisions of paragraphs (b)(1)(ii) or (iii), (b)(2)(ii) or (iii), (b)(3)(ii) or (iii), or (b)(4)(ii) or (iii) of § 229.34.

(p) It is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies in areas where pingers are required, as specified under § 229.33 (a)(2) through (a)(5) and (a)(7), unless the operator on board the vessel during fishing operations possesses and retains on board the vessel a valid pinger training authorization issued by NMFS as specified under § 229.33(c).

(q)— (r) [Reserved]

(s) It is prohibited to fish with, or possess on board a vessel unless stowed, or fail to remove, any gillnet gear from the areas specified in § 229.35(c) unless the gear complies with the specified restrictions set forth in § 229.35(d).

(t) It is prohibited to deploy or fish with pelagic longline gear in the Mid-Atlantic Bight unless the vessel:

(1) Complies with the placard posting requirement specified in § 229.36(c); and

(2) Complies with the gear restrictions specified in § 229.36(e).

(u) It is prohibited to deploy or fish with pelagic longline gear in the Cape Hatteras Special Research Area unless the vessel is in compliance with the observer and research requirements specified in § 229.36(d).

[60 FR 45100, Aug. 30, 1995, as amended at 62 FR 39184, July 22, 1997; 63 FR 66487, Dec. 2, 1998; 64 FR 7552, Feb. 16, 1999; 64 FR 9086, Feb. 24, 1999; 65 FR 80377, Dec. 21, 2000; 67 FR 1313, Jan. 10, 2002; 67 FR 59477, Sept. 23, 2002; 71 FR 24796, Apr. 26, 2006; 72 FR 57180, Oct. 5, 2007; 74 FR 23357, May 19, 2009; 75 FR 7396, Feb. 19, 2010]

### § 229.4 Requirements for Category I and II fisheries.

(a) *General.* (1) For a vessel owner or crew members to lawfully incidentally take marine mammals in the course of a commercial fishing operation in a Category I or II fishery, the owner or authorized representative of a fishing vessel or nonvessel fishing gear must have in possession a valid Certificate of Authorization. The owner of a fishing vessel or nonvessel fishing gear is responsible for obtaining a Certificate of Authorization.

(2) The granting and administration of Authorization Certificates under this part will be integrated and coordinated with existing fishery license, registration, or permit systems and related programs wherever possible. These programs may include, but are not limited to, state or interjurisdictional fisheries programs. If the administration of Authorization Certificates is integrated into a program, NMFS will publish a notice in the FEDERAL REGISTER announcing the integrated program and summarizing how an owner or authorized representative of a fishing vessel or non-fishing gear may register under that program or how registration will be achieved if no action is required on the part of the affected fisher. NMFS will make additional efforts to contact participants in the affected fishery via other appropriate means of notification.

(b) *Registration.* (1) The owner of a vessel, or for nonvessel gear fisheries, the owner of gear, who participates in a Category I or II fishery is required to be registered for a Certificate of Authorization.

(2) Unless a notice is published in the FEDERAL REGISTER announcing an integrated registration program, the owner of a vessel, or for nonvessel fishery, the owner of the gear must register for and receive an Authorization Certificate.

To register, owners must submit the following information using the format specified by NMFS:

(i) Name, address, and phone number of owner.

(ii) Name, address, and phone number of operator, if different from owner, unless the name of the operator is not known or has not been established at the time the registration is submitted.

(iii) For a vessel fishery, vessel name, length, home port; U.S. Coast Guard documentation number or state registration number, and if applicable; state commercial vessel license number and for a nonvessel fishery, a description of the gear and state commercial license number, if applicable.

(iv) A list of all Category I and II fisheries in which the fisher may actively engage during the calendar year.

(v) A certification signed and dated by the owner of an authorized representative of the owner as follows: ''I hereby certify that I am the owner of the vessel, that I have reviewed all information contained on this document, and that it is true and complete to the best of my knowledge.''

(vi) A check or money order made payable to NMFS in the amount specified in the notice of the final List of Fisheries must accompany each registration submitted to NMFS. The amount of this fee will be based on recovering the administrative costs incurred in granting an authorization. The Assistant Administrator may waive the fee requirement for good cause upon the recommendation of the Regional Director.

(3) If a notice is published in the FEDERAL REGISTER announcing an integrated registration program, the owner of a vessel, or for nonvessel fishery, the owner of the gear may register by following the directions provided in that notice. If a person receives a registration to which he or she is not entitled or if the registration contains incorrect, inaccurate or incomplete information, the person shall notify NMFS within 10 days following receipt. If a fisher participating in a Category I or II fishery who expects to receive automatic registration does not receive that registration within the time specified in the notice announcing the integrated registration program, the person shall notify NMFS as directed in the notice or may apply for registration by submitting the information required under paragraph (b)(1)(i) through (b)(1)(vi) of this section.

(c) *Address*. Unless the granting and administration of authorizations under this part 229 is integrated and coordinated with existing fishery licenses, registrations, or related programs pursuant to paragraph (a) of this section, requests for registration forms and completed registration and renewal forms should be sent to the NMFS Regional Offices as follows:

(1) Alaska Region, NMFS, P.O. Box 21668, 709 West 9th Street, Juneau, AK 99802; telephone: 907–586-7235;

(2) Northwest Region, NMFS, 7600 Sand Point Way NE., Seattle, WA 98115-0070; telephone: 206–526-4353;

(3) Southwest Region, NMFS, 501 West Ocean Blvd., Suite 4200, Long Beach, CA 90802–4213; telephone: 562–980–4001;

(4) Northeast Region, NMFS, 1 Blackburn Drive, Gloucester, MA 01930; telephone: 978–281–9254; or

(5) Southeast Region, NMFS, 9721 Executive Center Drive North, St. Petersburg, FL 33702; telephone: 727–570–5312.

(d) *Issuance*. (1) For integrated fisheries, an Authorization Certificate or other proof of registration will be issued annually to each fisher registered for that fishery.

(2) For all other fisheries (i.e., nonintegrated fisheries), NMFS will issue an Authorization Certificate and, if necessary, a decal to an owner or authorized representative who:

(i) Submits a completed registration form and the required fee.

(ii) Has complied with the requirements of this section and §§ 229.6 and 229.7

(iii) Has submitted updated registration or renewal registration which includes a statement (yes/no) whether any marine mammals were killed or injured during the current or previous calendar year.

(3) If a person receives a renewed Authorization Certificate or a decal to which he or she is not entitled, the person shall notify NMFS within 10 days following receipt.

(e) *Authorization Certificate and decal requirements*. (1) If a decal has been

issued under the conditions specified in paragraph (e)(2) of this section, the decal must be attached to the vessel on the port side of the cabin or, in the absence of a cabin, on the forward port side of the hull, and must be free of obstruction and in good condition. The decal must be attached to the Authorization Certificate for nonvessel fisheries.

(2) The Authorization Certificate, or a copy, must be on board the vessel while it is operating in a Category I or II fishery, or, in the case of nonvessel fisheries, the Authorization Certificate with decal attached, or copy must be in the possession of the person in charge of the fishing operation. The Authorization Certificate, or copy, must be made available upon request to any state or Federal enforcement agent authorized to enforce the Act, any designated agent of NMFS, or any contractor providing observer services to NMFS.

(3) Authorization Certificates and decals are not transferable. In the event of the sale or change in ownership of the vessel, the Authorization Certificate is void and the new owner must register for an Authorization Certificate and decal.

(4) An Authorization Certificate holder must notify the issuing office in writing:

(i) If the vessel or nonvessel fishing gear will engage in any Category I or II fishery not listed on the initial registration form at least 30 days prior to engaging in that fishery; and,

(ii) If there are any changes in the mailing address or vessel ownership within 30 days of such change.

(f) *Reporting*. Any Authorization Certificate holders must comply with the reporting requirements specified under § 229.6.

(g) *Disposition of marine mammals*. Any marine mammal incidentally taken must be immediately returned to the sea with a minimum of further injury, unless directed otherwise by NMFS personnel, a designated contractor or an official observer, or authorized otherwise by a scientific research permit that is in the possession of the operator.

(h) *Monitoring*. Authorization Certificate holders must comply with the observer or other monitoring requirements specified under § 229.7.

(i) *Deterrence*. When necessary to deter a marine mammal from damaging fishing gear, catch, or other private property, or from endangering personal safety, vessel owners and crew members engaged in a Category I or II fishery must comply with all deterrence provisions set forth in the Act and all guidelines and prohibitions published thereunder.

(j) *Self defense*. When imminently necessary in self-defense or to save the life of a person in immediate danger, a marine mammal may be lethally taken if such taking is reported to NMFS in accordance with the requirements of § 229.6.

(k) *Take reduction plans and emergency regulations*. Authorization Certificate holders must comply with any applicable take reduction plans and emergency regulations.

(l) *Expiration*. Authorization Certificates expire at the end of each calendar year.

[60 FR 45100, Aug. 30, 1995, as amended at 62 FR 46, Jan. 2, 1997; 64 FR 9086, Feb. 24, 1999]

### § 229.5 Requirements for Category III fisheries.

(a) *General*. Vessel owners and crew members of such vessels engaged only in Category III fisheries may incidentally take marine mammals without registering for or receiving an Authorization Certificate.

(b) *Reporting*. Vessel owners engaged in a Category III fishery must comply with the reporting requirements specified in § 229.6.

(c) *Disposition of marine mammals*. Any marine mammal incidentally taken must be immediately returned to the sea with a minimum of further injury unless directed otherwise by NMFS personnel, a designated contractor, or an official observer, or authorized otherwise by a scientific research permit in the possession of the operator.

(d) *Monitoring*. Vessel owners engaged in a Category III fishery must comply with the observer requirements specified under § 229.7(d).

(e) *Deterrence*. When necessary to deter a marine mammal from damaging fishing gear, catch, or other private property, or from endangering

personal safety, vessel owners and crew members engaged in commercial fishing operations must comply with all deterrence provisions set forth in the Act and all guidelines and prohibitions published thereunder.

(f) *Self-defense*. When imminently necessary in self-defense or to save the life of a person in immediate danger, a marine mammal may be lethally taken if such taking is reported to NMFS in accordance with the requirements of § 229.6.

(g) *Emergency regulations*. Vessel owners engaged in a Category III fishery must comply with any applicable emergency regulations.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9087, Feb. 24, 1999]

### § 229.6 Reporting requirements.

(a) Vessel owners or operators engaged in any commercial fishery must report all incidental mortality and injury of marine mammals in the course of commercial fishing operations to the Assistant Administrator, or appropriate Regional Office, by mail or other means, such as fax or overnight mail specified by the Assistant Administrator. Reports must be sent within 48 hours after the end of each fishing trip during which the incidental mortality or injury occurred, or, for nonvessel fisheries, within 48 hours of an occurrence of an incidental mortality or injury. Reports must be submitted on a standard postage-paid form as provided by the Assistant Administrator. The vessel owner or operator must provide the following information on this form:

(1) The vessel name, and Federal, state, or tribal registration numbers of the registered vessel;

(2) The name and address of the vessel owner or operator;

(3) The name and description of the fishery, including gear type and target species; and

(4) The species and number of each marine mammal incidentally killed or injured, and the date, time, and approximate geographic location of such occurrence. A description of the animal(s) killed or injured must be provided if the species is unknown.

(b) Participants in nonvessel fisheries must provide all of the information in paragraphs (a)(1) through (a)(4) of this section except, instead of providing the vessel name and vessel registration number, participants in nonvessel fisheries must provide the gear permit number.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9087, Feb. 24, 1999]

### § 229.7 Monitoring of incidental mortalities and serious injuries.

(a) *Purpose*. The Assistant Administrator will establish a program to monitor incidental mortality and serious injury of marine mammals during the course of commercial fishing operations in order to:

(1) Obtain statistically reliable estimates of incidental mortality and serious injury;

(2) Determine the reliability of reports of incidental mortality and injury under § 229.6; and

(3) Identify changes in fishing methods or technology that may increase or decrease incidental mortality and serious injury.

(b) *Observer program*. Pursuant to paragraph (a) of this section, the Assistant Administrator may observe Category I and II vessels as necessary. Observers may, among other tasks:

(1) Record incidental mortality and injury, and bycatch of other nontarget species;

(2) Record numbers of marine mammals sighted; and

(3) Perform other scientific investigations, which may include, but are not limited to, sampling and photographing incidental mortalities and serious injuries.

(c) *Observer requirements for participants in Category I and II fisheries*. (1) If requested by NMFS or by a designated contractor providing observer services to NMFS, a vessel owner/operator must take aboard an observer to accompany the vessel on fishing trips.

(2) After being notified by NMFS, or by a designated contractor providing observer services to NMFS, that the vessel is required to carry an observer, the vessel owner/operator must comply with the notification by providing information requested within the specified time on scheduled or anticipated fishing trips.

(3) NMFS, or a designated contractor providing observer services to NMFS,

may waive the observer requirement based on a finding that the facilities for housing the observer or for carrying out observer functions are so inadequate or unsafe that the health or safety of the observer or the safe operation of the vessel would be jeopardized.

(4) The vessel owner/operator and crew must cooperate with the observer in the performance of the observer's duties including:

(i) Providing, at no cost to the observer, the United States government, or the designated observer provider, food, toilet, bathing, sleeping accommodations, and other amenities that are equivalent to those provided to the crew, unless other arrangements are approved in advance by the Regional Administrator;

(ii) Allowing for the embarking and debarking of the observer as specified by NMFS personnel or designated contractors. The operator of a vessel must ensure that transfers of observers at sea are accomplished in a safe manner, via small boat or raft, during daylight hours if feasible, as weather and sea conditions allow, and with the agreement of the observer involved;

(iii) Allowing the observer access to all areas of the vessel necessary to conduct observer duties;

(iv) Allowing the observer access to communications equipment and navigation equipment, when available on the vessel, as necessary to perform observer duties;

(v) Providing true vessel locations by latitude and longitude, accurate to the minute, or by loran coordinates, upon request by the observer;

(vi) Sampling, retaining, and storing of marine mammal specimens, other protected species specimens, or target or non-target catch specimens, upon request by NMFS personnel, designated contractors, or the observer, if adequate facilities are available and if feasible;

(vii) Notifying the observer in a timely fashion of when all commercial fishing operations are to begin and end;

(viii) Not impairing or in any way interfering with the research or observations being carried out; and

(ix) Complying with other guidelines or regulations that NMFS may develop to ensure the effective deployment and use of observers.

(5) Marine mammals or other specimens identified in paragraph (c)(4)(vi) of this section, which are readily accessible to crew members, must be brought on board the vessel and retained for the purposes of scientific research if feasible and requested by NMFS personnel, designated contractors, or the observer. Specimens so collected and retained must, upon request by NMFS personnel, designated contractors, or the observer, be retained in cold storage on board the vessel, if feasible, until removed at the request of NMFS personnel, designated contractors, or the observer, retrieved by authorized personnel of NMFS, or released by the observer for return to the ocean. These biological specimens may be transported on board the vessel during the fishing trip and back to port under this authorization.

(d) *Observer requirements for participants in Category III fisheries.* (1) The Assistant Administrator may place observers on Category III vessels if the Assistant Administrator:

(i) Believes that the incidental mortality and serious injury of marine mammals from such fishery may be contributing to the immediate and significant adverse impact on a species or stock listed as a threatened species or endangered species under the Endangered Species Act of 1973 (16 U.S.C. 1531 *et seq.*); and

(ii) Has complied with § 229.9(a)(3)(i) and (ii); or

(iii) Has the consent of the vessel owner.

(2) If an observer is placed on a Category III vessel, the vessel owner and/or operator must comply with the requirements of § 229.7(c).

(e) *Alternative observer program.* The Assistant Administrator may establish an alternative observer program to provide statistically reliable information on the species and number of marine mammals incidentally taken in the course of commercial fishing operations. The alternative observer program may include direct observation of fishing activities from vessels, airplanes, or points on shore.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9087, Feb. 24, 1999]

### § 229.8 Publication of List of Fisheries.

(a) The Assistant Administrator will publish in the FEDERAL REGISTER a proposed revised List of Fisheries on or about July 1 of each year for the purpose of receiving public comment. Each year, on or about October 1, the Assistant Administrator will publish a final revised List of Fisheries, which will become effective January 1 of the next calendar year.

(b) The proposed and final revised List of Fisheries will:

(1) Categorize each commercial fishery based on the definitions of Category I, II, and III fisheries set forth in § 229.2; and

(2) List the marine mammals that have been incidentally injured or killed by commercial fishing operations and the estimated number of vessels or persons involved in each commercial fishery.

(c) The Assistant Administrator may publish a revised List of Fisheries at other times, after notification and opportunity for public comment.

