# 2008 Summer Flounder, Scup, and Black Sea Bass Specifications Environmental Assessment Regulatory Impact Review Initial Regulatory Flexibility Analysis and Essential Fish Habitat Assessment

**November 2007**

**Mid-Atlantic Fishery Management Council**

**in cooperation with the**

**National Marine Fisheries Service**

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## 1.0 EXECUTIVE SUMMARY

This document was prepared by the Mid-Atlantic Fishery Management Council (Council) in consultation with the National Marine Fisheries Service (NMFS). The purpose of this action (specifications document) is to implement 2008 commercial quotas and recreational harvest limits for the summer flounder, scup, and black sea bass fisheries that are necessary to achieve, but not exceed the annual target exploitation rates established under the respective fishery management plan (FMP) rebuilding schedules[1].

This specifications document was developed in accordance with the Magnuson-Stevens Fishery Conservation and Management Act[2] (MSA) and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ). Although this document has been prepared primarily in response to the requirements of the MSA and NEPA, it also addresses requirements of the Marine Mammal Protection Act (MMPA), Endangered Species Act (ESA), Regulatory Flexibility Act (RFA), Administrative Procedure Act (APA), Paperwork Reduction Act (PRA), Coastal Zone Management Act (CZMA), the Information Quality Act (IQA), and Executive Order 12866 (Regulatory Planning and Review). These applicable laws and executive orders help ensure that the Council considers the full range of alternatives and their expected impacts on the marine environment, living marine resources, and affected human communities. This integrated document contains all required elements of an environmental assessment including a socioeconomic analysis as required by NEPA.

This specifications document details all management alternatives for summer flounder, scup, and black sea bass fisheries evaluated for a one year period (2008). Under the FMP, the no action alternatives for summer flounder, scup, and black sea bass are not equivalent to the status quo. If the actions proposed in this document are not taken, some current management measures will remain in place, but the overall management program will not be identical to that of 2007. The "true" no action alternative for each fishery is infeasible and inconsistent with the MSA; therefore, the no action alternatives are presented in section 5.5 of this document but not analyzed further. For comparison purposes, the alternatives in this specifications document are compared to the status quo alternatives (base line) as opposed to the "true" no action alternatives. The base line condition is the adjusted quotas for 2007 (quotas adjusted for research set-aside (RSA) and/or overages/quotas restorations)

[1] The Council and ASMFC Summer Flounder, Scup and Black Sea Bass Board (Board) will meet in December 2007 to adopt 2008 recreational management measures when more complete data regarding 2007 recreational landings are available. A comprehensive document which analyzes the impacts of recreational management measures for summer flounder, scup, and black sea bass (i.e., bag limits, size limits, and seasonal closures) will be prepared after the December Council meeting.

[2] Magnuson-Stevens Fishery Conservation and Management Act, portions retained plus revisions made by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006.

## Quota Alternatives

The proposed actions in this specifications document would only modify the 2008 commercial quotas and recreational harvest limits (Box ES-1). Changes to other commercial management measures (i.e., minimum fish size, mesh size, possession limits, other gear regulations) are not recommended for 2008. Therefore, these other commercial management measures would remain status quo for the 2008 fishing year (see section 5.5 for additional discussion).

**Box ES-1. Comparison of the summer flounder, scup, and black sea bass quota alternatives, in million lb, analyzed in this specifications document.**

| | | Initial TAL | Research Set-Aside[b] | Preliminary Adjusted Commercial Quota[c] | Preliminary Adjusted Recreational Harvest Limit |
|---|---|---|---|---|---|
| **Summer Flounder**[a] | **Alternative 1** (Council-Preferred) | 15.77 | 0.23 | 9.32 | 6.21 |
| | **Alternative 2** (Non-Preferred: Monitoring Ctte. Recommended / Most Restrictive) | 11.64 | 0.23 | 6.84 | 4.56 |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | 17.11 | 0.23 | 10.13 | 6.75 |
| **Scup**[a] | **Alternative 1** (Council-Preferred: Monitoring Ctte. Recommended) | 7.34 | 0.21 | 5.30 | 1.82 |
| | **Alternative 2** (Non-Preferred: Most Restrictive) | 5.02 | 0.15 | 3.54 | 1.33 |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | 12.00 | 0.21 | 8.94 | 2.85 |
| **Black Sea Bass**[a] | **Alternative 1** (Council-Preferred: Monitoring Ctte. Recommended) | 4.22 | 0.09 | 2.03 | 2.11 |
| | **Alternative 2** (Non-Preferred: Most Restrictive) | 3.75 | 0.09 | 1.80 | 1.87 |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | 5.00 | 0.09 | 2.41 | 2.51 |

[a] As discussed below, the no action alternative (no TAL specified for 2008) for each species is presented in Section 5.5 but is not analyzed.

[b] For analysis of the alternatives in this specifications document, the RSA amounts deducted from each TAL are either the conditionally approved RSA amount, or 3 percent of the TAL, whichever is less.

[c] For analysis of state by state commercial impacts, an overage of 0.05 million lb (0.02 million kg) for Delaware will be deducted from that state's TAL; that overage is not reflected in the preliminary adjusted commercial quotas presented in this table.

## Summary of Alternatives

The following section presents a qualitative summary of expected impacts, by species, research set-aside, and cumulatively, for the alternatives under consideration for 2008. In the species-specific boxes (Boxes ES-2, ES-3), a minus sign (-) signifies an expected negative impact, a plus sign (+) signifies an expected positive impact, a zero is used to indicate a null impact and a question mark (?) is used when the impact is uncertain. A "sl" in front of a sign is used to convey a potentially minor effect, such as slight positive (sl+). An 'S' is used to indicate short-term, and an 'L' is used to indicate long-term impacts. As previously discussed, the no action alternative for each species is presented in section 5.5 but is not analyzed.

### *Summer Flounder*

The Council-preferred alternative 1 is expected to result in positive to potentially negative impacts on the managed resource in 2008, when compared to the status quo (alternative 3; Box ES-2). While the stock may continue to increase under this alternative, stock rebuilding will likely be slowed if the target fishing mortality rates are exceeded over the time period. These measures will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. Under this alternative, it may be less likely that the overfishing threshold will be exceeded. Similar to alternative 1, alternative 2 will likely result in a decrease in the incidental catch rates of other species. Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008, when compared to 2007. Recent stock assessment information indicates that rebuilding rates required to meet rebuilding targets and deadlines would likely be exceeded at the TAL proposed under the status quo alternative.

Given the range of potential habitat impacts, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

Given the range of potential impacts on endangered and protected resources, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

Under alternative 1, it is expected that negative social and economic impacts may occur because of the decrease in total landings (in 2008), relative to the status quo measures for summer flounder. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. Given that the commercial

quotas and recreational harvest levels are substantially lower under alternative 2 than under alternative 1, it is expected that the overall negative social and economic impacts under this alternative 2 would be greater than those derived when comparing the Council-preferred alternative 1 to the status quo alternative. As indicated in section 7.1.1, there is potential for negative impacts on the stock under non-preferred alternative 3 due to an increased risk that overfishing will occur resulting in slowed or negative gains in rebuilding efforts under alternative 3. Overall, the status quo summer flounder measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the summer flounder fisheries compared to 2007 in the short-term.

***Scup***

The Council-preferred alternative 1 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo (alternative 3; Box ES-2). This TAL was recommended by the Scup Monitoring Committee and would achieve the rebuilding fishing mortality rate under the current 7-year rebuilding plan. These measures will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. The scup stock will be starting year-1 of a 7-year rebuilding program under the 2008 specifications document; therefore, this alternative may be more restrictive than necessary to achieve rebuilding and the positive impacts would be greater than those under alternative 1. Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008, when compared to 2007. Maintaining the status quo alternative would result in a 2008 TAL that is inconsistent with the rebuilding F under Amendment 14 to the FMP.

Given the range of potential habitat impacts, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

Given the range of potential impacts on endangered and protected resources, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

It is expected that negative social and economic impacts may occur under both alternatives 1 and 2 because of the decrease in total landings (in 2008), relative to the status quo measures for scup (alternative 3). However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels under the current 7-year rebuilding program. Given that the commercial quotas and recreational harvest levels are substantially lower under alternative 2 than under

alternative 1, it is expected that the overall negative social and economic impacts under this alternative would be greater than those derived when comparing the Council-preferred alternative 1 to the status quo alternative. As indicated in section 7.2.1, there is potential for negative impacts on the stock under non-preferred alternative 3 due to an increased risk that overfishing will occur resulting in slowed or negative gains in rebuilding efforts under alternative 3. Overall, the status quo scup measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the scup fisheries compared to 2007 in the short-term.