(d) The revised final List of Fisheries will become effective no sooner than 30 days after publication in the FEDERAL REGISTER.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9087, Feb. 24, 1999]

### § 229.9 Emergency regulations.

(a) If the Assistant Administrator finds that the incidental mortality or serious injury of marine mammals from commercial fisheries is having, or is likely to have, an immediate and significant adverse impact on a stock or species, the Assistant Administrator will:

(1) In the case of a stock or species for which a take reduction plan is in effect—

(i) Prescribe emergency regulations that, consistent with such plan to the maximum extent practicable, reduce incidental mortality and serious injury in that fishery; and

(ii) Approve and implement on an expedited basis, any amendments to such plan that are recommended by the Take Reduction Team to address such adverse impact;

(2) In the case of a stock or species for which a take reduction plan is being developed—

(i) Prescribe emergency regulations to reduce such incidental mortality and serious injury in that fishery; and

(ii) Approve and implement, on an expedited basis, such plan, which will provide methods to address such adverse impact if still necessary;

(3) In the case of a stock or species for which a take reduction plan does not exist and is not being developed, or in the case of a Category III fishery that the Assistant Administrator believes may be contributing to such adverse impact,

(i) Prescribe emergency regulations to reduce such incidental mortality and serious injury in that fishery, to the extent necessary to mitigate such adverse impact;

(ii) Immediately review the stock assessment for such stock or species and the classification of such commercial fishery under this section to determine if a take reduction team should be established and if recategorization of the fishery is warranted; and

(iii) Where necessary to address such adverse impact on a species or stock listed as a threatened species or endangered species under the Endangered Species Act (16 U.S.C. 1531 *et seq.*), place observers on vessels in a Category III fishery if the Assistant Administrator has reason to believe such vessels may be causing the incidental mortality and serious injury to marine mammals from such stock.

(b) Prior to taking any action under § 229.9(a)(1) through (3), the Assistant Administrator will consult with the Marine Mammal Commission, all appropriate Regional Fishery Management Councils, state fishery managers, and the appropriate take reduction team, if established.

(c) Any emergency regulations issued under this section:

(1) Shall be published in the FEDERAL REGISTER and will remain in effect for no more than 180 days or until the end of the applicable commercial fishing season, whichever is earlier, except as provided in paragraph (d) of this section; and

(2) May be terminated by notification in the FEDERAL REGISTER at an earlier

date if the Assistant Administrator determines that the reasons for the emergency regulations no longer exist.

(d) If the Assistant Administrator finds that incidental mortality and serious injury of marine mammals in a commercial fishery is continuing to have an immediate and significant adverse impact on a stock or species, the Assistant Administrator may extend the emergency regulations for an additional period of not more than 90 days or until reasons for the emergency regulations no longer exist, whichever is earlier.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9087, Feb. 24, 1999]

### § 229.10 Penalties.

(a) Except as provided for in paragraphs (b) and (c) of this section, any person who violates any regulation under this part or any provision of section 118 of the MMPA shall be subject to all penalties set forth in the Act.

(b) The owner or master of a vessel that fails to comply with a take reduction plan shall be subject to the penalties of sections 105 and 107 of the Act, and may be subject to the penalties of section 106 of the Act.

(c) The owner of a vessel engaged in a Category I or II fishery who fails to ensure that a decal, or other physical evidence of such authorization issued by NMFS, is displayed on the vessel or is in possession of the operator of the vessel shall be subject to a penalty of not more than $100.

(d) Failure to comply with take reduction plans or emergency regulations issued under this part may result in suspension or revocation of an Authorization Certificate, and failure to comply with a take reduction plan or emergency regulation is also subject to the penalties of sections 105 and 107 of the Act, and may be subject to the penalties of section 106 of the Act.

(e) For fishers operating in Category I or II fisheries, failure to report all incidental injuries and mortalities within 48 hours of the end of each fishing trip, or failure to comply with requirements to carry an observer, will subject such persons to the penalties of sections 105 and 107 and may subject them to the penalties of section 106 of the Act, which will result in suspension, revocation, or denial of an Authorization Certificate until such requirements have been fulfilled.

(f) For fishers operating in Category III fisheries, failure to report all incidental injuries and mortalities within 48 hours of the end of each fishing trip will subject such persons to the penalties of sections 105 and 107, and may subject them to section 106, of the Act.

(g) *Suspension, revocation or denial of Authorization Certificates.* (1) Until the Authorization Certificate holder complies with the regulations under this part, the Assistant Administrator shall suspend or revoke an Authorization Certificate or deny an annual renewal of an Authorization Certificate in accordance with the provisions in 15 CFR part 904 if the Authorization Certificate holder fails to report all incidental mortality and injury of marine mammals as required under § 229.6; or fails to take aboard an observer if requested by NMFS or its designated contractors.

(2) The Assistant Administrator may suspend or revoke an Authorization Certificate or deny an annual renewal of an Authorization Certificate in accordance with the provisions in 15 CFR part 904 if the Authorization Certificate holder fails to comply with any applicable take reduction plan, take reduction regulations, or emergency regulations developed under this subpart or subparts B and C of this part or if the Authorization Certificate holder fails to comply with other requirements of these regulations;

(3) A suspended Authorization Certificate may be reinstated at any time at the discretion of the Assistant Administrator provided the Assistant Administrator has determined that the reasons for the suspension no longer apply or corrective actions have been taken.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9088, Feb. 24, 1999]

### § 229.11 Confidential fisheries data.

(a) Proprietary information collected under this part is confidential and includes information, the unauthorized disclosure of which could be prejudicial or harmful, such as information or data that are identifiable with an individual fisher. Proprietary information

obtained under part 229 will not be disclosed, in accordance with NOAA Administrative Order 216–100, except:

(1) To Federal employees whose duties require access to such information;

(2) To state employees under an agreement with NMFS that prevents public disclosure of the identity or business of any person;

(3) When required by court order; or

(4) In the case of scientific information involving fisheries, to employees of Regional Fishery Management Councils who are responsible for fishery management plan development and monitoring.

(5) To other individuals or organizations authorized by the Assistant Administrator to analyze this information, so long as the confidentiality of individual fishers is not revealed.

(b) Information will be made available to the public in aggregate, summary, or other such form that does not disclose the identity or business of any person in accordance with NOAA Administrative Order 216–100. Aggregate or summary form means data structured so that the identity of the submitter cannot be determined either from the present release of the data or in combination with other releases.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9088, Feb. 24, 1999]

### § 229.12 Consultation with the Secretary of the Interior.

The Assistant Administrator will consult with the Secretary of the Interior prior to taking actions or making determinations under this part that affect or relate to species or population stocks of marine mammals for which the Secretary of the Interior is responsible under the Act.

## Subpart B—Takes of Endangered and Threatened Marine Mammals

### § 229.20 Issuance of permits.

(a) *Determinations*. During a period of up to 3 consecutive years, NMFS will allow the incidental, but not the intentional, taking by persons using vessels of the United States or foreign vessels that have valid fishing permits issued by the Assistant Administrator in accordance with section 204(b) of the Magnuson Fishery Conservation and Management Act (16 U.S.C. 1824(b)), while engaging in commercial fishing operations, of marine mammals from a species or stock designated as depleted because of its listing as an endangered species or threatened species under the Endangered Species Act of 1973 if the Assistant Administrator determines that:

(1) The incidental mortality and serious injury from commercial fisheries will have a negligible impact on such species or stock;

(2) A recovery plan has been developed or is being developed for such species or stock pursuant to the Endangered Species Act of 1973; and

(3) Where required under regulations in subpart A of this part:

(i) A monitoring program has been established under § 229.7;

(ii) Vessels engaged in such fisheries are registered in accordance with § 229.4; and

(iii) A take reduction plan has been developed or is being developed for such species or stock in accordance with regulations at subpart C of this part.

(b) *Procedures for making determinations*. In making any of the determinations listed in paragraph (a) of this section, the Assistant Administrator will publish an announcement in the FEDERAL REGISTER of fisheries having takes of marine mammals listed under the Endangered Species Act, including a summary of available information regarding the fisheries interactions with listed species. Any interested party may, within 45 days of such publication, submit to the Assistant Administrator written data or views with respect to the listed fisheries. As soon as practicable after the end of the 45 days following publication, NMFS will publish in the FEDERAL REGISTER a list of the fisheries for which the determinations listed in paragraph (a) of this section have been made. This publication will set forth a summary of the information used to make the determinations.

(c) *Issuance of authorization*. The Assistant Administrator will issue appropriate permits for vessels in fisheries that are required to register under § 229.4 and for which determinations

under the procedures of paragraph (b) of this section can be made.

(d) *Category III fisheries.* Vessel owners engaged only in Category III fisheries for which determinations are made under the procedures of paragraph (b) of this section will not be subject to the penalties of this Act for the incidental taking of marine mammals to which this subpart applies, as long as the vessel owner or operator of such vessel reports any incidental mortality or injury of such marine mammals in accordance with the requirements of § 229.6.

(e) *Emergency authority.* During the course of the commercial fishing season, if the Assistant Administrator determines that the level of incidental mortality or serious injury from commercial fisheries for which such a determination was made under this section has resulted or is likely to result in an impact that is more than negligible on the endangered or threatened species or stock, the Assistant Administrator will use the emergency authority of § 229.9 to protect such species or stock, and may modify any permit granted under this paragraph as necessary.

(f) *Suspension, revocation, modification and amendment.* The Assistant Administrator may, pursuant to the provisions of 15 CFR part 904, suspend or revoke a permit granted under this section if the Assistant Administrator determines that the conditions or limitations set forth in such permit are not being complied with. The Assistant Administrator may amend or modify, after notification and opportunity for public comment, the list of fisheries published in accordance with paragraph (b) of this section whenever the Assistant Administrator determines there has been a significant change in the information or conditions used to determine such a list.

(g) *Southern sea otters.* This subpart does not apply to the taking of Southern (California) sea otters.

[60 FR 45100, Aug. 30, 1995, as amended at 64 FR 9088, Feb. 24, 1999]

## Subpart C—Take Reduction Plan Regulations and Emergency Regulations

### § 229.30 Basis.

Section 118(f)(9) of the Act authorizes the Director, NMFS, to impose regulations governing commercial fishing operations, when necessary, to implement a take reduction plan in order to protect or restore a marine mammal stock or species covered by such a plan.

[64 FR 9088, Feb. 24, 1999]

### § 229.31 Pacific Offshore Cetacean Take Reduction Plan.

(a) *Purpose and scope.* The purpose of this section is to implement the Pacific Offshore Cetacean Take Reduction Plan. Paragraphs (b) through (d) of this section apply to all U.S. drift gillnet fishing vessels operating in waters seaward of the coast of California or Oregon, including adjacent high seas waters. For purposes of this section, the fishing season is defined as beginning May 1 and ending on January 31 of the following year.

(b) *Extenders.* An *extender* is a line that attaches a buoy (float) to a drift gillnet's floatline. The floatline is attached to the top of the drift gillnet. All extenders (buoy lines) must be at least 6 fathoms (36 ft; 10.9 m) in length during all sets. Accordingly, all floatlines must be fished at a minimum of 36 feet (10.9 m) below the surface of the water.

(c) *Pingers.* (1) For the purposes of this paragraph (c), a pinger is an acoustic deterrent device which, when immersed in water, broadcasts a 10 kHz (±2 kHz) sound at 132 dB (±4 dB) re 1 micropascal at 1 m, lasting 300 milliseconds (+15 milliseconds), and repeating every 4 seconds (+ .2 seconds); and remains operational to a water depth of at least 100 fathoms (600 ft or 182.88 m).

(2) While at sea, operators of drift gillnet vessels with gillnets onboard must carry enough pingers on the vessel to meet the requirements set forth under paragraphs (c)(3) through(6) of this section.

(3) *Floatline.* Pingers shall be attached within 30 ft (9.14 m) of the

floatline and spaced no more than 300 ft (91.44 m) apart.

(4) *Leadline*. Pingers shall be attached within 36 ft (10.97 m) of the leadline and spaced no more than 300 ft (91.44 m) apart.

(5) *Staggered Configuration*. Pingers attached within 30 ft (9.14 m) of the floatline and within 36 ft (10.97 m) of the leadline shall be staggered such that the horizontal distance between them is no more than 150 ft (45.5 m).

(6) Any materials used to weight pingers must not change its specifications set forth under paragraph (c)(1) of this section.

(7) The pingers must be operational and functioning at all times during deployment.

(8) If requested, NMFS may authorize the use of pingers with specifications or pinger configurations differing from those set forth in paragraphs (c)(1) and (c)(3) of this section for limited, experimental purposes within a single fishing season.

(d) *Skipper education workshops*. After notification from NMFS, vessel operators must attend a skipper education workshop before commencing fishing each fishing season. For the 1997/1998 fishing season, all vessel operators must have attended one skipper education workshop by October 30, 1997. NMFS may waive the requirement to attend these workshops by notice to all vessel operators.

[62 FR 51813, Oct. 3, 1997, as amended at 63 FR 27861, May 21, 1998; 64 FR 3432, Jan. 22, 1999]

### § 229.32 Atlantic large whale take reduction plan regulations.

(a)(1) *Purpose and scope*. The purpose of this section is to implement the Atlantic Large Whale Take Reduction Plan to reduce incidental mortality and serious injury of fin, humpback, and right whales in specific Category I and Category II commercial fisheries from Maine through Florida. The measures identified in the Atlantic Large Whale Take Reduction Plan are also intended to benefit minke whales, which are not designated as a strategic stock, but are known to be taken incidentally in gillnet and trap/pot fisheries. The gear types affected by this plan include gillnets (e.g., anchored, drift, and shark) and traps/pots.

(2) *Regulated waters*. The regulations in this section apply to all U.S. waters in the Atlantic except for the areas exempted in paragraph (a)(3) of this section.

(3) *Exempted waters*. (i) The regulations in this section do not apply to waters landward of the first bridge over any embayment, harbor, or inlet in Massachusetts.

(ii) The regulations in this section do not apply to waters landward of the 72 COLREGS demarcation lines (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by the National Oceanic and Atmospheric Administration (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80 with the exception of the COLREGS lines for Casco Bay (Maine), Portsmouth Harbor (New Hampshire), Gardiners Bay and Long Island Sound (New York), and the state of Massachusetts.

(iii) *Other exempted waters*. The regulations in this section do not apply to waters landward of the following lines:

Maine

A line connecting the following points (Quoddy Narrows/U.S.-Canada border to Odiornes Pt., Portsmouth, New Hampshire):

44°49.67′ N. lat., 66°57.77′ W. long. (R N ''2'', Quoddy Narrows)

44°48.64′ N. lat., 66°56.43′ W. long. (G ''1'' Whistle, West Quoddy Head)

44°47.36′ N. lat., 66°59.25′ W. long. (R N ''2'', Morton Ledge)

44°45.51′ N. lat., 67°02.87′ W. long. (R ''28M'' Whistle, Baileys Mistake)

44°37.70′ N. lat., 67°09.75′ W. long. (Obstruction, Southeast of Cutler)

44°27.77′ N. lat., 67°32.86′ W. long. (Freeman Rock, East of Great Wass Island)

44°25.74′ N. lat., 67°38.39′ W. long. (R ''2SR'' Bell, Seahorse Rock, West of Great Wass Island)

44°21.66′ N. lat., 67°51.78′′ W. long. (R N ''2'', Petit Manan Island)

44°19.08′ N. lat., 68°02.05′ W. long. (R ''2S'' Bell, Schoodic Island)

44°13.55′ N. lat., 68°10.71′ W. long. (R ''8BI'' Whistle, Baker Island)

44°08.36′ N. lat., 68°14.75′ W. long. (Southern Point, Great Duck Island)

43°59.36′ N. lat., 68°37.95′ W. long. (R ''2'' Bell, Roaring Bull Ledge, Isle Au Haut)
43°59.83′ N. lat., 68°50.06'' W. long. (R ''2A'' Bell, Old Horse Ledge)
43°56.72′ N. lat., 69°04.89′ W. long. (G ''5TB'' Bell, Two Bush Channel)
43°50.28′ N. lat., 69°18.86′ W. long. (R ''2 OM'' Whistle, Old Man Ledge)
43°48.96′ N. lat., 69°31.15′ W. long. (GR C ''PL'', Pemaquid Ledge)
43°43.64′ N. lat., 69°37.58′ W. long. (R ''2BR'' Bell, Bantam Rock)
43°41.44′ N. lat., 69°45.27′ W. long. (R ''20ML'' Bell, Mile Ledge)
43°36.04′ N. lat., 70°03.98′ W. long. (RG N ''BS'', Bulwark Shoal)
43°31.94′ N. lat., 70°08.68′ W. long. (G ''1'', East Hue and Cry)
43°27.63′ N. lat., 70°17.48′ W. long. (RW ''WI'' Whistle, Wood Island)
43°20.23′ N. lat., 70°23.64′ W. long. (RW ''CP'' Whistle, Cape Porpoise)
43°04.06′ N. lat., 70°36.70′ W. long. (R N ''2MR'', Murray Rock)
43°02.93′ N. lat., 70°41.47′ W. long. (R ''2KR'' Whistle, Kittery Point)
43°02.55′ N. lat., 70°43.33′ W. long. (Odiornes Pt., Portsmouth, New Hampshire)

New Hampshire

A line from 42°53.691′ N. lat., 70°48.516′ W. long. to 42°53.516′ N. lat., 70°48.748′ W. long. (Hampton Harbor)
A line from 42°59.986′ N. lat., 70°44.654′ W. long. to 42°59.956′ N., 70°44.737′ W. long. (Rye Harbor)

Rhode Island

A line from 41°22.441′ N. lat., 71°30.781′ W. long. to 41°22.447′ N. lat., 71°30.893′ W. long. (Pt. Judith Pond Inlet)
A line from 41°21.310′ N. lat., 71°38.300′ W. long. to 41°21.300′ N. lat., 71°38.330′ W. long. (Ninigret Pond Inlet)
A line from 41°19.875′ N. lat., 71°43.061′ W. long. to 41°19.879′ N. lat., 71°43.115′ W. long. (Quonochontaug Pond Inlet)
A line from 41°19.660′ N. lat., 71°45.750′ W. long. to 41°19.660′ N. lat., 71°45.780′ W. long. (Weekapaug Pond Inlet)

New York

A line that follows the territorial sea baseline through Block Island Sound (Watch Hill Point, RI, to Montauk Point, NY)

South Carolina

A line from 32°34.717′ N. lat., 80°08.565′ W. long. to 32°34.686′ N. lat., 80°08.642′ W. long. (Captain Sams Inlet)

(4) *Sinking groundline exemption*. The fisheries regulated under this section are exempt from the requirement to have groundlines composed of sinking line if their groundline is at a depth equal to or greater than 280 fathoms (1,680 ft or 512.1 m) (as shown on NOAA charts 13200 (Georges Bank and Nantucket Shoals, 1:400,000), 12300 (NY Approaches - Nantucket Shoals to Five Fathom Bank, 1:400,000), 12200 (Cape May to Cape Hatteras, 1:419,706), 11520 (Cape Hatteras to Charleston, 1:432,720), 11480 (Charleston Light to Cape Canaveral, 1:449,659) and 11460(Cape Canaveral to Key West, 1:466,940)).

(5) *Net panel weak link and anchoring exemption*. The anchored gillnet fisheries regulated under this section are exempt from the requirement to install weak links in the net panel and anchor each end of the net string if the floatline is at a depth equal to or greater than 280 fathoms (1,680 ft or 512.1 m) (as shown on NOAA charts 13200 (Georges Bank and Nantucket Shoals, 1:400,000), 12300 (NY Approaches—Nantucket Shoals to Five Fathom Bank, 1:400,000), 12200 (Cape May to Cape Hatteras, 1:419,706), 11520 (Cape Hatteras to Charleston, 1:432,720), 11480 (Charleston Light to Cape Canaveral, 1:449,659) and 11460(Cape Canaveral to Key West, 1:466,940)).

(b) *Gear marking requirements*. (1) Specified gear consists of trap/pot gear and gillnet gear set in specified areas.

(2) *Specified areas*. The following areas are specified for gear marking purposes: Northern Inshore State Trap/Pot Waters, Cape Cod Bay Restricted Area, Stellwagen Bank/Jeffreys Ledge Restricted Area, Northern Nearshore Trap/Pot Waters Area, Great South Channel Restricted Trap/Pot Area, Great South Channel Restricted Gillnet Area, Great South Channel Sliver Restricted Area, Southern Nearshore Trap/Pot Waters Area, Offshore Trap/Pot Waters Area, Other Northeast Gillnet Waters Area, Mid/South Atlantic Gillnet Waters Area, Other Southeast Gillnet Waters Area, Southeast

U.S. Restricted Area, and Southeast U.S. Monitoring Area.

(i) *Requirements for Shark Gillnet Gear in the Southeast U.S. Restricted Area S, Southeast U.S. Monitoring Area and Other Southeast Gillnet Waters*—(A) *Color code.* Shark gillnet gear (i.e., gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh) in the Southeast U.S. Restricted Area S, Southeast U.S. Monitoring Area, and Other Southeast Gillnet Waters must be marked with the appropriate color code to designate gear types and areas as follows:

(1) *Gear type code.* Shark gillnet gear must be marked with a green marking.

(*2*) *Area code.* Shark gillnet gear set in the Southeast U.S. Restricted Area S, Southeast U.S. Monitoring Area, and Other Southeast Gillnet Waters must be marked with a blue marking.

(B) *Markings.* All specified gear in specified areas must be marked with two color codes, one designating the gear type, the other indicating the area where the gear is set. Each color of the two-color code must be permanently marked on or along the line or lines specified below under paragraphs (b)(2)(i)(C) and (D) of this section. Each color mark of the color codes must be clearly visible when the gear is hauled or removed from the water. Each mark must be at least 4 inches (10.2 cm) long. The two color marks must be placed within 6 inches (15.2 cm) of each other. If the color of the rope is the same as or similar to a color code, a white mark may be substituted for that color code. In marking or affixing the color code, the line may be dyed, painted, or marked with thin colored whipping line, thin colored plastic, or heat-shrink tubing, or other material; or a thin line may be woven into or through the line; or the line may be marked as approved in writing by the Assistant Administrator. A brochure illustrating the techniques for marking gear is available from the Regional Administrator, NMFS, Northeast Region upon request.

(C) *Buoy line markings.* All buoy lines greater than 4 feet (1.22 m) long must be marked within 2 feet (0.6 m) of the top of the buoy line (closest to the surface) and midway along the length of the buoy line.

(D) *Net panel markings.* Each gillnet net panel must be marked along both the floatline and the leadline at least once every 100 yards (91.4 m), unless otherwise required by the Assistant Administrator under paragraph (i) of this section.

(ii) *Requirements for other specified areas.* Any person who owns or fishes with specified gear in the other specified areas must mark that gear in accordance with paragraphs (b)(2)(ii)(A), (b)(2)(ii)(B), and (b)(2)(iii) of this section, unless otherwise required by the Assistant Administrator under paragraph (i) of this section.

(A) *Color code.* Specified gear must be marked with the appropriate colors to designate gear-types and areas as follows:

(*1*) Trap/pot gear in the Northern Inshore State Trap/Pot Waters Area, the Cape Cod Bay Restricted Area, the Stellwagen Bank/Jeffreys Ledge Restricted Area, the Great South Channel Restricted Trap/Pot Area where it overlaps with Lobster Management Area (LMA) 2 and the Outer Cape LMA (as defined in the American Lobster Fishery regulations in 50 CFR 697.18), and the Northern Nearshore Trap/Pot Waters Area must be marked with a red marking.

(*2*) Trap/pot gear in the Southern Nearshore Trap/Pot Waters Area must be marked with an orange marking.

(*3*) Trap/pot gear in the Great South Channel Restricted Trap/Pot Area where it overlaps with LMA ⅔ Overlap and LMA 3 (as defined in the American Lobster Fishery regulations in 50 CFR 697.18), and the Offshore Trap/Pot Waters Area must be marked with a black marking.

(*4*) Anchored and drift gillnet gear in the Cape Cod Bay Restricted Area, Stellwagen Bank/Jeffreys Ledge Restricted Area, Great South Channel Restricted Gillnet Area, Great South Channel Sliver Restricted Area, and Other Northeast Gillnet Waters Area must be marked with a green marking.

(*5*) Anchored and drift gillnet gear in the Mid/South Atlantic Gillnet Waters Area must be marked with a blue marking.

(*6*) Gillnet gear (except gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh) in the

Southeast U.S. Restricted Area S and Other Southeast Gillnet Waters must be marked with a yellow marking.

(B) *Markings*. All specified gear in specified areas must be marked with one color code described in paragraph (b)(2)(ii)(A) of this section (which indicates the gear type and general area where the gear is set). Each color code must be permanently affixed on or along the line or lines. Each color code must be clearly visible when the gear is hauled or removed from the water. Each mark must be at least 4 inches (10.2 cm) long and be placed midway on the buoy line in the water column. If the color of the rope is the same as or similar to a color code, a white mark may be substituted for that color code. In marking or affixing the color code, the line may be dyed, painted, or marked with thin colored whipping line, thin colored plastic, or heat-shrink tubing, or other material; or a thin line may be woven into or through the line; or the line may be marked as approved in writing by the Assistant Administrator. A brochure illustrating the techniques for marking gear is available from the Regional Administrator, NMFS, Northeast Region upon request.

(iii) *Requirements for all specified areas*—(A) *Surface buoy markings*. Trap/pot and gillnet gear regulated under this section must mark all surface buoys to identify the vessel or fishery with one of the following: The owner's motorboat registration number, the owner's U.S. vessel documentation number, the federal commercial fishing permit number, or whatever positive identification marking is required by the vessel's home-port state. When marking of surface buoys is not already required by state or federal regulations, the letters and numbers used to mark the gear to identify the vessel or fishery must be at least 1 inch (2.5 cm) in height in block letters or arabic numbers in a color that contrasts with the background color of the buoy. A brochure illustrating the techniques for marking gear is available upon from the Regional Administrator, NMFS, Northeast Region upon request.

(3) *Changes to requirements*. If the Assistant Administrator revises the gear marking requirements in accordance with paragraph (i) of this section, the gear must be marked in compliance with those requirements.

(c) *Restrictions applicable to trap/pot gear in regulated waters*—(1) *Universal trap/pot gear requirements*. In addition to the area-specific measures listed in paragraphs (c)(2) through (c)(9) of this section, all trap/pot gear in regulated waters, including the Northern Inshore State Trap/Pot Waters Area, must comply with the universal gear requirements listed here.[1] The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(i) *No buoy line floating at the surface*. No person or vessel may fish with trap/pot gear that has any portion of the buoy line floating at the surface at any time when the buoy line is directly connected to the gear at the ocean bottom. If more than one buoy is attached to a single buoy line or if a high flyer and a buoy are used together on a single buoy line, floating line may be used between these objects.

(ii) *No wet storage of gear*. Trap/pot gear must be hauled out of the water at least once every 30 days.

(2) *Cape Cod Bay Restricted Area*—(i) *Area*. The Cape Cod Bay restricted area consists of the Cape Cod Bay right whale critical habitat area specified under 50 CFR 226.203(b) unless the Assistant Administrator changes that area in accordance with paragraph (i) of this section.

(ii) *Area-specific gear or vessel requirements during the winter restricted period*. No person or vessel may fish with or possess trap/pot gear in the Cape Cod Bay Restricted Area during the winter restricted period unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed below for the winter restricted period, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these

[1] Fishermen are also encouraged to maintain their buoy lines to be as knot-free as possible. Splices are considered to be less of an entanglement threat and are thus preferable to knots.

requirements in accordance with paragraph (i) of this section.

(A) *Winter restricted period.* The winter restricted period for the Cape Cod Bay Restricted Area is from January 1 through May 15 of each year unless the Assistant Administrator changes this period in accordance with paragraph (i) of this section.

(B) *Buoy line weak links.* All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The breaking strength of the weak links must not exceed 500 lb (226.8 kg).

(*2*) The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(C) *Single traps and multiple-trap trawls.* Single traps and three-trap trawls are prohibited. All traps must be set in either a two-trap string or in a trawl of four or more traps. A two-trap string must have no more than one buoy line.

(D) *Buoy lines.* All buoy lines must be composed of sinking line except the bottom portion of the line, which may be a section of floating line not to exceed one-third the overall length of the buoy line.

(E) *Groundlines.* All groundlines must be composed entirely of sinking line. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(iii) *Area-specific gear or vessel requirements for the other restricted period.* No person or vessel may fish with or possess trap/pot gear in the Cape Cod Bay Restricted Area during the other restricted period unless that gear complies with the gear marking requirements specified in paragraph (b) of this section and the universal trap/pot gear requirements specified in paragraph (c)(1) of this section as well as the area-specific requirements listed below for the other restricted period, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(A) *Other restricted period.* The other restricted period for the Cape Cod Bay Restricted Area is from May 16 through December 31 of each year unless the Assistant Administrator revises this period in accordance with paragraph (i) of this section.

(B) *Gear and vessel requirements*—(*1*) *State-water portion.* No person or vessel may fish with or possess trap/pot gear in the state-water portion of the Cape Cod Bay Restricted Area during the other restricted period unless that gear complies with the requirements for the Northern Inshore State Trap/Pot Waters Area listed in paragraph (c)(6) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(*2*) *Federal-water portion.* No person or vessel may fish with or possess trap/pot gear in the Federal-water portion of the Cape Cod Bay Restricted Area during the other restricted period unless that gear complies with the requirements for the Northern Nearshore Trap/Pot Waters Area in paragraph (c)(7) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(3) *Great South Channel Restricted Trap/Pot Area*—(i) *Area.* The Great South Channel Restricted Trap/Pot Area consists of the Great South Channel right whale critical habitat area specified under 50 CFR 226.203(a) unless

the Assistant Administrator changes that area in accordance with paragraph (i) of this section.

(ii) *Closure during the spring restricted period.* The spring restricted period for the Great South Channel Restricted Trap/Pot Area is from April 1 through June 30 of each year unless the Assistant Administrator revises this period in accordance with paragraph (i) of this section. During the spring restricted period, no person or vessel may fish with, set, or possess trap/pot gear in this Area unless the Assistant Administrator specifies gear modifications or alternative fishing practices in accordance with paragraph (i) of this section and the gear or practices comply with those specifications, or unless the gear is stowed as specified in § 229.2.

(iii) *Area-specific gear or vessel requirements for the other restricted period.* The other restricted period for the Great South Channel Restricted Trap/Pot Area is July 1 through March 31, unless the Assistant Administrator revises this period in accordance with paragraph (i) of this section. During the other restricted period, no person or vessel may fish with or possess trap/pot gear in the Great South Channel Restricted Trap/Pot Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, and the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess trap/pot gear in the Great South Channel Restricted Trap/Pot Area unless that gear complies with the requirements listed for Northern Nearshore Trap/Pot Waters Area in paragraph (c)(7) of this section where the Great South Channel Restricted Trap/Pot Area overlaps with Lobster Management Area (LMA) 2 and the Outer Cape LMA (as defined in the American Lobster Fishery regulations in 50 CFR 697.18); the requirements listed for Offshore Trap/Pot Waters in paragraph (c)(5) of this section where the Great South Channel Restricted Trap/Pot Area overlaps with LMA 2/3 Overlap and LMA 3 (as defined in the American Lobster Fishery regulations in 50 CFR 697.18); or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(4) *Stellwagen Bank/Jeffreys Ledge Restricted Area*—(i) *Area.* The Stellwagen Bank/Jeffreys Ledge Restricted Area includes all Federal waters of the Gulf of Maine, except those designated as right whale critical habitat under 50 CFR 226.203(b), that lie south of 43°15′ N. lat. and west of 70°00′ W. long. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements.* No person or vessel may fish with or possess trap/pot gear in the Stellwagen Bank/Jeffreys Ledge Restricted Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the requirements listed for the Northern Nearshore Trap/Pot Waters Area specified in paragraph (c)(7) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(5) *Offshore Trap/Pot*[2] *Waters Area*—(i) *Area.* The Offshore Trap/Pot Waters Area includes all Federal waters of the EEZ Offshore Management Area 3 (including the area known as the Area ⅔ Overlap and Area ⅗ Overlap as defined in the American Lobster Fishery regulations at 50 CFR 697.18, with the exception of the Great South Channel Restricted Trap/Pot Area), and extending south along the 100-fathom (600-ft or 182.9-m) depth contour from 35°30′ N. lat. south to 27°51′ N. lat., and east to the eastern edge of the EEZ. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements.* No person or vessel may fish with or possess trap/pot gear in the Offshore Trap/Pot Waters Area that overlaps an area from the U.S./Canada border south to a straight line from 41°18.2′ N. lat., 71°51.5′ W. long.

[2] Fishermen using red crab trap/pot gear should refer to § 229.32(c)(9) for the restrictions applicable to red crab trap/pot fishery.

(Watch Hill Point, RI) south to 40°00′ N. lat., and then east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links*. All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links may not exceed 1,500 lb (680.4 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Groundlines*. On or before April 5, 2009, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other flotation devices to groundlines is prohibited.

(iii) *Seasonal area-specific gear or vessel requirements*. From September 1 to May 31, no person or vessel may fish with or possess trap/pot gear in the Offshore Trap/Pot Waters Area that overlaps an area bounded on the north by a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, and bounded on the south by a line at 32°00′ N. lat., and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, the area-specific requirements specified in paragraphs (c)(5)(ii)(A) and (c)(5)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(iv) *Seasonal area-specific gear or vessel requirements*. From November 15 to April 15, no person or vessel may fish with or possess trap/pot gear in the Offshore Trap/Pot Waters Area that overlaps an area from 32°00′ N. lat. south to 29°00′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(5)(ii)(A) and (c)(5)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(v) *Seasonal area-specific gear or vessel requirements*. From December 1 to March 31, no person or vessel may fish with or possess trap/pot gear in the Offshore Trap/Pot Waters Area that overlaps an area from 29°00′ N. lat. south to 27°51′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(5)(ii)(A) and (c)(5)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise this period and

these requirements in accordance with paragraph (i) of this section.