***Black Sea Bass***

The Council-preferred alternative 1 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo (alternative 3; Box ES-2). This TAL was recommended by the Black Sea Bass Monitoring Committee and would achieve the target fishing mortality rate under the current rebuilding plan. These measures will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. However, this alternative may be more restrictive than necessary to achieve rebuilding and the positive impacts would be greater than those under alternative 1. Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008, when compared to 2007. Maintaining the status quo alternative would result in a 2008 TAL that is inconsistent with the rebuilding fishing mortality rate under the current rebuilding program.

Given the range of potential habitat impacts, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

Given the range of potential impacts on endangered and protected resources, depending upon whether fishing effort increases or decreases, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts.

It is expected that negative social and economic impacts may occur under both alternatives 1 and 2 because of the decrease in total landings (in 2008), relative to the status quo measures for black sea bass (alternative 3). However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. Given that the commercial quotas and recreational harvest levels are substantially lower under alternative 2 than under alternative 1, it is expected that the overall negative social and economic impacts under this alternative would be greater than those derived when comparing the Council-preferred alternative 1 to the status quo

alternative. As indicated in section 7.3.1, there is potential for negative impacts on the stock under non-preferred alternative 3 due to an increased risk that overfishing will occur resulting in slowed or negative gains in rebuilding efforts under alternative 3. Overall, the status quo black sea bass measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the black sea bass fisheries compared to 2007 in the short-term.

**Box ES-2. Overall qualitative summary of the expected impacts of various summer flounder, scup, and black sea bass alternatives considered in this document (2008).**

| | | Biological | EFH | Protected Resources | Economic | Social |
|---|---|---|---|---|---|---|
| **Summer Flounder** | **Alternative 1** (Council-Preferred) | +/-(?) | 0/sl+ | 0/sl+ | -S/-L(?) | -S/+L(?) |
| | **Alternative 2** (Non-Preferred: Monitoring Ctte. Recommended / Most Restrictive) | + | 0/sl+ | 0/sl+ | -S/+L | -S/+L |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | - | 0 | 0 | 0S/-L | 0S/-L |
| **Scup** | **Alternative 1** (Council-Preferred: Monitoring Ctte. Recommended) | + | 0/+ | 0/+ | -S/+L | -S/+L |
| | **Alternative 2** (Non-Preferred: Most Restrictive) | + | + | + | -S/+L | -S/+L |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | - | 0 | 0 | 0S/-L | 0S/-L |
| **Black Sea Bass** | **Alternative 1** (Council-Preferred: Monitoring Ctte. Recommended) | + | 0/sl+ | 0/sl+ | -S/+L | -S/+L |
| | **Alternative 2** (Non-Preferred: Most Restrictive) | + | 0/sl+ | 0/sl+ | -S/+L | -S/+L |
| | **Alternative 3** (Non-Preferred: Least Restrictive / Status Quo) | - | 0 | 0 | 0S/-L | 0S/-L |

### *Research Set-aside*

Under both RSA alternatives 1 and 2, all summer flounder, scup, and black sea bass landings count against the overall quotas regardless of whether or not an RSA is implemented; therefore, the biological impacts of alternatives 1 and 2 in 2008 would not change relative to 2007. However under alternative 2, which specifies RSA amounts for

each FMP species, there could be indirect positive effects as new data or other information pertaining to these fisheries are obtained for management and/or stock assessment purposes.

The impacts of these two alternatives (alternative 1 and alternative 2) on protected and endangered resources and habitat are not expected to change relative to 2007. Because all landings count against the overall quota regardless of which alternative is implemented, neither alternative is expected to change the level of fishing effort, cause effort to be redistributed by gear type, or change the manner in which these fisheries are prosecuted.

Under non-preferred alternative 1, there will be no RSA deducted from the overall TALs for each FMP species. In fisheries where the entire quota is taken and the fishery is prematurely closed (i.e., the quota is constraining), the economic and social costs of the program are shared among the non-RSA participants in the fishery. Since no RSA is implemented under this alternative, there are no direct economic or social costs as described above. Under Council-preferred alternative 2, specifying the RSA would result in indirect positive effects from the collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made. Qualitative summaries of the impacts of the RSA alternatives under consideration are provided in Box ES-3.

**Box ES-3. Overall qualitative summary of the expected impacts of summer flounder, scup, and black sea bass research set-aside measures considered in this document (2008). A plus sign signifies a positive impact and a zero is used for null impact.**

| | **Environmental Dimensions** | | | | |
|---|---|---|---|---|---|
| | **Biological** | **EFH** | **Protected Resources** | **Economic** | **Social** |
| **Alternative 1** (No Action / No Research Set-Aside) | 0 | 0 | 0 | 0 | 0 |
| **Alternative 2** (Council-Preferred / Status Quo) | + (?) | 0 | 0 | 0/-(?) | + |

### *Cumulative Impacts*

For summer flounder, scup, and black sea bass, the Council analyzed the biological, habitat (EFH), protected resources, social, and economic impacts of the Council-considered alternatives. When the proposed action is considered in conjunction with all the other pressures placed on fisheries by past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative; therefore, there are no significant cumulative effects associated with the action proposed in this document (see section 7.6).

### *Conclusions*

A detailed description and discussion of the expected environmental impacts resulting from each of the alternatives, as well as any cumulative impacts, considered in this specifications document are provided in section 7.0. None of the Council-preferred action alternatives are associated with significant impacts to the biological, social or economic, or physical environment individually or in conjunction with other actions under NEPA; therefore, a "Finding of No Significant Impact" is determined.

## 2.0 LIST OF ACRONYMS

| | |
|---|---|
| ACFCMA | Atlantic Coastal Fisheries Cooperative Management Act |
| ADAPT VPA | Adaptive Approach (age-structured) Virtual Population Analysis |
| APA | Administrative Procedures Act |
| ASMFC | Atlantic States Marine Fisheries Commission or Commission |
| B | Biomass |
| CEQ | Council on Environmental Quality |
| CPUE | Catch Per Unit Effort |
| CZMA | Coastal Zone Management Act |
| DPS | Distinct Population Segment |
| EA | Environmental Assessment |
| EEZ | Exclusive Economic Zone |
| EFH | Essential Fish Habitat |
| EIS | Environmental Impact Statement |
| EO | Executive Order |
| ESA | Endangered Species Act of 1973 |
| F | Fishing Mortality Rate |
| FR | Federal Register |
| FMP | Fishery Management Plan |
| GRA | Gear Restricted Area |
| HPTRP | Harbor Porpoise Take Reduction Plan |
| IQA | Information Quality Act |
| IRFA | Initial Regulatory Flexibility Analysis |
| LOF | List of Fisheries |
| LTPC | Long-term Potential Catch |
| LWTRP | Large Whale Take Reduction Plan |
| M | Natural Mortality Rate |
| MAFMC | Mid-Atlantic Fishery Management Council |
| MMPA | Marine Mammal Protection Act |
| MRFSS | Marine Recreational Fisheries Statistical Survey |
| MSA | Magnuson-Stevens Fishery Conservation and Management Act |
| MSY | Maximum Sustainable Yield |
| mt | metric tons |
| NAO | National Oceanic and Atmospheric Administration Administrative Order |
| NE | New England |
| NEFMC | New England Fishery Management Council |
| NEFSC | Northeast Fisheries Science Center |
| NEPA | National Environmental Policy Act |
| NMFS | National Marine Fisheries Service |
| NOAA | National Oceanic and Atmospheric Administration |
| OY | Optimal Yield |
| PBR | Potential Biological Removal |
| PRA | Paperwork Reduction Act |
| PREE | Preliminary Regulatory Economic Evaluation |
| RFA | Regulatory Flexibility Act |
| RIR | Regulatory Impact Review |
| RSA | Research Set-Aside |
| SAFMC | South Atlantic Fishery Management Council |
| SARC | Stock Assessment Review Committee |
| SAV | Submerged Aquatic Vegetation |
| SAW | Stock Assessment Workshop |
| SFA | Sustainable Fisheries Act |
| SBA | Small Business Administration |
| SSB | Spawning Stock Biomass |
| TAL | Total Allowable Landings |
| VECs | Valued Ecosystem Components |
| VPA | Virtual Population Analysis |
| VTR | Vessel Trip Report |

## 3.0 TABLE OF CONTENTS

*ENVIRONMENTAL ASSESSMENT*

## 4.0 INTRODUCTION AND BACKGROUND OF SPECIFICATION PROCESS

## 4.1 PURPOSE AND NEED OF THE ACTION

The purpose of this action (specifications document) is to implement 2008 commercial quotas and 2008 recreational harvest limits for the summer flounder, scup, and black sea bass fisheries that are necessary to achieve, but not exceed the annual target exploitation rates established under the respective FMP rebuilding schedules. These specifications are needed to prevent overfishing in 2008 and allow continued stock rebuilding toward the levels associated with optimum yield, which would provide the greatest overall benefit to the Nation in terms of food production and fishing opportunities. This specifications document was developed in accordance with the MSA and the National Environmental Policy Act (NEPA), the former being the primary domestic legislation governing fisheries management in the U.S. Exclusive Economic Zone (EEZ), and the FMP. Failure to specify annual quotas that are designed to constrain harvest to achieve fishing mortality objectives in the FMP for summer flounder, scup, and black sea bass in 2008 would result in overfishing and would therefore be inconsistent with the National Standards under the MSA.

The management regime is detailed in the FMP, including any subsequent amendments. A summary of the management actions taken since the establishment of the FMP, through amendments and framework adjustments is given in Box 4.1.

**Box. 4.1 Summary of the history of the Summer Flounder, Scup, and Black Sea Bass FMP.**

| Year Approved | Document | Plan Species | Management Action(s) |
|---|---|---|---|
| 1988 | Original FMP | summer flounder | - Established management plan for summer flounder |
| 1991 | Amendment 1 | summer flounder | - Established an overfishing definition for summer flounder |
| 1993 | Amendment 2 | summer flounder | - Established rebuilding schedule, commercial quotas, recreational harvest limits, size limits, gear restrictions, permit and reporting requirements for summer flounder<br>- Created the Summer Flounder Monitoring Committee |
| 1993 | Amendment 3 | summer flounder | - Revised exempted fishery line<br>- Increased large mesh net threshold<br>- Otter trawl retentions requirements for large mesh use |
| 1993 | Amendment 4 | summer flounder | - Revised state-specific shares for summer flounder quota allocation |
| 1993 | Amendment 5 | summer flounder | - Allowed states to combine or transfer summer flounder quota |
| 1994 | Amendment 6 | summer flounder | - Set criteria for allowance of multiple nets on board commercial vessels for summer flounder<br>- Established deadline for publishing catch limits, commercial mgmt. measures for summer flounder |

| Box. 4.1 Cont. Summary of the history of the Summer Flounder, Scup, and Black Sea Bass FMP. | | | |
|---|---|---|---|
| **Year Approved** | **Document** | **Plan Species** | **Management Action** |
| 1995 | Amendment 7 | summer flounder | - Revised the F reduction schedule for summer flounder |
| 1996 | Amendment 8 | summer flounder and scup | - Incorporated Scup FMP into Summer Flounder FMP and established scup measures including commercial quotas, recreational harvest limits, size limits, gear restrictions, permits, and reporting requirements |
| 1996 | Amendment 9 | summer flounder and black sea bass | - Incorporated Black Sea Bass FMP into Summer Flounder FMP and established black sea bass measures including commercial quotas, recreational harvest limits, size limits, gear restrictions, permits, and reporting requirements |
| 1997 | Amendment 10 | summer flounder, scup, and black sea bass | - Modified commercial minimum mesh requirements, continued commercial vessel moratorium, prohibited transfer of fish at sea, established special permit for party/charter sector for summer flounder |
| 1998 | Amendment 11 | summer flounder, scup, and black sea bass | - Modified certain provisions related to vessel replacement and upgrading, permit history transfer, splitting, and permit renewal regulations |
| 1999 | Amendment 12 | summer flounder, scup, and black sea bass | - Revised FMP to comply with the SFA and established framework adjustment process |
| 2001 | Framework 1 | summer flounder, scup, and black sea bass | -Established quota set-aside for research for all three species |
| 2001 | Framework 2 | summer flounder | - Established state-specific conservation equivalency measures for summer flounder |
| 2003 | Framework 3 | scup | - Allowed the rollover of scup quota<br>- Revised start date for summer quota period for scup fishery |
| 2003 | Framework 4 | scup | - Established system to transfer scup at sea |
| 2003 | Amendment 13 | summer flounder, scup, and black sea bass | - Addressed disapproved sections of Amendment 12 and included new EIS |
| 2004 | Framework 5 | summer flounder, scup, and black sea bass | - Established multi-year specification setting of quota for all three species |
| 2006 | Framework 6 | summer flounder | - Established region-specific conservation equivalency measures for summer flounder |
| 2007 | Amendment 14 | scup | - Established rebuilding schedule for scup |
| 2007 | Framework 7 | summer flounder, scup, and black sea bass | - Built flexibility into process to define and update status determination criteria for each plan species<br>- Scup GRAs made modifiable through framework adjustment process |

Summer flounder, scup, and black sea bass are all currently under rebuilding schedules; therefore, annual specifications need to be set not only to ensure overfishing does not occur on these stocks but also to ensure the statutory rebuilding deadlines are met. Overfishing occurs when the threshold fishing mortality rate is exceeded and the stock is overfished when stock biomass falls below the minimum biomass threshold.

For summer flounder, the rebuilding deadline is January 1, 2013. Therefore, the specifications use a rebuilding fishing mortality rate (F), which is less than the threshold F to ensure overfishing does not occur and the stock achieves the spawning stock biomass rebuilding target of 197.2 millions lbs (89.45 million kg) by November 1, 2012. The threshold F is defined in Amendment 12 to the FMP as $F_{MAX}$ = 0.28 (level of fishing that produces maximum yield per recruit; proxy for $F_{MSY}$; Terceiro, 2006b), and the minimum biomass threshold is defined as 98.6 million lbs (44.72 million kg); Terceiro, 2006b). The rebuilding F is achieved by specification of the total allowable landings (TAL) allocated to the commercial (60 percent) and the recreational (40 percent) sectors. The commercial sector's quota is allocated to the coastal states based on percentage shares specified in the FMP.

For scup, the rebuilding deadline is January 1, 2015. Therefore, the specifications use a rebuilding fishing mortality rate (F) of F=0.10 as specified in the 7-year rebuilding schedule, which is less than the threshold F to ensure overfishing does not occur and the stock achieves the rebuilding target defined as the NEFSC 3-year average Spring survey index of 5.54 kg/tow. The threshold F is defined in Amendment 12 to the FMP as $F_{MAX}$ = 0.26 (level of fishing that produces maximum yield per recruit; proxy for $F_{MSY}$; SAW 35 for scup; NEFSC 2002) and the minimum biomass threshold is defined as the NEFSC 3-year average Spring survey index of 2.77 kg/tow; (MAFMC 1998). The rebuilding F is achieved by specification of total allowable catch (TAC) associated with that rate to the commercial (78 percent) and the recreational (22 percent) sectors. Discard estimates are deducted from both TACs to establish TALs for both sectors. The commercial TAC, discards, and TAL are allocated to three different periods.

For black sea bass, the rebuilding deadline is January 1, 2010. Therefore, the specifications use a rebuilding fishing mortality rate (F) of F=0.33 as specified in the 10-year rebuilding schedule, to ensure overfishing does not occur and the stock achieves the rebuilding target defined as the NEFSC 3-year average Spring survey index of 1.96 kg/tow. The threshold F, which is also the rebuilding target F, is defined in Amendment 12 to the FMP as $F_{MAX}$ = 0.33 (level of fishing that produces maximum yield per recruit; proxy for $F_{MSY}$; SAW 39 for black sea bass; NEFSC 2004), and the minimum biomass threshold is defined as the NEFSC 3-year average Spring survey index of 0.98 kg/tow; (MAFMC 1998). The rebuilding F is achieved by specification of a TAL associated with that rate to the commercial (49 percent) and the recreational (51 percent) sectors. The annual coastwide commercial quota is specified and then allocated state-by-state under the system adopted by the Atlantic States Marine Fisheries Commission (Commission) for the commercial black sea bass fishery.