(vi) [Reserved]

(6) *Northern Inshore State Trap/Pot Waters Area*—(i) *Area*. The Northern Inshore State Trap/Pot Waters Area includes the state waters of Rhode Island, Massachusetts, New Hampshire, and Maine, with the exception of Cape Cod Bay Restricted Area and those waters exempted under paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess trap/pot gear in the Northern Inshore State Trap/Pot Waters Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links*. All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links may not exceed 600 lb (272.2 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Groundlines*. On or before April 5, 2009, all groundlines must be composed entirely of sinking line unless exempted for this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other flotation devices to groundlines is prohibited.

(C) [Reserved]

(7) *Northern Nearshore Trap/Pot Waters Area*—(i) *Area*. The Northern Nearshore Trap/Pot Waters Area includes all Federal waters of EEZ Nearshore Management Area 1, Area 2, and the Outer Cape Lobster Management Area (as defined in the American Lobster Fishery regulations at 50 CFR 697.18), with the exception of the Great South Channel Restricted Trap/Pot Area, Cape Cod Bay Restricted Area, Stellwagen Bank/Jeffreys Ledge Restricted Area and those waters exempted under paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess trap/pot gear in the Northern Nearshore Trap/Pot Waters Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links*. All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: swivels, plastic weak links,

rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links must not exceed 600 lb (272.2 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Single traps and multiple-trap trawls.* Single traps are prohibited. All traps must be set in trawls of two or more traps. All trawls up to and including five traps must have no more than one buoy line.

(C) *Groundlines.* On or before April 5, 2009, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(D) [Reserved]

(8) *Southern Nearshore*[3] *Trap/Pot Waters Area*—(i) *Area.* The Southern Nearshore Trap/Pot Waters Area includes all state and Federal waters which fall within EEZ Nearshore Management Area 4, EEZ Nearshore Management Area 5, and EEZ Nearshore Management Area 6 (as defined in the American Lobster Fishery regulations in 50 CFR 697.18), and inside the 100-fathom (600-ft or 182.9-m) depth contour line from 35°30′ N lat. south to 27°51′ N lat. and extending inshore to the shoreline or exemption line, with the exception of those waters exempted under paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements.* No person or vessel may fish with or possess trap/pot gear in the Southern Nearshore Trap/Pot Waters Area that is east of a straight line from 41°18.2′ N. lat.,71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat., unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed here, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links.* All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links may not exceed 600 lb (272.2 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Groundlines.* On or before April 5, 2009, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(iii) *Seasonal area-specific gear or vessel requirements.* From September 1 to May 31, no person or vessel may fish

[3] Fishermen using red crab trap/pot gear should refer to § 229.32(c)(9) for the restrictions applicable to red crab trap/pot fishery.

with or possess trap/pot gear in the Southern Nearshore Trap/Pot Waters Area that overlaps an area bounded on the north by a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, and bounded on the south by 32°00′ N. lat., and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements in paragraph (c)(1) of this section, requirements specified in paragraphs (c)(8)(ii)(A) and (c)(8)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(iv) *Seasonal area-specific gear or vessel requirements.* From November 15 to April 15, no person or vessel may fish with or possess trap/pot gear in the Southern Nearshore Trap/Pot Waters Area that overlaps an area from 32°00′ N. lat. south to 29°00′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(8)(ii)(A) and (c)(8)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(v) *Seasonal area-specific gear or vessel requirements.* From December 1 to March 31, no person or vessel may fish with or possess trap/pot gear in the Southern Nearshore Trap/Pot Waters Area that overlaps an area from 29°00′ N. lat. south to 27°51′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(8)(ii)(A) and (c)(8)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise this period and these requirements in accordance with paragraph (i) of this section.

(vi) [Reserved]

(9) *Restrictions applicable to the red crab trap/pot fishery*—(i) *Area.* The red crab trap/pot fishery is regulated in the waters identified in paragraphs (c)(5)(i) and (c)(8)(i) of this section.

(ii) *Year-round area-specific gear or vessel requirements.* No person or vessel may fish with or possess red crab trap/pot gear in the area identified in paragraph (c)(9)(i) of this section that overlaps an area from the U.S./Canada border south to a straight line from 41° 18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat., and then east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator revises these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links.* All buoys, flotation devices and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links may not exceed 2,000 lb (907.2 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Groundlines*. On or before April 5, 2009, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(iii) *Seasonal area-specific gear or vessel requirements*. From September 1 to May 31, no person or vessel may fish with or possess red crab trap/pot gear in the area identified in paragraph (c)(9)(i) of this section that overlaps an area bounded on the north by a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, and bounded on the south by a line at 32°00′ N. lat., and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements listed in paragraphs (c)(9)(ii)(A) and (c)(9)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator revises these requirements in accordance with paragraph (i) of this section.

(iv) *Seasonal area-specific gear or vessel requirements*. From November 15 to April 15, no person or vessel may fish with or possess red crab trap/pot gear in the area identified in paragraph (c)(9)(i) of this section that overlaps an area from 32°00′ N. lat. south to 29°00′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(9)(ii)(A) and (c)(9)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(v) *Seasonal area-specific gear or vessel requirements*. From December 1 to March 31, no person or vessel may fish with or possess red crab trap/pot gear in the area identified in paragraph (c)(9)(i) of this section that overlaps an area from 29°00′ N. lat. south to 27°51′ N. lat. and east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal trap/pot gear requirements specified in paragraph (c)(1) of this section, and the area-specific requirements specified in paragraphs (c)(9)(ii)(A) and (c)(9)(ii)(B) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise that period and these requirements in accordance with paragraph (i) of this section.

(vi) [Reserved]

(d) *Restrictions applicable to anchored gillnet gear—(1) Universal anchored gillnet gear requirements*. In addition to the area-specific measures listed in paragraphs (d)(2) through (d)(7) of this section, all anchored gillnet gear in regulated waters must comply with the universal gear requirements listed here.[4] The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(i) *No buoy line floating at the surface*. No person or vessel may fish with anchored gillnet gear that has any portion of the buoy line floating at the surface at any time when the buoy line is directly connected to the gear at the ocean bottom. If more than one buoy is attached to a single buoy line or if a high flyer and a buoy are used together on a single buoy line, sinking line must be used between these objects.

(ii) *No wet storage of gear*. Anchored gillnet gear must be hauled out of the water at least once every 30 days.

(2) *Cape Cod Bay Restricted Area*—(i) *Area*. The Cape Cod Bay Restricted Area consists of the Cape Cod Bay

[4] Fishermen are also encouraged to maintain their buoy lines to be as knot-free as possible. Splices are considered to be less of an entanglement threat and are thus preferable to knots.

right whale critical habitat area specified under 50 CFR 226.203(b), unless the Assistant Administrator changes that area in accordance with paragraph (i) of this section.

(ii) *Closure during the winter restricted period*—(A) *Winter restricted period*. The winter restricted period for this area is from January 1 through May 15 of each year, unless the Assistant Administrator revises that period in accordance with paragraph (i) of this section.

(B) *Closure*. During the winter restricted period, no person or vessel may fish with or possess anchored gillnet gear in the Cape Cod Bay Restricted Area unless the Assistant Administrator specifies gear restrictions or alternative fishing practices in accordance with paragraph (i) of this section and the gear or practices comply with those specifications, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may waive this closure for the remaining portion of the winter restricted period in any year through a notification in the FEDERAL REGISTER if NMFS determines that right whales have left the restricted area and are unlikely to return for the remainder of the season.

(iii) *Area-specific gear or vessel requirements for the other restricted period*—(A) *Other restricted period*. The other restricted period for the Cape Cod Bay Restricted Area is from May 16 through December 31 of each year unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Area-specific gear or vessel requirements*. No person or vessel may fish with or possess anchored gillnet gear in the Cape Cod Bay Restricted Area during the other restricted period unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed in paragraph (d)(6)(ii) of this section for the Other Northeast Gillnet Waters Area, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(3) *Great South Channel Restricted Gillnet Area*—(i) *Area*. The Great South Channel Restricted Gillnet Area consists of the area bounded by lines connecting the following four points: 41°02.2′ N. lat./69°02′ W. long., 41°43.5′ N. lat./69°36.3′ W. long., 42°10′ N. lat./68°31′ W. long., and 41°38′ N. lat./68°13′ W. long. This area includes most of the Great South Channel right whale critical habitat area specified under 50 CFR 226.203(a), with the exception of the sliver along the western boundary described in paragraph (d)(4)(i) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Closure during the spring restricted period*—(A) *Spring restricted period*. The spring restricted period for the Great South Channel Restricted Gillnet Area is from April 1 through June 30 of each year unless the Assistant Administrator revises that period in accordance with paragraph (i) of this section.

(B) *Closure*. During the spring restricted period, no person or vessel may set, fish with or possess anchored gillnet gear in the Great South Channel Restricted Gillnet Area unless the Assistant Administrator specifies gear restrictions or alternative fishing practices in accordance with paragraph (i) of this section and the gear or practices comply with those specifications, or unless the gear is stowed as specified in § 229.2.

(iii) *Area-specific gear or vessel requirements for the other restricted period*—(A) *Other restricted period*. The other restricted period for the Great South Channel Restricted Gillnet Area is from July 1 though March 31 of each year unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Area-specific gear or vessel requirements*. During the other restricted period, no person or vessel may fish with or possess anchored gillnet gear in the Great South Channel Restricted Gillnet Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed in paragraph (d)(6)(ii) of this section for

the Other Northeast Gillnet Waters Area, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(4) *Great South Channel Sliver Restricted Area*—(i) *Area*. The Great South Channel Sliver Restricted Area consists of the area bounded by lines connecting the following points: 41°02.2′ N. lat./69°02′ W. long., 41°43.5′ N. lat./69°36.3′ W. long., 41°40′ N. lat./69°45′ W. long., and 41°00′ N. lat./69°05′ W. long. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess anchored gillnet gear in the Great South Channel Sliver Restricted Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed in paragraph (d)(6)(ii) of this section for the Other Northeast Gillnet Waters Area, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(5) *Stellwagen Bank/Jeffreys Ledge Restricted Area*—(i) *Area*. The Stellwagen Bank/Jeffreys Ledge Restricted Area includes all Federal waters of the Gulf of Maine, except those designated as right whale critical habitat under 50 CFR 226.203(b), that lie south of 43°15′ N. lat. and west of 70°00′ W. long, and those waters exempted under paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess anchored gillnet gear in the Stellwagen Bank/Jeffreys Ledge Restricted Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed in paragraph (d)(6)(ii) of this section for the Other Northeast Gillnet Waters Area, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(6) *Other Northeast Gillnet Waters Area*—(i) *Area*. The Other Northeast Gillnet Waters Area consists of all U.S. waters from the U.S./Canada border to Long Island, NY, at 72°30′ W. long. south to 36°33.03′ N. lat. and east to the eastern edge of the EEZ, with the exception of the Cape Cod Bay Restricted Area, Stellwagen Bank/Jeffreys Ledge Restricted Area, Great South Channel Restricted Gillnet Area, Great South Channel Sliver Restricted Area, and exempted waters listed in paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess anchored gillnet gear in the Other Northeast Gillnet Waters Area that overlaps an area from the U.S./Canada border south to a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(A) *Buoy line weak links*. All buoys, flotation devices and/or weights (except gillnets, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by

NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links must not exceed 1,100 lb (499.0 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Net panel weak links.* The breaking strength of each weak link must not exceed 1,100 lb (499.0 kg). The weak link requirements apply to all variations in panel size. All net panels in a string must contain weak links that meet one of the following two configurations:

(*1*) *Configuration 1.* (*i*) The weak link must be chosen from the following list approved by NMFS: Plastic weak links or rope of appropriate breaking strength. If rope of appropriate breaking strength is used throughout the floatline or as the up and down line, or if no up and down line is present, then individual weak links are not required on the floatline or up and down line. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request; and

(*ii*) One weak link must be placed in the center of each of the up and down lines at both ends of the net panel; and

(*iii*) One weak link must be placed as close as possible to each end of the net panels on the floatline; and

(*iv*) For net panels of 50 fathoms (300 ft or 91.4 m) or less in length, one weak link must be placed in the center of the floatline; or

(*v*) For net panels greater than 50 fathoms (300 ft or 91.4 m) in length, one weak link must be placed at least every 25 fathoms (150 ft or 45.7 m) along the floatline.

(*2*) *Configuration 2.* (*i*) The weak link must be chosen from the following list approved by NMFS: Plastic weak links or rope of appropriate breaking strength. If rope of appropriate breaking strength is used throughout the floatline or as the up and down line, or if no up and down line is present, then individual weak links are not required on the floatline or up and down line. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request; and

(*ii*) One weak link must be placed in the center of each of the up and down lines at both ends of the net panel; and

(*iii*) One weak link must be placed between the floatline tie loops between net panels; and

(*iv*) One weak link must be placed where the floatline tie loops attaches to the bridle, buoy line, or groundline at the end of a net string; and

(*v*) For net panels of 50 fathoms (300 ft or 91.4 m) or less in length, one weak link must be placed in the center of the floatline; or

(*vi*) For net panels greater than 50 fathoms (300 ft or 91.4 m) in length, one weak link must be placed at least every 25 fathoms (150 ft or 45.7 m) along the floatline.

(C) *Anchoring systems.* All anchored gillnets, regardless of the number of net panels, must be secured at each end of the net string with a burying anchor (an anchor that holds to the ocean bottom through the use of a fluke, spade, plow, or pick) having the holding capacity equal to or greater than a 22-lb (10.0-kg) Danforth-style anchor. Dead weights do not meet this requirement. A brochure illustrating the techniques for rigging anchoring systems is available from the Regional Administrator, NMFS, Northeast Region upon request.

(D) *Groundlines.* On or before October 5, 2008, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(iii) *Seasonal area-specific gear or vessel requirements.* From September 1 to May 31, no person or vessel may fish with or possess anchored gillnet gear in the Other Northeast Gillnet Waters

Area that is south of a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements listed in paragraphs (d)(6)(ii)(A) through (d)(6)(ii)(D) of this section, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(7) *Mid/South Atlantic Gillnet Waters*—(i) *Area*. The Mid/South Atlantic Gillnet Waters consists of all U.S. waters bounded on the north from Long Island, NY, at 72°30′ W. long. south to 36°33.03′ N. lat. and east to the eastern edge of the EEZ, and bounded on the south by 32°00′ N. lat., and east to the eastern edge of the EEZ. The Assistant Administrator may change that area in accordance with paragraph (i) of this section. When the Mid/South Atlantic Gillnet Waters Area overlaps the Southeast U.S. Restricted Area and its restricted period as specified in paragraphs (f)(1) and (f)(2), then the closure and exemption for the Southeast U.S. Restricted Area as specified in paragraph (f)(2) applies.

(ii) *Area-specific gear or vessel requirements*. From September 1 through May 31, no person or vessel may fish with or possess anchored gillnet gear in the Mid/South Atlantic Gillnet Waters unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the following area-specific requirements, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section. When the Mid/South Atlantic Gillnet Waters Area overlaps the Southeast U.S. Restricted Area and its restricted period as specified in paragraphs (f)(1) and (f)(2), then the closure and exemption for the Southeast U.S. Restricted Area as specified in paragraph (f)(2) applies.

(A) *Buoy line weak links*. All buoys, flotation devices and/or weights (except gillnets, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible and that meets the following specifications:

(*1*) The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) The breaking strength of the weak links must not exceed 1,100 lb (499.0 kg).

(*3*) Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision.

(B) *Net panel weak links*. The weak link requirements apply to all variations in panel size. All net panels must contain weak links that meet the following specifications:

(*1*) The breaking strength for each of the weak links must not exceed 1,100 lb (499.0 kg).

(*2*) The weak link must be chosen from the following list approved by NMFS: Plastic weak links or rope of appropriate breaking strength. If rope of appropriate breaking strength is used throughout the floatline then individual weak links are not required. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*3*) Weak links must be placed in the center of the floatline of each gillnet net panel up to and including 50 fathoms (300 ft or 91.4 m) in length, or at

least every 25 fathoms (150 ft or 45.7 m) along the floatline for longer panels.

(C) *Additional anchoring system and net panel weak link requirements.* All gillnets must return to port with the vessel unless the gear meets the following specifications:

(*1*) *Anchoring systems.* All anchored gillnets, regardless of the number of net panels, must be secured at each end of the net string with a burying anchor (an anchor that holds to the ocean bottom through the use of a fluke, spade, plow, or pick) having the holding capacity equal to or greater than a 22-lb (10.0-kg) Danforth-style anchor. Dead weights do not meet this requirement. A brochure illustrating the techniques for rigging anchoring systems is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) *Net panel weak links.* Net panel weak links must meet the specifications in this paragraph. The breaking strength of each weak link must not exceed 1,100 lb (499.0 kg). The weak link requirements apply to all variations in panel size. All net panels in a string must contain weak links that meet one of the following two configurations found in paragraph (d)(6)(ii)(B)(*1*) or (d)(6)(ii)(B)(*2*) of this section.

(*3*) *Additional provision for North Carolina.* All gillnets set 300 yards (274.3 m) or less from the shoreline in North Carolina must meet the anchoring system and net panel weak link requirements in paragraphs (d)(7)(ii)(C)(*1*) and (d)(7)(ii)(C)(*2*) of this section, or the following:

(*i*) The entire net string must be less than 300 yards (274.3 m) from shore.