On this basis, these specifications are necessary to ensure rebuilding goals are met and overfishing does not occur for each of the species managed through this FMP.

## 4.2 MANAGEMENT OBJECTIVES OF THE FMP

The management objectives of the FMP are as follows:

1) reduce fishing mortality in the summer flounder, scup and black sea bass fisheries to ensure that overfishing does not occur;
2) reduce fishing mortality on immature summer flounder, scup, and black sea bass to increase spawning stock biomass;
3) improve the yield from the fishery;
4) promote compatible management regulations between state and federal jurisdictions;
5) promote uniform and effective enforcement of regulations; and
6) minimize regulations to achieve the management objectives stated above.

To attain these management objectives, the FMP states that the following measures may be specified annually:

* commercial quotas;
* minimum sizes;
* gear regulations;
* recreational harvest limits; and
* recreational possession limit, season, and no-sale provision.

## 4.3 MANAGEMENT UNITS

The management unit for summer flounder (*Paralichthys dentatus*) is the U.S. waters in the western Atlantic Ocean from the southern border of North Carolina northward to the U.S.-Canadian border. The management unit for both scup (*Stenotomus chrysops*) and black sea bass (*Centropristis striata*) is the U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the U.S.-Canadian border.

## 4.4 PROCESS AND METHODS OF ANALYSIS

The FMP established Monitoring Committees which annually review the best available scientific information and provide recommendations regarding annual specifications for each species. The Committee crafts recommendations to ensure overfishing thresholds are not exceeded and rebuilding schedules for each species are met. The Committee considers a broad range of relevant information which may include, but is not limited to, stock status updates from the most recent stock assessment; estimates of fishing mortality; recruitment, landings and catch information; and impacts of specific commercial fishery regulations (i.e., fish size, net mesh, possession limits, and seasonal closures), including non-compliance rates for those regulations.

Based on the Monitoring Committee recommendations, the Council makes a recommendation to the NMFS Northeast Regional Administrator. The Regional Administrator reviews the recommendation forwarded through this specifications document and may revise it if necessary

to achieve FMP objectives and statutory requirements. Because the FMP is cooperatively managed with the Commission, the Commission's Summer Flounder, Scup, and Black Sea Bass Board (Board) typically adopts complementary measures. The Council met jointly with the Board in August 2007 and recommended complementary management measures for the three species for 2008.

This specifications document serves a dual purpose, as it is a vehicle to convey the Council recommendations to the Regional Administrator. It also serves as a decision document for the Regional Administrator, who reviews the analysis of impacts of the various management alternatives presented here and determines which alternative achieves the FMP objectives as well as the objectives and statutory requirements under MSA.

The environmental assessment (EA) examines the impacts of each proposed action on the affected environment. The aspects of the affected environment that are likely to be directly or indirectly affected by the actions proposed in this document are described as *valued ecosystem components* (VECs; Beanlands and Duinker 1984). These VECs comprise the affected environment and are specifically defined as the managed resources (summer flounder, scup, and black sea bass) and any non-target species; habitat, including EFH for the managed resource and non-target species; endangered and protected resources; and any human communities (social and economic aspects of the environment). The impacts of the alternatives are evaluated with respect to these VECs.

In order to conduct a more complete analysis of each of the quota alternatives, both research set-aside (RSA) amounts and any overages (if applicable) are deducted from the TALs for each species. Framework 1 to the FMP established a procedure through which research set-aside amounts up to 3-percent are set annually as part of the Council's quota-setting process, to support collaborative research projects among the public, research institutions, and NMFS. The amounts deducted for RSA for year 2008 were equal to 3 percent of the TAL associated with an alternative, or the conditionally approved RSA amount, whichever was less. Any preliminary 2007 commercial overages are determined along with any previously unaccounted for 2006 overages and deducted appropriately from the upcoming 2008 fishing year quota, i.e., by state for summer flounder, period for scup, or coastwide for black sea bass. If any overage deductions are necessary as a result of landings made during November and December or as a result of late data submitted for January 1 to October 31, those overages are applied to the quota allocations for the next fishing year. There were preliminary summer flounder overages (as of Aug. 29, 2007) of 0.05 million lb (0.02 million kg) in Delaware. There were no overages in the scup or black sea bass fisheries as of Aug. 29, 2007; therefore, it was not necessary to adjust the scup or black sea bass commercial quotas in 2008. NMFS may further adjust quotas based on updated overage information as part of the final rule that implements the 2008 specifications.

All management alternatives under consideration for summer flounder, scup, and black sea bass were analyzed for 2008 only. While Framework Adjustment 5 does allow for multi-year specification of annual TALs (up to 3-years), there is uncertainty surrounding the 2009 status of these stocks; therefore, measures for only fishing year 2008 were specified. A full description of

each of these alternatives, including a discussion of a no action alternative, is given in section 5.0.

Box 4.4.1 describes the suites of alternatives for each species which include a Council-preferred alternative (specified at the August 2007 Council meeting), a status quo alternative, and any additional alternatives under consideration. In all cases the non-preferred, least restrictive alternatives are also the status quo measures. These recommendations and their impacts relative to 2006 landings are shown in Box 4.4.2.

**Box 4.4.1. Comparison of the summer flounder, scup, and black sea bass alternatives of quota combinations reviewed for 2008 in million lb.**

| | | Initial TAL | Research Set-Aside | Commercial Quota Overage | Preliminary Adjusted Commercial Quota[a,c] | Preliminary Recreational Harvest Limit |
|---|---|---|---|---|---|---|
| **Summer Flounder** | **Alternative 1 (Council-Preferred)** | 15.77 | 0.233 | 0.05 | 9.32 | 6.21 |
| | **Alternative 2 (Non-Preferred: Monitoring Ctte. Recommended / Most Restrictive)** | 11.64 | 0.233 | 0.05 | 6.84 | 4.56 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 17.11 | 0.233 | 0.05 | 10.13 | 6.75 |
| **Scup** | **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | 7.34 | 0.214 | 0 | 5.30 | 1.82 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 5.02 | 0.151[b] | 0 | 3.54 | 1.33 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 12.00 | 0.214 | 0 | 8.94 | 2.85 |
| **Black Sea Bass** | **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | 4.22 | 0.086 | 0 | 2.03 | 2.11 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 3.75 | 0.086 | 0 | 1.80 | 1.87 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 5.00 | 0.086 | 0 | 2.41 | 2.51 |

[a]Note that preliminary quotas are provisional and may change to account for overages according to the quota counting procedures outlined above.

[b]Note that this RSA amount represents 3 percent of the TAL associated with the respective alternative, while all other RSA amounts reflect conditionally-approved project amounts.

[c]For analysis of state-by-state commercial impacts, an overage of 0.05 million lb (0.02 million kg) for Delaware will be deducted from that state's TAL; that overage is not reflected in the preliminary adjusted commercial quotas presented in this table.

**Box 4.4.2. Comparison of the summer flounder, scup, and black sea bass alternatives of quota combinations reviewed for 2008 in million lb.**

| | | Preliminary Adjusted Commercial Quota[a] | 2006 Commercial Landings | Percent Change from 2006 Landings |
|---|---|---|---|---|
| **Summer Flounder** | **Alternative 1 (Council-Preferred)** | 9.32 | 13.97 | -33.3 |
| | **Alternative 2 (Non-Preferred: Monitoring Ctte. Recommended / Most Restrictive)** | 6.84 | 13.97 | -51.0 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 10.13 | 13.97 | -27.5 |
| **Scup** | **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | 5.30 | 8.57 | -38.2 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 3.54 | 8.57 | -58.7 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 8.94 | 8.57 | +4.3 |
| **Black Sea Bass** | **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | 2.03 | 2.80 | -27.5 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 1.80 | 2.80 | -35.7 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 2.41 | 2.80 | -13.9 |

[a]Note that preliminary quotas are provisional and may change to account for overages according to the quota counting procedures outlined above.

## 5.0 MANAGEMENT ALTERNATIVES

Under the management programs for summer flounder, scup, and black sea bass, detailed in the FMP, the no action alternative is not equivalent to the status quo alternative (see section 5.5 for additional discussion). Therefore, for purposes of comparing impacts throughout this document, the proposed alternatives for each species (alternatives 1, 2, and 3) are compared to alternative 3, which is the status quo alternative (base line) as opposed to the "true" no action alternative.

It should be noted that for each of the proposed quota alternatives, commercial quotas and state shares listed are provisional and may be adjusted (i.e., by state for summer flounder, period for scup, or coastwide for black sea bass) by NMFS in the 2008 specifications final rule. Adjustments to the commercial quotas may be made to account for more recent, updated current-year information (i.e., overages through October or November 2007) or to account for overages from the 2006 fishery that were not previously accounted for in the 2007 specifications final rule. At the time of specifications document preparation, there was a preliminary summer flounder overage (as of Aug. 29, 2007) of 0.05 million lb (0.02 million kg) in Delaware.

### 5.1 Summer Flounder

The proposed summer flounder specification alternatives would only modify the 2008 commercial quotas and recreational harvest limits. Changes to other commercial management measures were not recommended for 2008 by the Council, Board, or the Summer Flounder Monitoring Committee. Therefore, other commercial management measures in place will remain unchanged (status quo) for the 2008 fishing year (see section 5.5 for additional discussion). For reference, the current regulations require a 14 inch-TL minimum fish size in the commercial fishery and a 5.5 inch diamond or 6 inch square minimum mesh in the entire net for vessels possessing more than the threshold amount of summer flounder, i.e., 200 lbs in the winter and 100 lbs in the summer. Comprehensive descriptions of summer flounder regulations as detailed in the Code of Federal Regulations (CFR) are available through the website for the Northeast Regional Office (NERO) of NMFS: http://www.nero.noaa.gov/nero/regs/.

In addition, a program (established in 1998 by the Council and Commission) by which states can allocate 15 percent of their quota to bycatch fisheries will continue; therefore, under this incidental catch allocation program it is recommended that 1) state's implement possession limits such that summer flounder on board do not exceed 10 percent of total landings composition per trip and 2) possession limits be sufficiently restrictive to allow the incidental catch fishery to remain open for the entire year.

#### 5.1.1 Alternative 1 (Council-Preferred TAL)

Alternative 1 includes the harvest levels recommended by the Council (adjusted as detailed in section 4.4) for vessels that are permitted to catch summer flounder. The Council recommended a summer flounder TAL of 15.77 million lb (7.15 million kg) for 2008. The summer flounder TAL selected by the Council has a 75 percent probability of achieving the rebuilding F of 0.199

in 2008. This TAL is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013.

This TAL is an attempt by the Council to address social and economic concerns for the 2008 fishery. The TAL under this alternative is higher than the range recommended by the Monitoring Committee (alternative 2); however, it maintains a higher probability of success than is required by the NRDC versus Daley lawsuit (i.e., at least 50 percent) or has been historically recommended for summer flounder quota specifications by the Council and Board. This TAL does not correct for the retrospective pattern in F and SSB observed in the stock assessment (see section 6.1.2 for additional details), which results in systematic underestimation of F and overestimation of spawning stock biomass (SSB).

The Council approved a 2008 RSA for summer flounder of 233,192 lb (105,774 kg), which would be deducted from the TAL. After the RSA is deducted from the TAL, the TAL is divided between the commercial and recreational components of the fishery in the same proportion as it was each year from 1993 to present; 60 percent to the commercial fishery and 40 percent to the recreational fishery. In 2008, the commercial fishery would receive 9.32 million lb (4.23 million kg) as a quota, and the recreational fishery would receive 6.21 million lb (2.82 million kg) as a harvest limit. The summer flounder commercial quota is allocated to each state based on 1980-1989 adjusted landings as detailed in Amendment 4 of the FMP. As indicated in Box 5.1.1 state commercial shares would range from negative quotas to 2.56 million lb (1.16 million kg) in 2008.

**Box 5.1.1. 2008 Summer flounder commercial fishery state by state allocations for coastwide quota alternatives 1-3[a].**

| | | Quota Allocation (lb) | | |
|---|---|---|---|---|
| **State** | **Percent** | **Alternative 1** | **Alternative 2** | **Alternative 3** |
| **ME** | **0.04756** | 4,434 | 3,255 | 4,816 |
| **NH** | **0.00046** | 43 | 31 | 47 |
| **MA** | **6.82046** | 635,809 | 466,798 | 690,646 |
| **RI** | **15.68298** | 1,461,981 | 1,073,356 | 1,588,072 |
| **CT** | **2.25708** | 210,407 | 154,476 | 228,554 |
| **NY** | **7.64699** | 712,859 | 523,366 | 774,341 |
| **NJ** | **16.72499** | 1,559,118 | 1,144,672 | 1,693,587 |
| **DE** | **0.01779** | -49,865 | -50,305 | -49,722 |
| **MD** | **2.0391** | 190,087 | 139,558 | 206,481 |
| **VA** | **21.31676** | 1,987,166 | 1,458,937 | 2,158,553 |
| **NC** | **27.44584** | 2,558,524 | 1,878,417 | 2,779,189 |
| **Total[b]** | **100** | 9,320,427 | 6,842,868 | 10,124,284 |

[a]Allocations account for a preliminary overage of 0.05 million lb (0.02 million kg) in Delaware as of August 29, 2007, and have been adjusted for RSA.

[b]Total quota is the summation of all states having allocation. A state with a negative number has an allocation of zero (0).

### 5.1.2 Alternative 2 (Non-Preferred: Monitoring Committee Recommended/Most Restrictive TAL)

The most restrictive alternative for summer flounder is a TAL of 11.64 million lb (5.28 million kg) for 2008. This TAL is the lower bound of a TAL range of 11.64 to 12.90 million lb (5.85 million kg) that was recommended by the Summer Flounder Monitoring Committee to the Council for 2008. Because of the systematic underestimation of F and overestimation of spawning stock biomass (SSB) observed in the stock assessment (see section 6.1.2 for additional details), this scientific advisory committee recommended adjusting the rebuilding F downwards by 28 percent, which is the 3-year average annual retrospective pattern in F. This TAL is associated with a 75 percent probability of achieving the retrospective corrected rebuilding F=0.143 in 2008. It is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013, and includes a correction for the retrospective pattern.

After deducting the RSA of 233,192 lb (105,774 kg) in 2008, the commercial quota is 6.84 million lb (3.10 million kg), and the adjusted recreational harvest limit is 4.56 million lb (2.07 million kg). The state commercial shares for this alternative range from negative quotas to 1.88 million lb (0.85 million kg) in 2008 (Box 5.1.1).

### 5.1.3 Alternative 3 (Non-Preferred: Least restrictive/Status Quo TAL)

The status quo (least restrictive) summer flounder alternative includes a TAL of 17.11 million lb (7.76 million kg) in 2008. The proposed TAL has slightly greater than a 50 percent probability of achieving the rebuilding F=0.199 for summer flounder in 2008. This TAL is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013; however, it does not correct for the retrospective pattern in F observed in the stock assessment (see section 6.1.2 for additional details), which results in systematic underestimation of F and overestimation of spawning stock biomass (SSB). After deducting the RSA for summer flounder of 233,192 lb (105,774 kg) in 2008, the commercial quota is 10.13 million lb (4.59 million kg), and the adjusted recreational harvest limit is 6.75 million lb (3.06 million kg). The state commercial shares for this alternative range from negative quotas to 2.78 million lb (1.26 million kg) in 2008 (Box 5.1.1).

## 5.2 Scup

The proposed scup alternatives would only modify the 2008 commercial quotas and recreational harvest limits. Changes to other commercial management measures were not recommended for 2008 by the Council, Board, or the Scup Monitoring Committee. Therefore, other commercial management measures in place will remain unchanged (status quo) for the 2008 fishing year (see section 5.5 for additional discussion). For reference, the current regulations require a 9 inch-TL minimum fish size in the commercial fishery and a minimum mesh size of 5 inch for the first 75 meshes from the terminus of the net and for codends constructed with fewer than 75 meshes, a minimum mesh size of 5 inch in the entire net for vessels possessing more than the threshold amount of scup, i.e., 500 pounds of scup from November 1 through April 30 and 200 pounds or more of scup from May 1 through October 31. The minimum vent sizes for scup pots/traps are $3\ ^{1}/_{10}$ inch (7.9 cm) in diameter for circular vents, $2\ ^{1}/_{4}$ inch (5.7 cm) square vent for each side, or

an equivalent rectangular escape vent. The Winter I landings limit is a 30,000 lb possession limit until 80 percent of the landings is reached, and then the possession limit would drop to 1,000 lb; and the possession limit is 2,000 lb in the Winter II fishery. If transfer of quota occurs between Winter I and Winter II, then the Winter II possession limit increases at 1,500 pound intervals for every 500,000 lb of scup transferred. Comprehensive descriptions of scup regulations as detailed in the CFR are available through the website for the NERO of NMFS: http://www.nero.noaa.gov/nero/regs/.