(*ii*) The breaking strength of each weak link must not exceed 600 lb (272.2 kg). The weak link requirements apply to all variations in panel size.

(*iii*) All net panels in a string must contain weak links that meet one of the following two configuration specifications found in paragraph (d)(6)(ii)(B)(*1*) or (d)(6)(ii)(B)(*2*) of this section.

(*iv*) Regardless of the number of net panels, all anchored gillnets must be secured at the offshore end of the net string with a burying anchor (an anchor that holds to the ocean bottom through the use of a fluke, spade, plow, or pick) having a holding capacity equal to or greater than an 8-lb (3.6-kg) Danforth-style anchor, and at the inshore end of the net string with a dead weight equal to or greater than 31 lb (14.1 kg).

(D) *Groundlines.* On or before October 5, 2008, all groundlines must be composed entirely of sinking line unless exempted from this requirement under paragraph (a)(4) of this section. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(8) [Reserved]

(e) *Restrictions applicable to drift gillnet gear*—(1) *Cape Cod Bay Restricted Area*—(i) *Area.* The Cape Cod Bay Restricted Area consists of the Cape Cod Bay right whale critical habitat area specified under 50 CFR 226.203(b), unless the Assistant Administrator changes that area in accordance with paragraph (i) of this section.

(ii) *Closure during the winter restricted period*—(A) *Winter restricted period.* The winter restricted period for this area is from January 1 through May 15 of each year, unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Closure.* During the winter restricted period, no person or vessel may fish with or possess drift gillnet gear in the Cape Cod Bay Restricted Area unless the Assistant Administrator specifies gear restrictions or alternative fishing practices in accordance with paragraph (i) of this section and the gear or practices comply with those specifications, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may waive this closure for the remaining portion of the winter restricted period in any year through a notification in the FEDERAL REGISTER if NMFS determines that right whales have left the restricted area and are unlikely to return for the remainder of the season.

(iii) *Area-specific gear or vessel requirements for the other restricted period*—(A) *Other restricted period.* The other restricted period for the Cape Cod Bay Restricted Area is from May 16 through December 31 of each year unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Area specific gear or vessel requirements*. During the other restricted period, no person or vessel may fish with or possess drift gillnet gear in the Cape Cod Bay Restricted Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in the Cape Cod Bay Restricted Area during the other restricted period unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Cape Cod Bay Restricted Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(2) *Great South Channel Restricted Gillnet Area*—(i) *Area*. The Great South Channel Restricted Gillnet Area consists of the area bounded by lines connecting the following four points: 41°02.2′ N. lat./69°02′ W. long., 41°43.5′ N. lat./69°36.3′ W. long., 42°10′ N. lat./68°31′ W. long., and 41°38′ N. lat./68°13′ W. long. This area includes most of the Great South Channel right whale critical habitat area specified under 50 CFR 226.203(a), with the exception of the sliver along the western boundary described in paragraph (e)(3)(i) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Closure during the spring restricted period*—(A) *Spring restricted period*. The spring restricted period for the Great South Channel Restricted Gillnet Area is from April 1 through June 30 of each year unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Closure*. During the spring restricted period, no person or vessel may set, fish with or possess drift gillnet gear in the Great South Channel Restricted Gillnet Area unless the Assistant Administrator specifies gear restrictions or alternative fishing practices in accordance with paragraph (i) of this section and the gear or practices comply with those specifications, or unless the gear is stowed as specified in § 229.2.

(iii) *Area-specific gear or vessel requirements for the other restricted period*—(A) *Other restricted period*. The other restricted period for the Great South Channel Restricted Gillnet Area is from July 1 though March 31 of each year unless the Assistant Administrator changes that period in accordance with paragraph (i) of this section.

(B) *Area-specific gear or vessel requirements*. During the other restricted period, no person or vessel may fish with or possess drift gillnet gear in the Great South Channel Restricted Gillnet Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in the Great South Channel Restricted Gillnet Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Great South Channel Restricted Gillnet Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(3) *Great South Channel Sliver Restricted Area*—(i) *Area*. The Great South Channel Sliver Restricted Area consists of the area bounded by lines connecting the following points: 41°02.2′ N. lat./69°02′ W. long., 41°43.5′ N. lat./69°36.3′ W. long., 41°40′ N. lat./69°45′ W. long., and 41°00′ N. lat./69°05′ W. long. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess drift gillnet gear in the Great South Channel Sliver Restricted Gillnet Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in

the Great South Channel Sliver Restricted Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Great South Channel Sliver Restricted Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(4) *Stellwagen Bank/Jeffreys Ledge Restricted Area*—(i) *Area*. The Stellwagen Bank/Jeffreys Ledge Restricted Area includes all Federal waters of the Gulf of Maine, except those designated as right whale critical habitat under 50 CFR 226.203(b), that lie south of 43°15′ N. lat. and west of 70°00′ W. long. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess drift gillnet gear in the Stellwagen Bank/Jeffreys Ledge Restricted Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in the Stellwagen Bank/Jeffreys Ledge Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Stellwagen Bank/Jeffreys Ledge Restricted Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(5) *Other Northeast Gillnet Waters Area*—(i) *Area*. The Other Northeast Gillnet Waters Area consists of all U.S. waters from the U.S./Canada border to Long Island, NY, at 72°30′ W. long. south to 36°33.03′ N. lat. and east to the eastern edge of the EEZ, with the exception of the Cape Cod Bay Restricted Area, Stellwagen Bank/Jeffreys Ledge Restricted Area, Great South Channel Restricted Gillnet Area, Great South Channel Sliver Restricted Area, and exempted waters listed in paragraph (a)(3) of this section. The Assistant Administrator may change that area in accordance with paragraph (i) of this section.

(ii) *Year-round area-specific gear or vessel requirements*. No person or vessel may fish with or possess drift gillnet gear in the Other Northeast Gillnet Waters Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in the Other Northeast Gillnet Waters Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Other Northeast Gillnet Waters Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(iii) *Seasonal area-specific gear or vessel requirements*. From September 1 to May 31, no person or vessel may fish with or possess drift gillnet gear in the Other Northeast Gillnet Waters Area that is south of a straight line from 41°18.2′ N. lat., 71°51.5′ W. long. (Watch Hill Point, RI) south to 40°00′ N. lat. and then east to the eastern edge of the EEZ, unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in §§ 229.2. Additionally, no person or vessel may fish with or possess drift gillnet gear at night in the Other Northeast Gillnet Waters Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Other Northeast Gillnet Waters Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(6) *Mid/South Atlantic Gillnet Waters Area*—(i) *Area*. The Mid/South Atlantic Gillnet Waters consists of all U.S. waters bounded on the north from Long Island, NY at 72°30′ W. long. south to

36°33.03′ N. lat. and east to the eastern edge of the EEZ, and bounded on the south by 32°00′ N. lat., and east to the eastern edge of the EEZ. The Assistant Administrator may change that area in accordance with paragraph (i) of this section. When the Mid/South Atlantic Gillnet Waters Area overlaps the Southeast U.S. Restricted Area and its restricted period as specified in paragraphs (f)(1) and (f)(2), then the closure and exemption for the Southeast U.S. Restricted Area as specified in paragraph (f)(2) applies.

(ii) *Area-specific gear or vessel requirements*. From September 1 through May 31, no person or vessel may fish with or possess drift gillnet gear at night in the Mid/South Atlantic Gillnet Waters Area unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2. During that time, no person may fish with or possess drift gillnet gear at night in the Mid/South Atlantic Gillnet Waters Area unless that gear is tended, or unless the gear is stowed as specified in § 229.2. During that time, all drift gillnet gear set by that vessel in the Mid/South Atlantic Gillnet Waters Area must be removed from the water and stowed on board the vessel before a vessel returns to port. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section. When the Mid/South Atlantic Gillnet Waters Area overlaps the Southeast U.S. Restricted Area and its restricted period as specified in paragraphs (f)(1) and (f)(2), then the closure and exemption for the Southeast U.S. Restricted Area as specified in paragraph (f)(2) applies.

(7) [Reserved]

(f) *Restrictions applicable to the Southeast U.S. Restricted Area*—(1) *Area*. The Southeast U.S. Restricted Area consists of the area bounded by straight lines connecting the following points in the order stated from south to north, unless the Assistant Administrator changes that area in accordance with paragraph (i) of this section:

| Point | N. lat. | W. long. |
|---|---|---|
| SERA1 | 27°51′ | (1) |
| SERA2 | 27°51′ | 80°00′ |
| SERA3 | 32°00′ | 80°00′ |
| SERA4 | 32°36′ | 78°52′ |
| SERA5 | 32°51′ | 78°36′ |
| SERA6 | 33°15′ | 78°24′ |
| SERA7 | 33°27′ | 78°04′ |
| SERA8 | (2) | 78°33.9′ |

[1] Florida shoreline.
[2] South Carolina shoreline.

(i) *Southeast U.S. Restricted Area N*. The Southeast U.S. Restricted Area N consists of the Southeast U.S. Restricted Area from 29°00′ N. lat. northward.

(ii) *Southeast U.S. Restricted Area S*. The Southeast U.S. Restricted Area S consists of the Southeast U.S. Restricted Area southward of 29°00′ N. lat.

(2) *Restricted periods, closure, and exemptions*—(i) *Restricted periods*. The restricted period for the Southeast U.S. Restricted Area N is from November 15 through April 15, and the restricted period for the Southeast U.S. Restricted Area S is from December 1 through March 31, unless the Assistant Administrator revises the restricted period in accordance with paragraph (i) of this section.

(ii) *Closure for gillnets*. (A) Except as provided under paragraph (f)(2)(v) of this section, fishing with or possessing gillnet in the Southeast U.S. Restricted Area N during the restricted period is prohibited.

(B) Except as provided under paragraph (f)(2)(iii) of this section and (f)(2)(iv) of this section, fishing with gillnet in the Southeast U.S. Restricted Area S during the restricted period is prohibited.

(iii) *Exemption for Southeastern U.S. Atlantic shark gillnet fishery*. Fishing with gillnet for sharks with webbing of 5 inches (12.7 cm) or greater stretched mesh is exempt from the restrictions under paragraph (f)(2)(ii)(B) if:

(A) The gillnet is deployed so that it encloses an area of water;

(B) A valid commercial directed shark limited access permit has been issued to the vessel in accordance with 50 CFR 635.4(e) and is on board;

(C) No net is set at night or when visibility is less than 500 yards (1,500 ft, 460 m);

(D) The gillnet is removed from the water before night or immediately if visibility decreases below 500 yards (1,500 ft, 460 m);

(E) Each set is made under the observation of a spotter plane;

(F) No gillnet is set within 3 nautical miles (5.6 km) of a right, humpback, or fin whale;

(G) The gillnet is removed immediately from the water if a right, humpback, or fin whale moves within 3 nautical miles (5.6 km) of the set gear;

(H) The gear complies with the gear marking requirements specified in paragraph (b) of this section; and

(I) The operator of the vessel calls the Southeast Fisheries Science Center Panama City Laboratory in Panama City, FL, not less than 48 hours prior to departing on any fishing trip in order to arrange for observer coverage. If the Panama City Laboratory requests that an observer be taken on board a vessel during a fishing trip at any time from December 1 through March 31 south of 29°00′ N. lat., no person may fish with such gillnet aboard that vessel in the Southeast U.S. Restricted Area S unless an observer is on board that vessel during the trip.

(iv) *Exemption for Spanish Mackerel component of the Southeast Atlantic gillnet fishery*. Fishing with gillnet for Spanish mackerel is exempt from the restrictions under paragraph (f)(2)(ii)(B) from December 1 through December 31, and from March 1 through March 31 if:

(A) Gillnet mesh size is between 3.5 inches (8.9 cm) and 4 ⅞ inches (12.4 cm) stretched mesh;

(B) A valid commercial vessel permit for Spanish mackerel has been issued to the vessel in accordance with 50 CFR 622.4(a)(2)(iv) and is on board;

(C) No person may fish with, set, place in the water, or have on board a vessel a gillnet with a float line longer than 800 yards (2,400 ft, 732 m);

(D) No person may fish with, set, or place in the water more than one gillnet at any time;

(E) No more than two gillnets, including any net in use, may be possessed at any one time; provided, however, that if two gillnets, including any net in use, are possessed at any one time, they must have stretched mesh sizes (as allowed under the regulations) that differ by at least .25 inch (.64 cm);

(F) No person may soak a gillnet for more than 1 hour. The soak period begins when the first mesh is placed in the water and ends either when the first mesh is retrieved back on board the vessel or the gathering of the gillnet is begun to facilitate retrieval on board the vessel, whichever occurs first; providing that, once the first mesh is retrieved or the gathering is begun, the retrieval is continuous until the gillnet is completely removed from the water;

(G) No net is set at night or when visibility is less than 500 yards (1,500 ft, 460 m);

(H) The gillnet is removed from the water before night or immediately if visibility decreases below 500 yards (1,500 ft, 460 m);

(I) No net is set within 3 nautical miles (5.6 km) of a right, humpback, or fin whale;

(J) The gillnet is removed immediately from the water if a right, humpback, or fin whale moves within 3 nautical miles (5.6 km) of the set gear; and

(K) The gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements for anchored gillnets specified in paragraphs (d)(7)(ii)(A) through (d)(7)(ii)(D) of this section for the Mid/South Atlantic Gillnet Waters.

(v) *Exemption for vessels in transit with gillnet aboard*. Possession of gillnet aboard a vessel in transit is exempt from the restrictions under paragraph (f)(2)(ii)(A) of this section if: All nets are covered with canvas or other similar material and lashed or otherwise securely fastened to the deck, rail, or drum; and all buoys, high flyers, and anchors are disconnected from all gillnets. No fish may be possessed aboard such a vessel in transit.

(vi) [Reserved]

(g) *Restrictions applicable to the Other Southeast Gillnet Waters Area*—(1) *Area*. The Other Southeast Gillnet Waters Area consists of the area from 32°00′ N. lat. (near Savannah, GA) south to 27°51′ N. lat. for the Southeast Atlantic gillnet fishery, and from 32°00 N. lat. south to 26°46.50′ N. lat. (near West Palm Beach, FL) for the Southeastern U.S. Atlantic shark gillnet fishery, and

extending from 80°00′ W. long. east to the eastern edge of the EEZ, for both the Southeast Atlantic gillnet and Southeastern U.S. Atlantic gillnet fisheries unless the Assistant Administrator changes this area in accordance with paragraph (i) of this section.

(2) *Restrictions for Southeastern U.S. Atlantic shark gillnet fishery*. No person or vessel may fish with or possess gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh in the Other Southeast Gillnet Waters Area north of 29°00′ N. lat. (near New Smyrna Beach, FL) from November 15 through April 15 and south of 29°00′ N. lat. from December 1 through March 31 unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, and the set restrictions listed below, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(i) *Set restrictions*. All gillnets must comply with the following set restrictions:

(A) No net is set within 3 nautical miles (5.6 km) of a right, humpback, or fin whale; and

(B) If a right, humpback, or fin whale moves within 3 nautical miles (5.6 km) of the set gear, the gear is removed immediately from the water.

(3) *Restrictions for Southeast Atlantic gillnet fishery*. No person or vessel may fish with or possess gillnet gear in the Other Southeast Gillnet Waters Area, except as provided in paragraph (g)(2) of this section, north of 29°00′ N. lat. from November 15 through April 15 and south of 29°00′ N. lat. from December 1 through March 31 unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, the universal anchored gillnet gear requirements specified in paragraph (d)(1) of this section, and the area-specific requirements for anchored gillnets specified in paragraphs (d)(7)(ii)(A) through (d)(7)(ii)(D) of this section for the Mid/South Atlantic Gillnet Waters, or unless the gear is stowed as specified in § 229.2. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(4) [Reserved]

(h) *Restrictions applicable to the Southeast U.S. Monitoring Area*—(1) *Area*. The Southeast U.S. Monitoring Area consists of the area from 27°51′ N. lat. (near Sebastian Inlet, FL) south to 26°46.50′ N. lat. (near West Palm Beach, FL), extending from the shoreline or exemption line out to 80°00′ W. long., unless the Assistant Administrator changes that area in accordance with paragraph (i) of this section.

(2) *Restrictions for Southeastern U.S. Atlantic shark gillnet fishery*. No person or vessel may fish with or possess gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh in the Southeast U.S. Monitoring Area from December 1 through March 31 unless that gear complies with the gear marking requirements specified in paragraph (b) of this section, or unless the gear is stowed as specified in § 229.2, and the person or vessel satisfies the vessel monitoring system and observer requirements listed below. The Assistant Administrator may revise these requirements in accordance with paragraph (i) of this section.

(i) *Vessel monitoring systems*. No person or vessel may fish with or possess gillnet gear for shark with webbing of 5 inches (12.7 cm) or greater stretched mesh in the Southeast U.S. Monitoring Area during the restricted period unless the operator of the vessel is in compliance with the vessel monitoring system (VMS) requirements found in 50 CFR 635.69.