### 5.2.1 Alternative 1 (Council-Preferred: Monitoring Committee Recommended TAL)

The Council-preferred alternative for scup recommends a TAL at 7.34 million lb (3.33 million kg) for 2008. This TAL was recommended by the Scup Monitoring Committee and would achieve the rebuilding fishing mortality rate under the current 7-year rebuilding plan of F=0.10. This TAL is based on the relative exploitations index approach detailed in Amendment 14 to the FMP. Estimated discards were added to the TAL to derive a TAC of 9.90 million lb (4.49 million kg). The TAC is allocated to the commercial and recreational fisheries based on the proportions of commercial and recreational catch (landings plus discards) for the years 1988-1992. Based on this data, 78 percent of the TAC is allocated to the commercial fishery and 22 percent to the recreational fishery (Box 5.2.1.1). Discard estimates are deducted from these TACs to set a TAL for the commercial and recreational sectors.

**Box 5.2.1.1. Derivation of the initial 2008 TALs for the commercial and recreational scup fisheries.**

| | Commercial (million lb) | Recreational (million lb) |
|---|---|---|
| **TAC:** | 7.72 | 2.18 |
| **Less Discard Estimate:** | 2.26 | 0.30 |
| **Initial TAL:** | 5.46 | 1.88 |

The approved RSA for scup of 214,000 lb (97,069 kg) is then deducted from the initial TAL to result in a preliminary adjusted commercial quota of 5.30 million lb (2.40 million kg), and an adjusted recreational harvest limit of 1.82 million lb (0.83 million kg).

Framework Adjustment 3 to the FMP allows for the transfer of unused scup quota from the Winter I to the Winter II period. As such, if the fishery does not land their quota in Winter I, the opportunities to land those scup are not lost for the fishing year. The current scup period allocation formula remains unchanged as detailed in Box 5.2.1.2.

| Box 5.2.1.2. Comparison (in million lb) of the commercial scup quota alternatives, by period, for 2008. | | | | |
|---|---|---|---|---|
| | | Adjusted Quota (million lb) | | |
| **Period** | **Percent Allocation** | **Alternative 1** | **Alternative 2** | **Alternative 3** |
| **Annual** | 100 | 5.30 | 3.54 | 8.94 |
| **Winter I (Jan-April)** | 45.11 | 2.39 | 1.60 | 4.03 |
| **Summer (May-Oct)** | 38.95 | 2.07 | 1.38 | 3.48 |
| **Winter II (Nov-Dec)** | 15.94 | 0.85 | 0.57 | 1.42 |

Note: As of August 29, 2007, there were no overages by the 2007 commercial scup fishery.

### 5.2.2 Alternative 2 (Non-Preferred: Most Restrictive TAL)

The most restrictive alternative considered for scup in 2008 is a TAL of 5.02 million lb (2.28 million kg). This TAL would achieve the fishing mortality rate of F=0.067, which is expected to rebuild the scup stock within 5 years (as detailed under Amendment 14 to the FMP). The scup stock will be starting year-1 of a 7-year rebuilding program under the 2008 specifications document; therefore, this alternative may be more restrictive than necessary to achieve rebuilding. After deducting the maximum RSA for scup under this alternative of 150,600 lb (68,311 kg) from the initial TAL (Box 5.2.1.1), the preliminary adjusted commercial quota is 3.54 million lb (1.61 million kg), and the preliminary recreational harvest is 1.33 million lb (0.60 million kg). The current scup period allocation formula remains unchanged as detailed in Box 5.2.1.2.

### 5.2.3 Alternative 3 (Non-Preferred: Least Restrictive/Status Quo TAL)

The least restrictive alternative (status quo) considered for scup in 2008 includes a TAL of 12.00 million lb (5.44 million kg). The approved RSA for scup of 214,000 lb (97,069 kg) is then deducted from the initial TAL (Box 5.2.1.1) to result in a preliminary adjusted commercial quota of 8.94 million lb (4.06 million kg) and the recreational harvest limit of 2.85 million lb (1.29 million kg). The current scup period allocation formula remains unchanged as detailed in Box 5.2.1.2.

## 5.3 Black Sea Bass

The proposed black sea bass alternatives would only modify the 2008 commercial quotas and recreational harvest limits. Changes to other commercial management measures were not recommended for 2008 by the Council, Board, or the Black Sea Bass Monitoring Committee. Therefore, other commercial management measures in place will remain unchanged (status quo) for the 2008 fishing year (see section 5.5 for additional discussion). For reference, the current regulations require an 11 inch-TL minimum fish size in the commercial fishery and a minimum mesh size of 4.5 inch for the first 75 meshes from the terminus of the net in the codends for large nets, or 4.5 inch in the entire net for small nets of vessels possessing more than the threshold

amount of black sea bass, i.e., 500 pounds of black sea bass from January 1 through March 31 and 100 pounds or more of black sea bass from April 1 through December 31. The minimum vent sizes for black sea bass pots/traps are 2 $^{1}/_{2}$ inch (6.4 cm) in diameter for circular vents, 2 inch (5.1 cm) square vents, or a 1 $^{3}/_{8}$ x 5 $^{3}/_{4}$ inch (3.5 x 14.6 cm) rectangular escape vent; with two additional vents required in the parlor portion of the trap. Comprehensive descriptions of black sea bass regulations as detailed in the CFR are available through the website for the NERO of NMFS: http://www.nero.noaa.gov/nero/regs/.

### 5.3.1 Alternative 1 (Council-Preferred: Monitoring Committee Recommended TAL)

The Council-preferred alternative for black sea bass recommends a TAL of 4.22 million lb (1.91 million kg) for 2008. Because of uncertainty in the survey estimates and the potential underestimation of the 2003 exploitation rate, two different sets of assumptions were used to estimate the TAL. If the spring survey for 2008 is equal to 0.263 (three-year moving average for 2006) and assuming an exploitation rate of 21 percent in 2003, the TAL associated with an exploitation rate of 25 percent is about 3.75 million lb (1.70 million kg). However, if the spring survey for 2008 is equal to 0.328 (three-year moving average for 2005) and assuming an exploitation rate of 21 percent in 2003, the TAL associated with an exploitation rate of 25 percent is about 4.68 million lb (2.12 million kg). The Council and Board therefore selected a TAL of 4.22 million lb (1.91 million kg), the average of the TALs associated with each of the calculations described above. Based on landings data from 1983 to 1992, 49 percent of the TAL is allocated to the commercial fishery as quota, and 51 percent is allocated to the recreational fishery as a harvest limit. The approved RSA for black sea bass of 85,790 lb (38,914 kg) is then deducted from the initial TAL to result in a preliminary adjusted commercial quota alternative of 2.03 million lb (0.92 million kg), and the preliminary recreational harvest is 2.11 million lb (0.96 million kg).

### 5.3.2 Alternative 2 (Non-Preferred: Most Restrictive TAL)

The most restrictive alternative considered for black sea bass in 2008 is a TAL of 3.75 million lb (1.70 million kg). Despite the uncertainty in the survey estimates and the potential underestimation of the 2003 exploitation rate, it is possible that the three-year moving average for 2006 equal to 0.263 is most representative of the current state of the black sea bass stock (2008). Therefore using that survey index value and assuming an exploitation rate of 21 percent in 2003, the TAL associated with an exploitation rate of 25 percent is about 3.75 million lb (1.70 million kg). After deducting the approved RSA for black sea bass of 85,790 lb (38,914 kg) from the initial TAL, the preliminary adjusted commercial quota is 1.80 million lb (0.82 million kg), and the preliminary recreational harvest is 1.87 million lb (0.85 million kg).

### 5.3.3 Alternative 3 (Non-Preferred: Least Restrictive/Status Quo TAL)

The least restrictive/status quo coastwide TAL for black sea bass is 5.00 million lb (2.27 million kg). After the approved RSA for black sea bass of 85,790 lb (38,914 kg) is deducted, the preliminary adjusted commercial quota is 2.41 million lb (1.09 million kg), and the preliminary recreational harvest is 2.51 million lb (1.14 million kg).