(ii) *At-sea observer coverage*. When selected, vessels are required to take observers on a mandatory basis in compliance with the requirements for at-sea observer coverage found in 50 CFR 229.7. Any vessel that fails to carry an observer once selected is prohibited from fishing pursuant to 50 CFR part 635.

(iii) [Reserved]

(i) *Other provisions*. In addition to any other emergency authority under the Marine Mammal Protection Act, the Endangered Species Act, the Magnuson-Stevens Fishery Conservation and Management Act, or other appropriate authority, the Assistant Administrator may take action under this section in the following situations:

(1) *Entanglements in critical habitat or restricted areas.* If a serious injury or mortality of a right whale occurs in the Cape Cod Bay Restricted Area from January 1 through May 15, in the Great South Channel Restricted Area from April 1 through June 30, the Southeast U.S. Restricted Area N from November 15 to April 15, or the Southeast U.S. Restricted Area S from December 1 through March 31 as the result of an entanglement by trap/pot or gillnet gear allowed to be used in those areas and times, the Assistant Administrator shall close that area to that gear type (i.e., trap/pot or gillnet) for the rest of that time period and for that same time period in each subsequent year, unless the Assistant Administrator revises the restricted period in accordance with paragraph (i)(2) of this section or unless other measures are implemented under paragraph (i)(2) of this section.

(2) *Other special measures.* The Assistant Administrator may revise the requirements of this section through a publication in the FEDERAL REGISTER if:

(i) NMFS verifies that certain gear characteristics are both operationally effective and reduce serious injuries and mortalities of endangered whales;

(ii) New gear technology is developed and determined to be appropriate;

(iii) Revised breaking strengths are determined to be appropriate;

(iv) New marking systems are developed and determined to be appropriate;

(v) NMFS determines that right whales are remaining longer than expected in a closed area or have left earlier than expected;

(vi) NMFS determines that the boundaries of a closed area are not appropriate;

(vii) Gear testing operations are considered appropriate; or

(viii) Similar situations occur.

(3) *Seasonal Area Management (SAM) Program.* Until October 6, 2008, in addition to existing requirements for vessels deploying anchored gillnet or trap/pot gear in the Other Northeast Gillnet Waters, Northern Inshore State Trap/Pot Waters, Trap/Pot Waters, Offshore Trap/Pot Waters, Great South Channel Restricted Gillnet Area (July 1 through July 31), Great South Channel Sliver Restricted Area (May 1 through July 31), Great South Channel Restricted Trap/Pot Area (July 1 through July 31), and Stellwagen Bank/Jeffreys Ledge Restricted Area (anchored gillnet and trap/pot area) found at § 229.32 (b)–(d), a vessel may fish in the SAM Areas as described in paragraphs (i)(3)(i)(A) and (i)(3)(ii)(A) of this section, which overlay the previously mentioned areas, provided the gear or vessel complies with the requirements specified in paragraphs (i)(3)(i)(B) and (i)(3)(ii)(B) of this section during the times specified in those paragraphs. These requirements are in addition to requirements found in § 229.32 (b)–(d). The requirements in (i)(3)(i)(B) and (i)(3)(ii)(B) of this section supercede requirements found at § 229.32 (b)–(d) when the former are more restrictive than the latter. For example, the closures applicable to trap/pot and gillnet gear in the Great South Channel found in paragraphs (c)(3)(ii) and (d)(3)(ii) of this section are more restrictive than the gear modifications described in this section and, therefore, supercede them. A copy of a chart depicting these areas is available upon request from the Regional Administrator, NMFS, Northeast Region, 1 Blackburn Drive, Gloucester, MA 01930.

(i) *SAM West*—(A) *Area.* SAM West consists of all waters bounded by straight lines connecting the following points in the order stated:

SAM WEST

| Point | N. lat. | W. long |
|---|---|---|
| 1W | 42°30′ | 70°30′ |
| 2W | 42°30′ | 69°24′ |
| 3W | 41°48.9′ | 69°24′ |
| 4W | 41°40′ | 69°45′ |
| 5W | 41°40′ | 69°57′ |
| and along the eastern shoreline of Cape Cod to | | |
| 6W | 42°04.8′ | 70°10′ |
| 7W | 42°12′ | 70°15′ |
| 8W | 42°12′ | 70°30′ |

(B) *Gear or vessel requirements.* Unless otherwise authorized by the Assistant Administrator, in accordance with paragraph (i)(2) of this section, from March 1 through April 30, no person or vessel may fish with or possess anchored gillnet or trap/pot gear in SAM West unless that gear complies with the following gear modifications, or unless the gear is stowed as specified in § 229.2.

(*1*) *Anchored gillnet gear*—(*i*) *Groundlines*. All groundlines must be made entirely of sinking line. Floating groundlines are prohibited. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(*ii*) *Buoy lines*. All buoy lines must be composed of sinking line except the bottom portion of the line, which may be a section of floating line not to exceed one-third the overall length of the buoy line.

(*iii*) *Buoy line weak links*. All buoys, flotation devices and/or weights (except gillnets, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, sub-surface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device and/or weight as operationally feasible that has a maximum breaking strength of 1,100 lb (499.0 kg). The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*iv*) *Net panel weak links*. The breaking strength of each weak link must not exceed 1,100 lb (499.0 kg). The weak link requirements apply to all variations in panel size. All net panels in a string must contain weak links that meet one of the following two configuration specifications found in paragraph (d)(6)(ii)(B)(*1*) or (d)(6)(ii)(B)(*2*) of this section.

(*v*) *Anchoring systems*. All anchored gillnets, regardless of the number of net panels, must be secured at each end of the net string with a burying anchor (an anchor that holds to the ocean bottom through the use of a fluke, spade, plow, or pick) having the holding capacity equal to or greater than a 22-lb (10.0-kg) Danforth-style anchor. Dead weights do not meet this requirement. A brochure illustrating the techniques for rigging anchoring systems is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*2*) *Trap/pot gear*—(*i*) *Groundlines*. All groundlines must be made entirely of sinking line. Floating groundlines are prohibited. The attachment of buoys, toggles, or other floatation devices to groundlines is prohibited.

(*ii*) *Buoy lines*. All buoy lines must be composed of sinking line except the bottom portion of the line, which may be a section of floating line not to exceed one-third the overall length of the buoy line.

(*iii*) *Northern Inshore State Trap/Pot Waters, Northern Nearshore Trap/Pot Waters Areas, Stellwagen Bank/Jeffreys Ledge Restricted Area, and Great South Channel Restricted Trap/Pot Area (that overlaps with LMA 2 and Outer Cape LMA only) buoy line weak links*. All buoys, flotation devices, and/or weights (except traps/pots, anchors, and leadline woven into the buoy line), such as surface buoys, high flyers, subsurface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device, and/or weight as operationally feasible that has a maximum breaking strength of up to 600 lb (272.2 kg). The weak link must be chosen from the following list approved by NMFS: Swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(*iv*) *Offshore Trap/Pot Waters Area and Great South Channel Restricted Trap/Pot Area (that overlaps with LMA 2/3 Overlap and LMA 3 only) buoy line weak links*. All buoys, flotation devices, and/or weights (except traps/pots, anchors,

and leadline woven into the buoy line), such as surface buoys, high flyers, subsurface buoys, toggles, window weights, etc., must be attached to the buoy line with a weak link placed as close to each individual buoy, flotation device, and/or weight as operationally feasible that has a maximum breaking strength of up to 1,500 lb (680.4 kg). The weak link must be chosen from the following list approved by NMFS: swivels, plastic weak links, rope of appropriate breaking strength, hog rings, rope stapled to a buoy stick, or other materials or devices approved in writing by the Assistant Administrator. Weak links must break cleanly leaving behind the bitter end of the line. The bitter end of the line must be free of any knots when the weak link breaks. Splices are not considered to be knots for the purposes of this provision. A brochure illustrating the techniques for making weak links is available from the Regional Administrator, NMFS, Northeast Region upon request.

(ii) *SAM East*—(A) *Area*. SAM East consists of all waters bounded by straight lines connecting the following points in the order stated:

SAM EAST

| Point | N. Lat. | W. Long. |
|---|---|---|
| 1E | 42°30′ | 69°45′ |
| 2E | 42°30′ | 67°27′ |
| 3E | 42°09′ | 67°08.4′ |
| 4E | 41°00′ | 69°05′ |
| 5E | 41°40′ | 69°45′ |

(B) *Gear or vessel requirements*. Unless otherwise authorized by the Assistant Administrator, in accordance with paragraph (i)(2) of this section, from May 1 through July 31, no person or vessel may fish with or possess anchored gillnet or trap/pot gear in SAM East unless that gear complies with the gear modifications found in paragraphs (i)(3)(i)(B)(*1*) and (i)(3)(i)(B)(*2*) of this section, or unless the gear is stowed as specified in § 229.2.

[72 FR 57181, Oct. 5, 2007, as amended at 73 FR 51241, Oct. 2, 2008]

### § 229.33 Harbor Porpoise Take Reduction Plan Regulations—New England.

(a) *Restrictions*—(1) *Northeast Closure Area*—(i) *Area restrictions*. From August 15 through September 13, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Northeast Closure Area. This restriction does not apply to vessels fishing with a single pelagic gillnet (as described and used as set forth in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Northeast Closure Area is bounded by straight lines connecting the following points in the order stated:

NORTHEAST CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| NE1 | 44°27.3′ | 68°55.0′ (ME shoreline) |
| NE2 | 43°29.6′ | 68°55.0′ |
| NE3 | 44°04.4′ | 67°48.7′ |
| NE4 | 44°06.9′ | 67°52.8′ |
| NE5 | 44°31.2′ | 67°02.7′ |
| NE6 | 44°45.8′ | 67°02.7′ (ME shoreline) |

(2) *Mid-Coast Management Area*—(i) *Area restrictions*. From September 15 through May 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Mid-Coast Management Area, unless the gillnet gear is equipped with pingers in accordance with paragraphs (b) and (c) of this section. This prohibition does not apply to vessels fishing with a single pelagic gillnet (as described and used as set forth in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Mid-Coast Management Area is the area bounded by straight lines connecting the following points in the order stated:

MID-COAST MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| MC1 | 42°30.0′ | 70°50.1′ (MA shoreline) |
| MC2 | 42°30.0′ | 70°15.0′ |
| MC3 | 42°40.0′ | 70°15.0′ |
| MC4 | 42°40.0′ | 70°00.0′ |
| MC5 | 43°00.0′ | 70°00.0′ |
| MC6 | 43°00.0′ | 69°30.0′ |
| MC7 | 43°30.0′ | 69°30.0′ |
| MC8 | 43°30.0′ | 69°00.0′ |
| MC9 | 44°17.8′ | 69°00.0′ (ME shoreline) |

(iii) *Closing procedures*. According to paragraphs (d)(1), (d)(3), and (d)(4) of this section, NMFS shall close the western portion of the Mid-Coast Management Area (west of 70°15′ W. long.) from October 1 through November 30 annually by incorporating it into the Coastal Gulf of Maine Closure Area if, after two full, consecutive management seasons, the average observed bycatch rate of harbor porpoises for the Mid-Coast, Massachusetts Bay, and Stellwagen Bank Management Areas combined exceeds the target harbor porpoise bycatch rate of 0.031 harbor porpoises per metric tons of landings.

(3) *Massachusetts Bay Management Area*—(i) *Area restrictions*. From November 1 through February 28/29 and from April 1 through May 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Massachusetts Bay Management Area, unless the gillnet gear is equipped with pingers in accordance with paragraphs (b) and (c) of this section. From March 1 through March 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Massachusetts Bay Management Area. These restrictions do not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Massachusetts Bay Management Area is bounded by straight lines connecting the following points in the order stated:

MASSACHUSETTS BAY MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| MB1 | 42°30.0′ | 70°50.1′ (MA shoreline) |
| MB2 | 42°30.0′ | 70°30.0′ |
| MB3 | 42°15.0′ | 70°30.0′ |
| MB4 | 42°15.0′ | 70°00.0′ |
| MB5 | 42°00.0′ | 70°00.0′ |
| MB6 | 42°00.0′ | 70°01.2′ (MA shoreline) |
| MB7 | 42°00.0′ | 70°04.8′ (MA shoreline) |
| MB8 | 42°00.0′ | 70°42.2′ (MA shoreline) |

(iii) *Closing procedures*. According to paragraphs (d)(1), (d)(3), and (d)(4) of this section, NMFS shall close a portion of the Massachusetts Bay Management Area (north of 42°15′ N. lat.) from October 1 through November 30 annually by incorporating it into the Coastal Gulf of Maine Closure Area if, after two full, consecutive management seasons, the average observed bycatch rate of harbor porpoises for the Massachusetts Bay, Mid-Coast, and Stellwagen Bank Management Areas combined exceeds the target harbor porpoise bycatch rate of 0.031 harbor porpoises per metric tons of landings.

(4) *Stellwagen Bank Management Area*—(i) *Area restrictions*. From November 1 through May 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Stellwagen Bank Management Area, unless the gillnet gear is equipped with pingers in accordance with paragraphs (b) and (c) of this section. This restriction does not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Stellwagen Bank Management Area is bounded by straight lines connecting the following points in the order stated:

STELLWAGEN BANK MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| SB1 | 42°30.0′ | 70°30.0′ |
| SB2 | 42°30.0′ | 70°15.0′ |
| SB3 | 42°15.0′ | 70°15.0′ |
| SB4 | 42°15.0′ | 70°30.0′ |
| SB1 | 42°30.0′ | 70°30.0′ |

(iii) *Closing procedures*. According to paragraphs (d)(1), (d)(3), and (d)(4) of this section, NMFS shall close the Stellwagen Bank Management Area from October 1 through November 30 annually by incorporating it into the Coastal Gulf of Maine Closure Area if, after two full, consecutive management seasons, the average observed bycatch rate of harbor porpoises for the Stellwagen Bank, Mid-Coast, and Massachusetts Bay Management Areas combined exceeds the target harbor porpoise bycatch rate of 0.031 harbor porpoises per metric tons of landings.

(5) *Southern New England Management Area*—(i) *Area restrictions*. From December 1 through May 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Southern New England Management Area, unless the gillnet gear is equipped with pingers in accordance with paragraphs (b) and (c) of this section. This prohibition does not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Southern New England Management Area is bounded by straight lines connecting the following points in the order stated:

SOUTHERN NEW ENGLAND MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| SNE1 | Western boundary as specified [1]. | |
| SNE2 | 40°00.0′ | 72°30.0′ |
| SNE3 | 40°00.0′ | 69°30.0′ |
| SNE4 | 42°15.0′ | 69°30.0′ |
| SNE5 | 42°15.0′ | 70°00.0′ |
| SNE6 | 41°58.3′ | 70°00.0′ (MA shoreline) |

[1] Bounded on the west by a line running from the Rhode Island shoreline at 41°18.2′ N. lat. and 71°51.5′ W. long. (Watch Hill, RI), southwesterly through Fishers Island, NY, to Race Point, Fishers Island, NY; and from Race Point, Fishers Island, NY; southeasterly to the intersection of the 3-nautical mile line east of Montauk Point; southwesterly along the 3-nautical mile line to the intersection of 72°30.0′ W. long.

(iii) *Closing procedures*. According to paragraphs (d)(2), (d)(3), and (d)(4) of this section, NMFS shall close two areas (Cape Cod South Expansion Closure Area and Eastern Cape Cod Closure Area) within the Southern New England Management Area from February 1 through April 30 annually if, after two full, consecutive management seasons, the average observed bycatch rate of harbor porpoises for the Southern New England Management Area exceeds the target harbor porpoise bycatch rate of 0.023 harbor porpoises per metric tons of landings.

(6) *Cape Cod South Closure Area*—(i) *Area restrictions*. From March 1 through March 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Cape Cod South Closure Area. This prohibition does not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Cape Cod South Closure Area is bounded by straight lines connecting the following points in the order stated:

CAPE COD SOUTH CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| CCS1 | 41°19.6′ | 71°45.0′ (RI shoreline) |
| CCS2 | 40°40.0′ | 71°45.0′ |
| CCS3 | 40°40.0′ | 70°30.0′ |
| CCS4 | 41°20.9′ | 70°30.0′ |
| CCS5 | 41°23.1′ | 70°30.0′ |
| CCS6 | 41°33.1′ | 70°30.0′ (MA shoreline) |

(iii) *Closing procedures*. According to paragraphs (d)(2), (d)(3), and (d)(4) of this section, NMFS shall close the Cape Cod South Closure Area and an area to its south (Cape Cod South Expansion Closure Area) from February 1 through April 30 annually if, after two full, consecutive management seasons, the average observed bycatch rate of harbor porpoises for the Southern New England Management Area exceeds the target harbor porpoise bycatch rate of 0.023 harbor porpoises per metric tons of landings.

(7) *Offshore Management Area*—(i) *Area restrictions*. From November 1 through May 31, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Offshore Management Area, unless the gillnet gear is equipped with pingers in accordance with paragraphs (b) and (c) of this section. This restriction does not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Offshore Management Area is bounded by straight lines connecting the following points in the order stated:

OFFSHORE MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| OFS1 | 42°50.0′ | 69°30.0′ |
| OFS2 | 43°10.0′ | 69°10.0′ |
| OFS3 | 43°10.0′ | 67°40.0′ |
| OFS4 | 43°05.8′ | 67°40.0′ (EEZ boundary) |

OFFSHORE MANAGEMENT AREA—Continued

| Point | N. Lat. | W. Long. |
|---|---|---|
| OFS5 | 42°53.1′ | 67°44.5′ (EEZ boundary) |
| OFS6 | 42°47.3′ | 67°40.0′ (EEZ boundary) |
| OFS7 | 42°10.0′ | 67°40.0′ |
| OFS8 | 42°10.0′ | 69°30.0′ |
| OFS1 | 42°50.0′ | 69°30.0′ |

(8) *Cashes Ledge Closure Area*—(i) *Area restrictions*. During the month of February, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Cashes Ledge Closure Area. This restriction does not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title).

(ii) *Area boundaries*. The Cashes Ledge Closure Area is bounded by straight lines connecting the following points in the order stated:

CASHES LEDGE CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| CL1 | 42°30.0′ | 69°00.0′ |
| CL2 | 42°30.0′ | 68°30.0′ |
| CL3 | 43°00.0′ | 68°30.0′ |
| CL4 | 43°00.0′ | 69°00.0′ |
| CL1 | 42°30.0′ | 69°00.0′ |

(b) *Pingers*—(1) *Pinger specifications*. For the purposes of this subpart, a pinger is an acoustic deterrent device which, when immersed in water, broadcasts a 10 kHz (plus or minus 2 kHz) sound at 132 dB (plus or minus 4 dB) re 1 micropascal at 1 m, lasting 300 milliseconds (plus or minus 15 milliseconds), and repeating every 4 seconds (plus or minus 0.2 seconds).

(2) *Pinger attachment*. An operating and functional pinger must be attached at each end of a string of gillnets and at the bridle of every net, or every 300 feet (91.4 m or 50 fathoms), whichever is closer.

(c) *Pinger training and authorization*. The operator of a vessel may not fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies in closed areas where pingers are required as specified under paragraph (b) of this section, unless the operator has satisfactorily received pinger training and possesses and retains on board the vessel a valid pinger training authorization issued by NMFS.

(d) *Annual review for consequence area actions*—(1) *Coastal Gulf of Maine Closure Area*—(i) *Establishment*. If, after two full, consecutive management seasons, the calculated average observed bycatch rate of the Mid-Coast, Massachusetts Bay, and Stellwagen Bank Management Areas exceeds the target bycatch rate of 0.031 harbor porpoises per metric tons of landings, the Coastal Gulf of Maine Closure Area shall be established.

(ii) *Restrictions*. From October 1 through November 30, it will be prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Coastal Gulf of Maine Closure Area. This prohibition will not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title). When the area is open to fishing, the requirements of the Mid-Coast (as described in paragraph (a)(2) of this section), Massachusetts Bay (as described in paragraph (a)(3) of this section), and Stellwagen Bank (as described in paragraph (a)(4) of this section) Management Areas will remain in effect.

(iii) *Area boundaries*. The Coastal Gulf of Maine Closure Area is bounded by straight lines connecting the following points in the order stated:

COASTAL GULF OF MAINE CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| CGM1 | 43°33.0′ | 70°15.0′ (ME shoreline) |
| CGM2 | 42°15.0′ | 70°15.0′ |
| CGM3 | 42°15.0′ | 70°46.0′ (MA shoreline) |

(2) *Cape Cod South Expansion and Eastern Cape Cod Closure Areas*—(i) *Establishment*. If, after two full, consecutive management seasons, the calculated average observed bycatch rate of the Southern New England Management Area exceeds the target bycatch rate of 0.023 harbor porpoises per metric tons of landings, the Cape Cod

South Expansion Closure Area and the Eastern Cape Cod Closure Area shall be established.

(ii) *Restrictions.* From February 1 through April 30, it will be prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove sink gillnet gear or gillnet gear capable of catching multispecies from the Cape Cod South Expansion Closure Area and the Eastern Cape Cod Closure Area. This prohibition will not apply to vessels fishing with a single pelagic gillnet (as described in § 648.81(f)(2)(ii) of this title). When the areas are open to fishing, the requirements of the Southern New England Management Area, as described in paragraph (a)(5) of this section, will remain in effect.

(iii) *Area boundaries.* (A) The Cape Cod South Expansion Closure Area is bounded by straight lines connecting the following points in the order stated:

CAPE COD SOUTH EXPANSION CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| CCSE1 | 41°19.6′ | 71°45.0′ (RI shoreline) |
| CCSE2 | 40°00.0′ | 71°45.0′ |
| CCSE3 | 40°00.0′ | 70°00.0′ |
| CCSE4 | 40°30.0′ | 70°00.0′ |
| CCSE5 | 40°30.0′ | 70°30.0′ |
| CCSE6 | 41°20.9′ | 70°30.0′ |
| CCSE7 | 41°23.1′ | 70°30.0′ |
| CCSE8 | 41°33.1′ | 70°30.0′ (MA shoreline) |

(B) The Eastern Cape Cod Closure Area is bounded by straight lines connecting the following points in the order stated:

EASTERN CAPE COD CLOSURE AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| ECC1 | 41°58.3′ | 70°00.0′ (MA shoreline) |
| ECC2 | 42°15.0′ | 70°00.0′ |
| ECC3 | 42°15.0′ | 69°30.0′ |
| ECC4 | 41°40.0′ | 69°30.0′ |
| ECC5 | 41°40.0′ | 69°56.8′ (MA shoreline) |

(3) *Notification.* Upon determining that establishing a consequence closure area as described in paragraphs (d)(1) and (d)(2) of this section is necessary, NMFS will notify, in advance of the closure, the Harbor Porpoise Take Reduction Team and gillnet permit holders through mail notification. NMFS will also publish notification in the FEDERAL REGISTER and post information on the Harbor Porpoise Take Reduction Plan Web site related to the establishment of the closure area(s).

(4) If any or all of the closure areas discussed in paragraphs (d)(1) and (d)(2) are implemented, NMFS will monitor harbor porpoise bycatch rates throughout the New England region. The provisions set forth in paragraphs (d)(1) and (d)(2) shall remain in effect each year after implementation until bycatch levels approach a zero mortality and serious injury rate (ZMRG), or until NMFS, in collaboration with the Harbor Porpoise Take Reduction Team, develops and implements new measures.

(e) *Research permits.* An exemption to the requirements set forth in this section may be acquired for the purposes of conducting scientific or gear research within the restricted areas described in this section. A scientific research permit must be acquired through NMFS's existing permit application process, administered by NMFS.

(f) *Other special measures.* The Assistant Administrator may revise the requirements of this section through notification published in the FEDERAL REGISTER if:

(1) NMFS determines that pinger operating effectiveness in the commercial gillnet fishery is inadequate to reduce bycatch below the stock's PBR level; or

(2) NMFS determines that the boundary or timing of a closed area is inappropriate, or that gear modifications (including pingers) are not reducing bycatch to below the PBR level.

[75 FR 7396, Feb. 19, 2010]

### § 229.34 Harbor Porpoise Take Reduction Plan Regulations—Mid-Atlantic.

(a)(1) *Regulated waters.* The regulations in this section apply to all waters in the Mid-Atlantic bounded on the east by 72°30′ W. long. at the southern coast of Long Island, NY at 40°50.1′ N. lat. and on the south by the NC/SC border (33°51.1′ N. lat.), except for the areas exempted in paragraph (a)(2) of this section.

(2) *Exempted waters.* The regulations within this section are not applicable

to waters landward of the first bridge over any embayment, harbor, or inlet, or to waters landward of the following lines:

New York

40°45.70′ N., 72°45.15′ W. to 40°45.72′ N., 72°45.30′ W. (Moriches Bay Inlet)

40°37.32′ N., 73°18.40′ W. to 40°38.00′ N., 73°18.56′ W. (Fire Island Inlet)

40°34.40′ N., 73°34.55′ W. to 40°35.08′ N., 73°35.22′ W. (Jones Inlet)

New Jersey/Delaware

39°45.90′ N., 74°05.90′ W. to 39°45.15′ N., 74°06.20′ W. (Barnegat Inlet)

39°30.70′ N., 74°16.70′ W. to 39°26.30′ N., 74°19.75′ W. (Beach Haven to Brigantine Inlet)

38°56.20′ N., 74°51.70′ W. to 38°56.20′ N., 74°51.90′ W. (Cape May Inlet)

All marine and tidal waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by NOAA (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80. (Delaware Bay)

Maryland/Virginia

38°19.48′ N., 75°05.10′ W. to 38°19.35′ N., 75°05.25′ W. (Ocean City Inlet)

All marine and tidal waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by NOAA (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80. (Chincoteague to Ship Shoal Inlet)

37°11.10′ N., 75°49.30′ W. to 37°10.65′ N., 75°49.60′ W. (Little Inlet)

37°07.00′ N., 75°53.75′ W. to 37°05.30′ N., 75°56.′ W. (Smith Island Inlet)

North Carolina

All marine and tidal waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by NOAA (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80.

(b) *Restrictions*—(1) *Waters off New Jersey Management Area*. The Waters off New Jersey Management Area is bounded by straight lines connecting the following points in the order stated:

WATERS OFF NEW JERSEY MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| WNJ1 ..... | 40°50.1′ ..... | 72°30.0′ (NY shoreline) |
| WNJ2 ..... | 38°47.0′ ..... | 72°30.0′ |
| WNJ3 ..... | 38°47.0′ ..... | 75°05.0′ (DE shoreline) |

(i) *Closure*. From April 1 through April 20, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear from the Waters off New Jersey Management Area.

(ii) *Gear limitations and requirements—large mesh gillnet gear*. From January 1 through April 30, except during April 1 through April 20, as described in paragraph (b)(1)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear in the Waters off New Jersey Management Area, unless the gear complies with the specified gear characteristics described in paragraphs (b)(1)(ii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Waters off New Jersey Management Area with large mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(1)(ii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is not more than 4,800 ft (1,463.0 m).

(B) *Twine size*. The twine is at least 0.035 inches (0.90 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.44 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel, or deployed by the vessel, does not exceed 80.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 16.

(F) *Tie-down system*. The gillnet gear is equipped with tie-downs spaced not more than 24 ft (7.3 m) apart along the floatline, and each tie-down is not more than 48 inches (18.90 cm) in length

from the point where it connects to the floatline to the point where it connects to the lead line.

(iii) *Gear limitations and requirements—small mesh gillnet gear.* From January 1 through April 30, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any small mesh gillnet gear in the Waters off New Jersey Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(1)(iii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Waters off New Jersey Management Area with small mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(1)(iii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length.* The floatline is not more than 3,000 ft (914.4 m) in length.

(B) *Twine size.* The twine is at least 0.031 inches (0.81 mm) in diameter.

(C) *Size of nets.* Individual nets or net panels are not more than 300 ft (91.4 m or 50 fathoms) in length.

(D) *Number of nets.* The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 45.

(E) *Number of nets per string.* The total number of nets or net panels in a net string does not exceed 10.

(F) *Tie-down system.* Tie-downs are prohibited.

(2) *Mudhole North Management Area.* The Mudhole North Management Area is bounded by straight lines connecting the following points in the order stated:

MUDHOLE NORTH MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| MN1 | 40°28.1′ | 74°00.0′ (NJ shoreline) |
| MN2 | 40°30.0′ | 74°00.0′ |
| MN3 | 40°30.0′ | 73°20.0′ |
| MN4 | 40°05.0′ | 73°20.0′ |
| MN5 | 40°05.0′ | 74°02.0′ (NJ shoreline) |

(i) *Closures.* From February 15 through March 15, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large or small mesh gillnet gear from the Mudhole North Management Area. In addition, from April 1 through April 20, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear from the Mudhole North Management Area.

(ii) *Gear limitations and requirements—large mesh gillnet gear.* From January 1 through April 30, except during February 15 through March 15 and April 1 through April 20 as described in paragraph (b)(2)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear in the Mudhole North Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(2)(ii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Mudhole North Management Area with large mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(2)(ii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length.* The floatline is not more than 3,900 ft (1,188.7 m).

(B) *Twine size.* The twine is at least 0.035 inches (0.90 mm) in diameter.

(C) *Size of nets.* Individual nets or net panels are not more than 300 ft (91.44 m or 50 fathoms) in length.

(D) *Number of nets.* The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 80.

(E) *Number of nets per string.* The total number of nets or net panels in a net string does not exceed 13.

(F) *Tie-down system.* The gillnet gear is equipped with tie-downs spaced not more than 24 ft (7.3 m) apart along the floatline, and each tie-down is not more than 48 inches (18.90 cm) in length

from the point where it connects to the floatline to the point where it connects to the lead line.

(iii) *Gear limitations and requirements—small mesh gillnet gear*. From January 1 through April 30, except during February 15 through March 15 as described in paragraph (b)(2)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any small mesh gillnet gear in the Mudhole North Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(2)(iii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Mudhole North Management Area with small mesh gillnet gear on board unless the gear complies with the specified gear characteristics described in paragraphs (b)(2)(iii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is not more than 3,000 ft (914.4 m) in length.

(B) *Twine size*. The twine is at least 0.031 inches (0.81 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.4 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 45.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 10.

(F) *Tie-down system*. Tie-downs are prohibited.

(3) *Mudhole South Management Area*. The Mudhole South Management Area is bounded by straight lines connecting the following points in the order stated:

MUDHOLE SOUTH MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| MS1 | 40°05.0′ | 73°31.0′ |
| MS2 | 40°05.0′ | 73°00.0′ |
| MS3 | 39°51.0′ | 73°00.0′ |
| MS4 | 39°51.0′ | 73°31.0′ |
| MS1 | 40°05.0′ | 73°31.0′ |

(i) *Closures*. From February 1 through March 15, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large or small mesh gillnet gear in the Mudhole South Management Area. In addition, from April 1 through April 20, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear from the Mudhole South Management Area.

(ii) *Gear limitations and requirements—large mesh gillnet gear*. From January 1 through April 30, except during February 1 through March 15 and April 1 through April 20 as described in paragraph (b)(3)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear in the Mudhole South Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(3)(ii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Mudhole South Management Area with large mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(3)(ii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is not more than 3,900 ft (1,188.7 m).

(B) *Twine size*. The twine is at least 0.035 inches (0.90 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.44 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 80.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 13.

(F) *Tie-down system*. The gillnet gear is equipped with tie-downs spaced not more than 24 ft (7.3 m) apart along the floatline, and each tie-down is not more than 48 inches (18.90 cm) in length from the point where it connects to the

floatline to the point where it connects to the lead line.

(iii) *Gear limitations and requirements—small mesh gillnet gear*. From January 1 through April 30 of each year, except during February 1 through March 15 as described in paragraph (b)(3)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any small mesh gillnet gear in the Mudhole South Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(3)(iii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Mudhole South Management Area with small mesh gillnet gear on board unless the gear complies with the specified gear characteristics described in paragraphs (b)(3)(iii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is not more than 3,000 ft (914.4 m) in length.

(B) *Twine size*. The twine is at least 0.031 inches (0.81 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.4 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 45.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 10.

(F) *Tie-down system*. Tie-downs are prohibited.

(4) *Southern Mid-Atlantic Management Area*. The Southern Mid-Atlantic Management Area is bounded by straight lines connecting the following points in the order stated:

SOUTHERN MID-ATLANTIC MANAGEMENT AREA

| Point | N. Lat. | W. Long. |
|---|---|---|
| SMA1 ..... | 38°47.0′ ..... | 75°05.0′ (DE shoreline) |
| SMA2 ..... | 38°47.0′ ..... | 72°30.0′ |
| SMA3 ..... | 33°51.1′ ..... | 72°30.0′ |
| SMA4 ..... | 33°51.1′ ..... | 78°32.5′ (NC/SC border) |

(i) *Closures*. From February 15 through March 15, it is prohibited to fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear from the Southern Mid-Atlantic Management Area.

(ii) *Gear limitations and requirements—large mesh gillnet gear*. From February 1 through April 30, except during February 15 through March 15 as described in paragraph (b)(4)(i) of this section, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any large mesh gillnet gear in the Southern Mid-Atlantic Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(4)(ii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Southern Mid-Atlantic Management Area with large mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(4)(ii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is not more than 3,900 ft (1,188.7 m) in length.

(B) *Twine size*. The twine is at least 0.035 inches (0.90 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.4 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 80.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 13.

(F) *Tie-down system*. The gillnet gear is equipped with tie-downs spaced not more than 24 ft (7.3 m) apart along the floatline, and each tie-down is not more than 48 inches (18.90 cm) in length from the point where it connects to the floatline to the point where it connects to the lead line.