## 5.4 Research Set-Aside Measures

### 5.4.1 Alternative 1 (No Research Set-Aside/No-Action)

Under this alternative, no RSA will be implemented for summer flounder, scup, or black sea bass in 2008. Thus, the quotas would not be adjusted downward for the RSAs.

### 5.4.2 Alternative 2 (Council-Preferred: Specify Research Set-Asides/Status Quo)

As part of the RSA program, research projects were submitted and approved by NMFS that may require exemptions from some of the current summer flounder, scup, and black sea bass regulations. Under the RSA program, the Council, in consultation with the Regional Administrator, and the Commission have recommended summer flounder, scup, and black sea bass research projects for 2008 (Perra, pers. comm. 2007). In order to expedite the implementation of projects, the impacts of any summer flounder, scup, and black sea bass exemptions on the environment are analyzed in this document. The impacts of the RSAs for other species are addressed in their respective species specifications documents, i.e., bluefish in the 2008 bluefish specifications document.

The approved 2008 RSA projects have requested summer flounder, scup, and black sea bass in the following amounts: 233,192 lb (105,774 kg), 214,000 lb (97,069 kg), and 85,790 lb (38,914 kg), respectively. RSA amounts that are deducted from the initial TALs cannot exceed 3 percent of the TALs for each of the species. For analysis of the impacts of the alternatives in this specifications document, the RSA amounts deducted from each initial TAL are either the approved RSA amount, or 3 percent of the TAL, whichever is less. A summary of the RSA projects requesting summer flounder, scup, and black sea bass for 2008 is presented in Appendix A.

## 5.5 No-Action Alternatives – Considered but Rejected (Summer Flounder, Scup, and Black Sea Bass)

Section 5.03(b) of NOAA Administrative Order (NAO) 216-6, "Environmental review procedures for implementing the National Environmental Policy Act," states that "an Environmental Assessment (EA) must consider all reasonable alternatives, including the preferred action and the no action alternative." Consideration of the "no action" alternative is important because it shows what would happen if the proposed action is not taken. Defining exactly what is meant by the "no action" alternative is often difficult. The President's Council on Environmental Quality (CEQ) has explained that there are two distinct interpretations of the "no action:" One interpretation is essentially the status quo, i.e., no change from the current management; and the other interpretation is when a proposed project, such as building a railroad facility, does not take place. In the case of the proposed 2008 specifications for summer flounder, scup, and black sea bass, determining the no action alternative is slightly more complicated than either of these interpretations suggest.

The status quo management for the summer flounder, scup, and black sea bass fisheries each involve a set of indefinite (i.e., in force until otherwise changed) management measures, such as minimum allowable sizes, bag limits, and reporting requirements. These measures will continue as they are even if the proposed specifications are not implemented. However, the current management program includes TALs that are specific to the 2007 fishing year. In the case of scup, a TAC is also specified. There are no "roll-over" provisions currently for these three fisheries provided for in the FMP. Thus, if the proposed 2008 summer flounder, scup, or black sea bass specifications are not implemented for one or all of these fisheries by January 1, 2008, that fishery/or fisheries will operate without an identified cap on allowable landings. Therefore, because of the subtleties in the management program for each FMP species, the no action alternative is not equivalent to status quo. If the action that results in setting the proposed specifications for any/or all of these fisheries is not taken, some current measures will remain in place, but the overall management program for those fisheries will not be identical to that of 2007.

For the purposes of this EA, the no action alternative for summer flounder is defined as follows: (1) no proposed specifications for the 2008 summer flounder fishery will be published; (2) the indefinite management measures (minimum sizes, bag limits, possession limits, permit and reporting requirements, etc.) remain unchanged; (3) no quota set-aside allocated to research in 2008; and (4) no specific cap on the allowable annual landings in this fishery (i.e., no quota). Under the no action alternative, the only regulatory controls on fishing effort and harvests would be the indefinite measures. A commercial quota, which determines the maximum amount of summer flounder landings allowable before the commercial fishery is shut down, would not be implemented for 2008.

For the purposes of this EA, the no action alternative for scup is defined as follows: (1) no proposed specifications for the 2008 scup fishery will be published; (2) the indefinite management measures (minimum sizes, bag limits, possession limits, permit and reporting requirements, etc.) remain unchanged; (3) no quota set-aside allocated to research in 2008; (4) no specific cap on the allowable annual landings in this fishery (i.e., no quota). Under the no action alternative, the only regulatory controls on fishing effort and harvests would be the indefinite measures. A commercial quota, which determines the maximum amount of scup landings allowable before the commercial fishery is shut down, would not be implemented for 2008.

For the purposes of this EA, the no action alternative for black sea bass is defined as follows: (1) no proposed specifications for the 2008 black sea bass fishery will be published; (2) the indefinite management measures (minimum sizes, bag limits, possession limits, permit and reporting requirements, etc.) remain unchanged; (3) no quota set-aside allocated to research in 2008; and (4) no specific cap on the allowable annual landings in this fishery (i.e., no quota). Under the no action alternative, the only regulatory controls on fishing effort and harvests would be the indefinite measures. A commercial quota, which determines the maximum amount of black sea bass landings allowable before the commercial fishery is shut down, would not be implemented for 2008.

The implications of the no action alternatives are substantial. These alternatives do not allow NMFS to specify and implement a TAL (also TAC in the case of scup) for these fisheries, as required in the regulations at 50 CFR part 648, for the upcoming fishing year. Monitoring the landings, and taking action as necessary to prevent the state and Federal caps from being exceeded, as applicable, is essential for management of these fisheries and forms the backbone of the current quota-based management systems under the FMP. The no action alternative is inconsistent with the goals and objectives of the FMP, as well as its implementing regulations, and is likely to result in overfishing of summer flounder, scup, and/or black sea bass (due to NMFS' inability to monitor and enforce quotas designed to constrain harvest to a target F). By not preventing overfishing, it is also inconsistent with National Standard 1 of the MSA. The no action alternatives are not considered reasonable; therefore, they are not analyzed further in the EA. Therefore, the alternatives for summer flounder, scup, and black sea bass are compared to summer flounder alternative 3, scup alternative 3, and black sea bass alternative 3, respectively, which are the status quo alternatives (base line) as opposed to the "true" no action alternatives described above.

## 6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

### 6.1 Description of the Managed Resource

#### 6.1.1 Description of the Fisheries

The commercial and recreational fisheries for summer flounder, scup, and black sea bass are fully described in section 3.3.2 of Amendment 13 to the FMP (MAFMC 2002) and are also outlined by principal port in section 3.4.2 of that document. Otter trawls are utilized in the commercial fisheries for all three species. In addition, floating traps and pots/traps are utilized to capture scup and black sea bass fisheries, respectively. An overview of commercial and recreational fishery trends in landings for each of the FMP species is provided below. The commercial landings are based on Dealer Weighout Data, as of May 21, 2007, and South Atlantic General Canvass Data as of June 25, 2007; recreational landings are based on Marine Recreational Fisheries Statistical Survey (MRFSS) data. As discussed in section 4.1, annual TALs are implemented through this specifications document to achieve fishing mortality targets to ensure rebuilding goals are met and overfishing does not occur. These controls on fishery removals (i.e., output controls) result in landings trends that may or may not closely follow trends in stock abundance. In the summer flounder commercial fishery, any landings overages are subtracted from the initial quota for a given state the following year. For the scup and black sea bass commercial fisheries, landings overages are subtracted from the following year's initial quota by period for scup and coastwide for black sea bass. An exception to this requirement occurred when a court ruling added 3.05 million lb to the summer flounder commercial fishery for 1995 (February 16, 1995, 60 FR 8958). In the recreational fishery, projected landings in a given year are used by the Council in recommending recreational management measures the subsequent year. The recreational fishery has target harvest levels. Due to the lengthy time lag (i.e. months) in recreational data collection, when compared to the commercial landings information which is available in a more timely manner, in-season adjustment and closures of the recreational fisheries for summer flounder, scup, and black sea bass are typically not feasible.