(iii) *Gear limitations and requirements—small mesh gillnet gear*. From

February 1 through April 30, no person may fish with, set, haul back, possess on board a vessel unless stowed in accordance with § 229.2, or fail to remove any small mesh gillnet gear in the Southern Mid-Atlantic Management Area unless the gear complies with the specified gear characteristics described in paragraphs (b)(4)(iii)(A) through (F) of this section. During this period, no vessel may enter or remain in the Southern Mid-Atlantic Management Area with small mesh gillnet gear on board, unless the gear complies with the specified gear characteristics described in paragraphs (b)(4)(iii)(A) through (F) of this section, or is stowed in accordance with § 229.2. In order to comply with these specified gear characteristics, the gear must have all the following characteristics:

(A) *Floatline length*. The floatline is no longer than 2,118 ft (645.6 m).

(B) *Twine size*. The twine is at least 0.031 inches (0.81 mm) in diameter.

(C) *Size of nets*. Individual nets or net panels are not more than 300 ft (91.4 m or 50 fathoms) in length.

(D) *Number of nets*. The total number of individual nets or net panels for a vessel, including all nets on board the vessel, hauled by the vessel or deployed by the vessel, does not exceed 45.

(E) *Number of nets per string*. The total number of nets or net panels in a net string does not exceed 7.

(F) *Tie-down system*. Tie-downs are prohibited.

(c) *Research permits*. An exemption to the requirements set forth in this section may be acquired for the purposes of conducting scientific or gear research within the restricted areas described in this section. A scientific research permit must be acquired through NMFS' existing permit application process, administered by NMFS.

(d) *Other special measures*. The Assistant Administrator may revise the requirements of this section through notification published in the FEDERAL REGISTER if NMFS determines that the boundary or timing of a closed area is inappropriate, or that gear modifications are not reducing bycatch to below the stock's PBR level.

[75 FR 7399, Feb. 19, 2010]

## § 229.35 Bottlenose Dolphin Take Reduction Plan.

(a) *Purpose and scope*. The purpose of this section is to implement the Bottlenose Dolphin Take Reduction Plan to reduce incidental mortality and serious injury of the western North Atlantic coastal bottlenose dolphin stock in specific Category I and Category II commercial fisheries from New Jersey through Florida. Specific Category I and II commercial fisheries within the scope of the BDTRP are identified and updated in the annual List of Fisheries. Gear restricted by this section includes small, medium, and large mesh gillnets. The geographic scope of the BDTRP is all tidal and marine waters within 6.5 nautical miles (12 km) of shore from the New York-New Jersey border southward to Cape Hatteras, North Carolina, and within 14.6 nautical miles (27 km) of shore from Cape Hatteras southward to, and including, the east coast of Florida down to the fishery management council demarcation line between the Atlantic Ocean and the Gulf of Mexico (as described in § 600.105 of this title).

(b) *Definitions*. In addition to the definitions contained in the Act, § 216.3 and § 229.2 of this chapter, the terms defined in this section shall have the following definitions, even if a contrary definition exists in the Act, § 216.3, or § 229.2:

*Beach* means landward of and including the mean low water line.

*Beach/water interface* means the mean low water line.

*Large mesh gillnet* means a gillnet constructed with a mesh size greater than or equal to 7–inches (17.8 cm) stretched mesh.

*Medium mesh gillnet* means a gillnet constructed with a mesh size of greater than 5–inches (12.7 cm) to less than 7–inches (17.8 cm) stretched mesh.

*New Jersey, Delaware, and Maryland State waters* means the area consisting of all marine and tidal waters, within 3 nautical miles (5.56 km) of shore, bounded on the north by 40o 30′ N. (New York/New Jersey border at the coast) and on the south by 38o 01.6′ N. (Maryland/Virginia border at the coast).

*Night* means any time between one hour after sunset and one hour prior to sunrise.

*Northern North Carolina State waters* means the area consisting of all marine and tidal waters, within 3 nautical miles (5.56 km) of shore, bounded on the north by 36° 33′ N. (Virginia/North Carolina border at the coast) and on the south by 34° 35.4′ N. (Cape Lookout, North Carolina).

*Northern Virginia State waters* means the area consisting of all marine and tidal waters, within 3 nautical miles (5.56 km) of shore, bounded on the north by 38° 01.6′ N. (Virginia/Maryland border at the coast) and on the south by 37° 07.23′ N. (Cape Charles Light on Smith Island in the Chesapeake Bay mouth).

*Small mesh gillnet* means a gillnet constructed with a mesh size of less than or equal to 5–inches (12.7 cm) stretched mesh.

*South Carolina, Georgia, and Florida waters* means the area consisting of all marine and tidal waters, within 14.6 nautical miles (27 km) of shore, between 33° 52′ N. (North Carolina/South Carolina border at the coast) and the fishery management council demarcation line between the Atlantic Ocean and the Gulf of Mexico (as described in § 600.105 of this title).

*Southern North Carolina State waters* means the area consisting of all marine and tidal waters, within 3 nautical miles (5.56 km) of shore, bounded on the north by 34° 35.4′ N. (Cape Lookout, North Carolina) and on the south by 33° 52′ N. (North Carolina/South Carolina border at the coast).

*Southern Virginia State waters* means the area consisting of all marine and tidal waters, within 3 nautical miles (5.56 km) of shore, bounded on the north by 37° 07.23′ N. (Cape Charles Light on Smith Island in the Chesapeake Bay mouth) and on the south by 36° 33′ N. (Virginia/North Carolina border at the coast).

(c) *Regulated waters.* The regulations in this section apply to New Jersey, Delaware, and Maryland State waters; Northern North Carolina State waters; Northern Virginia State waters; South Carolina, Georgia, and Florida waters; Southern North Carolina State waters; and Southern Virginia State waters as defined in § 229.35(b), except for the waters identified in § 229.34(a)(2), with the following modification and addition. From Chincoteague to Ship Shoal Inlet in Virginia (37° 52′ N. 75° 24.30′ W. to 37° 11.90′ N. 75° 48.30′ W) and South Carolina, Georgia, and Florida waters, those waters landward of the 72 COLREGS demarcation line (International Regulations for Preventing Collisions at Sea, 1972), as depicted or noted on nautical charts published by the National Oceanic and Atmospheric Administration (Coast Charts 1:80,000 scale), and as described in 33 CFR part 80 are excluded from the regulations.

(d) *Regional management measures*—(1) *New Jersey, Delaware, and Maryland State waters*''(i) *Medium and large mesh.* From June 1 through October 31, in New Jersey, Delaware, and Maryland State waters, no person may fish with any medium or large mesh anchored gillnet gear at night unless such person remains within 0.5 nautical mile (0.93 km) of the closest portion of each gillnet and removes all such gear from the water and stows it on board the vessel before the vessel returns to port.

(ii) [Reserved]

(2) *Virginia state waters*—(i) *Medium and large mesh.* From June 1 through October 31, in Southern Virginia State waters and Northern Virginia State waters, no person may fish with any medium or large mesh anchored gillnet gear at night unless such person remains within 0.5 nautical mile (0.93 km) of the closest portion of each gillnet and removes all such gear from the water and stows it on board the vessel before the vessel returns to port.

(ii) [Reserved]

(3) *Southern Virginia State waters*—(i) *Large mesh gillnets.* From November 1 through December 31, in Southern Virginia State waters, no person may fish with, possess on board a vessel unless stowed, or fail to remove from the water, any large mesh gillnet gear at night.

(ii) [Reserved]

(4) *Northern North Carolina State waters*—(i) *Small mesh gillnets.* From May 1 through October 31, in Northern North Carolina State waters, no person may fish with any small mesh gillnet gear longer than 1,000 feet (304.8 m).

(ii) *Medium mesh gillnets.* From November 1 through April 30 of the following year, in Northern North Carolina State waters, no person may fish

with any medium mesh gillnet at night. This provision expires on May 26, 2012.

(iii) *Large mesh gillnets.* (A) From April 15 through December 15, in Northern North Carolina State waters, no person may fish with any large mesh gillnet.

(B) From December 16 through April 14 of the following year, in Northern North Carolina State waters, no person may fish with any large mesh gillnet without tie-downs at night.

(5) *Southern North Carolina State waters*—(i) *Medium Mesh Gillnets.* From November 1 through April 30 of the following year, in Southern North Carolina State waters, no person may fish with any medium mesh gillnet at night. This provision expires on May 26, 2012.

(ii) *Large mesh gillnets.* (A) From April 15 through December 15, in Southern North Carolina State waters, no person may fish with any large mesh gillnet.

(B) From December 16 through April 14 of the following year, in Southern North Carolina State waters, no person may fish, possess on board unless stowed, or fail to remove from the water, any large mesh gillnet at night.

(6) *South Carolina, Georgia, and Florida waters*—(i) *Gillnets.* Year-round, in South Carolina, Georgia, and Florida waters, no person may fish with any gillnet gear unless such person remains within 0.25 nautical miles (0.46 km) of the closest portion of the gillnet. Gear shall be removed from the water and stowed on board the vessel before the vessel returns to port.

(ii) [Reserved]

[71 FR 24796, Apr. 26, 2006, as amended at 73 FR 77533, Dec. 19, 2008]

### § 229.36 Atlantic Pelagic Longline Take Reduction Plan (PLTRP).

(a) *Purpose and scope.* The purpose of this section is to implement the PLTRP to reduce incidental mortality and serious injury of long-finned and short-finned pilot whales and Risso's dolphins in the Atlantic pelagic longline fishery off the U.S. east coast, a component of the Atlantic Ocean, Caribbean, Gulf of Mexico large pelagics longline fishery.

(1) *Persons subject to this section.* The regulations in this section apply to the owner and operator of any vessel that has been issued or is required to be issued an Atlantic HMS tunas, swordfish, or shark permit under § 635.4 of this title and that has pelagic longline gear onboard as described under § 635.21(c) of this title.

(2) *Geographic scope.* The geographic scope of the PLTRP is the Atlantic Federal EEZ off the U.S. East Coast. The regulations specified in paragraphs (b) through (d) of this section apply throughout the Atlantic Federal EEZ off the U.S. East Coast. The regulation specified in paragraph (e) of this section applies to all U.S. Atlantic pelagic longline vessels operating in the EEZ portion of the Mid-Atlantic Bight.

(b) Definitions. In addition to the definitions contained in the MMPA and §§ 216.3 and 229.2 of this chapter, the following definitions apply.

(1) *Cape Hatteras Special Research Area (CHSRA)* means all waters inside and including the rectangular boundary described by the following lines: 35° N. lat., 75° W. long., 36° 25' N. lat., and 74° 35' W. long.

(2) *Mid-Atlantic Bight* means the area bounded by straight lines connecting the mid-Atlantic states' internal waters and extending to 71° W. long. between 35° N. lat. and 43° N. lat.

(3) *Observer* means an individual authorized by NMFS, or a designated contractor, placed aboard a commercial fishing vessel to record information on marine mammal interactions, fishing operations, marine mammal life history information, and other scientific data; to collect biological specimens; and to perform other scientific investigations.

(4) *Pelagic longline* has the same meaning as in § 635.2 of this title.

(c) *Marine Mammal Handling and Release Placard.* The placard, ''Marine Mammal Handling/Release Guidelines: A Quick Reference for Atlantic Pelagic Longline Gear,'' must be kept posted inside the wheelhouse and on the working deck. You may contact the NMFS Southeast Regional Office at (727) 824–5312 to request additional copies of the placard.

(d) *CHSRA*—(1) *Special observer requirements.* If you deploy or fish with

pelagic longline gear in the CHSRA, or intend to do so, you must call NMFS Southeast Fisheries Science Center (SEFSC), 1–888–254–2558, at least 48 hours, but no more than 96 hours, prior to embarking on your fishing trip. This requirement is in addition to any existing selection and notification requirement for observer coverage by the Pelagic Observer Program. If, upon calling in, you are informed by the NMFS SEFSC that no observer will be assigned and that no special research requirements will apply for that trip, then you need not wait until your stated date and time of departure and may depart on your fishing trip immediately. If you are assigned an observer, you must take the observer during that fishing trip. If you do not take the observer, you are prohibited from deploying or fishing with pelagic longline gear in the CHSRA for that fishing trip. You must comply with all provisions of § 229.7, Monitoring of incidental mortalities and serious injuries. In addition, all provisions of 50 CFR 600.746, Observers, apply. No waivers will be granted under § 229.7(c)(3) or § 600.746(f). A vessel that would otherwise be required to carry an observer, but is inadequate or unsafe for purposes of carrying an observer and for allowing operation of normal observer functions, is prohibited from deploying or fishing with pelagic longline gear in the CHSRA.

(2) *Special research requirements*. In addition to observing normal fishing activities, observers may conduct additional scientific investigations aboard your vessel designed to support the goals of the PLTRP. The observer will inform you of the specific additional investigations that may be conducted during your trip. An observer may direct you to modify your fishing behavior, gear, or both. Instead of carrying an observer, you may be required to carry and deploy gear provided by NMFS or an observer or modify your fishing practices. By calling in per § 229.36(d)(1), you are agreeing to take an observer. You are also acknowledging you are both willing and able to participate in research, as per this paragraph, in the CHSRA consistent with the PLTRP without any compensation. If you are assigned any special research requirements, you must participate in the research for the duration of the assignment. If you do not participate in the research, you are prohibited from deploying or fishing with pelagic longline gear in the CHSRA for that fishing trip.

(3) *Exception for transit*. If pelagic longline gear is appropriately stowed, a vessel may transit through the CHSRA without meeting the observer and research requirements specified in § 229.36(d)(1) and § 229.36(d)(2). For the purpose of this paragraph, transit means non-stop progression through the area. Pelagic longline gear is appropriately stowed if all gangions, hooks, and buoys are disconnected from the mainline; hooks are not baited; longline left on the drum is covered with a tarp; and all other gear components are either stowed below deck or secured on deck and covered with a tarp.

(e) *Gear restrictions*. No person may deploy a pelagic longline that exceeds 20 nautical miles (nm) (37.04 km) in length in the Mid-Atlantic Bight, including in the CHSRA, unless they have a written letter of authorization from the Director, NMFS Southeast Fishery Science Center to use a pelagic longline exceeding 20 nm (37.04 km) in the CHSRA in support research for reducing bycatch of marine mammals in the pelagic longline fishery.

[74 FR 23358, May 19, 2009]

FIGURE 1 TO PART 229—DRIFT GILLNET PINGER CONFIGURATION AND EXTENDER REQUIREMENTS

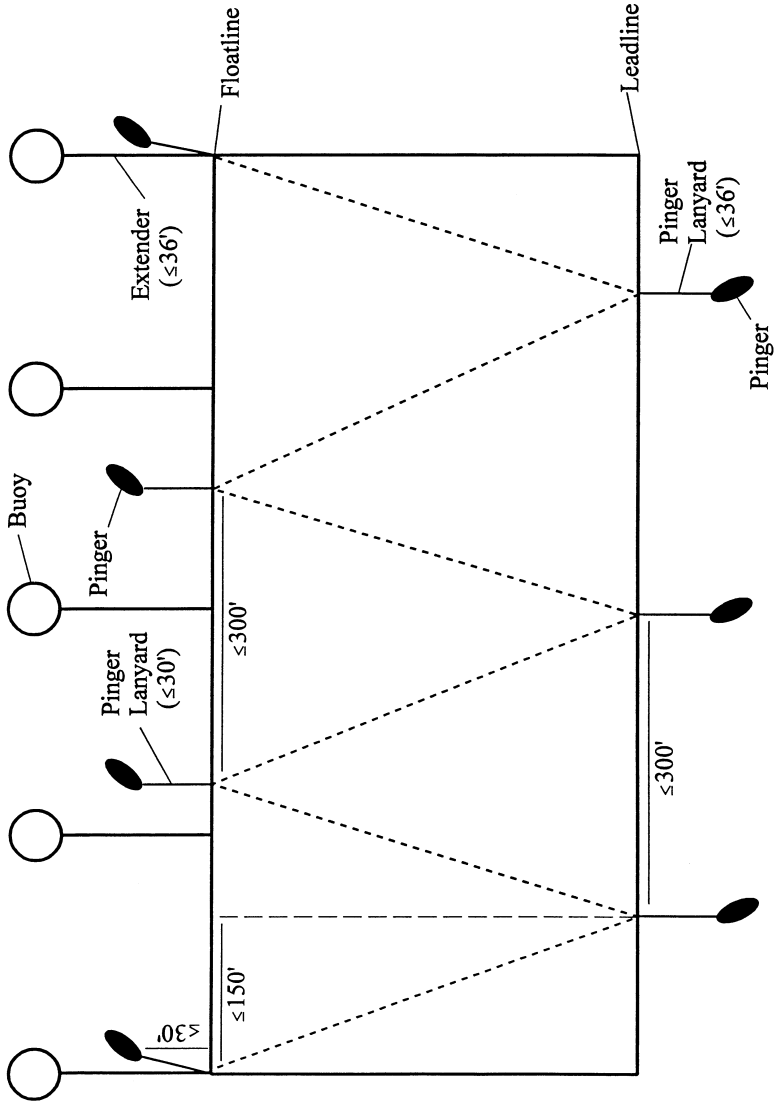


Figure 1. Drift Gillnet Pinger Configuration and Extender Requirements

[64 FR 3434, Jan. 22, 1999]