##### 6.1.1.1 Summer Flounder

Commercial and recreational summer flounder landings are graphed to show the relative contributions of each to total landings in Figure 1. Commercial landings peaked in 1984 at 37.77 million lb (17.13 million kg) and then declined rapidly to a time series low of 9.26 million lb (4.20 million kg) in 1990. In 2006, commercial landings were 13.97 million lb (6.34 million kg). The mean for the commercial time series, 1981 to 2006 is 18.24 million lb (8.27 million kg). Recreational landings peaked in 1980 at 38.22 million lb (17.34 million kg) and then declined rapidly to a time series low of 3.16 million lb (1.43 million kg) in 1989. In 2006, recreational landings were 13.97 million lb (6.34 million kg). The mean for the recreational time series, 1981 to 2006 is 11.63 million lb (5.28 million kg). Combined commercial and recreational landings were 25.48 million lb (11.56 million kg) in 2006.

The landings history for this stock, with respect to achieving the coastwide TALs (both recreational and commercial fisheries combined), is given in Box 6.1.1.1 below. This

information indicates a pattern of exceeding the summer flounder coastwide TAL in 10 of the 12 most recent years for which landings information is available.

**Box 6.1.1.1. Summer Flounder TAL,[a] and any landings overages above the coastwide TAL (both sectors combined), in millions lb.**

| Year | TAL | Total Landings | Overage |
|---|---|---|---|
| **1995** | 19.40 | 20.84 | 1.44 |
| **1996** | 18.52 | 22.78 | 4.26 |
| **1997** | 18.52 | 20.67 | 2.15 |
| **1998** | 18.52 | 23.70 | 5.18 |
| **1999** | 18.52 | 19.06 | 0.54 |
| **2000** | 18.52 | 27.73 | 9.21 |
| **2001** | 17.91 | 22.57 | 4.66 |
| **2002** | 24.30 | 22.55 | - |
| **2003** | 23.30 | 25.95 | 2.65 |
| **2004** | 28.20 | 29.02 | 0.82 |
| **2005** | 30.30 | 27.84 | - |
| **2006[b]** | 23.59 | 25.48 | 1.89 |
| **2007** | 17.11 | n/a | n/a |

[a]Includes both commercial quotas and recreational harvest limits.
[b]Preliminary. Commercial landings based on Dealer Weighout Data, as of May 21, 2007, and South Atlantic General Canvass Data as of June 25, 2007; recreational landings based on MRFSS. Note: 2007 landings not yet available.

### 6.1.1.2 Scup

Commercial and recreational scup landings are graphed to show the relative contributions of each to total landings in Figure 2. Commercial landings peaked in 1981 at 21.73 million lb (9.86 million kg) and then declined rapidly to a time series low of 2.66 million lb (1.21 million kg) in 2000. In 2006, commercial landings were 8.57 million lb (3.89 million kg). The mean for the commercial time series, 1981 to 2006 is 10.66 million lb (4.84 million kg). Recreational landings peaked in 1986 at 11.61 million lb (5.27 million kg) and then declined rapidly to a time series low of 0.88 million lb (0.40 million kg) in 1998. In 2006, recreational landings were 2.95 million lb (1.34 million kg). The mean for the recreational time series, 1981 to 2006 is 4.42 million lb (2.00 million kg). Combined commercial and recreational landings were 11.52 million lb (5.23 million kg) in 2006.

The landings history for this stock, with respect to achieving the coastwide TALs (both recreational and commercial fisheries combined) is given in Box 6.1.1.2 below. This information indicates that while the scup coastwide TAL was exceeded from 1999 to 2003, the TAL was not exceeded in the most three recent years for which landings information is available.

| Box 6.1.1.2. Scup TAL,[a] and any landings overages above the coastwide TAL (both sectors combined), in millions lb. | | | |
|---|---|---|---|
| **Year** | **TAL** | **Total Landings** | **Overage** |
| **1997** | 7.95 | 6.04 | - |
| **1998** | 6.13 | 5.05 | - |
| **1999** | 3.77 | 5.20 | 1.43 |
| **2000** | 3.77 | 8.10 | 4.33 |
| **2001** | 6.21 | 8.33 | 2.12 |
| **2002** | 10.77 | 10.91 | 0.14 |
| **2003** | 16.50 | 18.39 | 1.89 |
| **2004** | 16.50 | 13.02 | - |
| **2005** | 16.49 | 11.58 | - |
| **2006**[b] | 16.27 | 11.52 | - |
| **2007** | 12.00 | n/a | n/a |

[a]Includes both commercial quotas and recreational harvest limits.
[b]Preliminary. Commercial landings based on Dealer Weighout Data, as of May 21, 2007, and South Atlantic General Canvass Data as of June 25, 2007; recreational landings based on MRFSS. Note: 2007 landings not yet available.

### 6.1.1.3 Black Sea Bass

Commercial and recreational black sea bass landings are graphed to show the relative contributions of each to total landings in Figure 3. Commercial landings peaked in 1984 at 4.33 million lb (1.96 million kg) and then declined rapidly to a time series low of 2.04 million lb (0.93 million kg) in 1994. In 2006, commercial landings were 2.80 million lb (1.27 million kg). The mean for the commercial time series, 1981 to 2006 is 3.09 million lb (1.40 million kg). Recreational landings peaked in 1986 at 12.46 million lb (5.65 million kg) and then declined rapidly to a time series low of 1.29 million lb (0.59 million kg) in 1998. In 2006, recreational landings were 2.10 million lb (0.95 million kg). The mean for the recreational time series, 1981 to 2006 is 3.89 million lb (1.76 million kg). Combined commercial and recreational landings were 4.90 million lb (2.22 million kg) in 2006.

The landings history for this stock, with respect to achieving the coastwide TALs (both recreational and commercial fisheries combined), is given in Box 6.1.1.3 below. This information indicates that while the black sea bass coastwide TAL was exceeded from 2000 to 2002; the TAL was not exceeded in 7 of the 10 most recent years for which landings information is available.

**Box 6.1.1.3. Black sea bass TAL,[a] and any landings overages above the coastwide TAL (both sectors combined), in million lb.**

| Year | TAL | Total Landings | Overage |
|---|---|---|---|
| **1997** | - | 7.01 | - |
| **1998** | 6.17 | 3.85 | - |
| **1999** | 6.17 | 4.60 | - |
| **2000** | 6.17 | 6.79 | 0.62 |
| **2001** | 6.17 | 6.45 | 0.28 |
| **2002** | 6.80 | 7.91 | 1.11 |
| **2003** | 6.80 | 6.45 | - |
| **2004** | 8.00 | 5.03 | - |
| **2005** | 8.20 | 4.94 | - |
| **2006[b]** | 8.00 | 4.90 | - |
| **2007** | 5.00 | n/a | n/a |

[a]Includes both commercial quotas and recreational harvest limits.
[b]Preliminary. Commercial landings based on Dealer Weighout Data, as of May 21, 2007, and South Atlantic General Canvass Data as of June 25, 2007; recreational landings based on MRFSS. Note: 2007 landings not yet available.

### 6.1.2 Description of the Stock (Including Status, Stock Characteristics, and Ecological Relationships)

Reports on "Stock Status," including annual assessment and reference point update reports, Stock Assessment Workshop (SAW) reports, and Stock Assessment Review Committee (SARC) panelist reports, are available online at the NEFSC website: http://www.nefsc.noaa.gov.

EFH Source Documents, which include details on stock characteristics and ecological relationships, are available at the following website:
http://www.nefsc.noaa.gov/nefsc/habitat/efh/.

#### 6.1.2.1 Summer Flounder

The most recent assessment peer review on summer flounder was the NMFS Office of Science and Technology Division (S&T) Peer Review of the 2006 SAW Southern Demersal Working Group (SDWG) assessment (October 2006; Terceiro 2006a, 2006b).

The SDWG met in June 2007 to perform an annual update to the assessment. Using the updated 2006 fishery and 2007 survey data, the SDWG found that relative to the biological reference points, the stock is overfished and overfishing is occurring (Box 6.1.2.1). The fishing mortality rate estimated for 2006 is 0.35, a significant decline from the 1.32 estimated for 1994 but above the threshold F of 0.28. There is an 80% probability that the fishing mortality rate in 2006 was between 0.29 and 0.49. The estimate of F for 2006 may understate the actual fishing mortality; retrospective analysis shows that the current assessment method tends to underestimate recent

fishing mortality rates. Over the last 3 years, the annual retrospective increase in fishing mortality has ranged from +20 to +40%. Total stock biomass increased substantially during the 1990s and was estimated to be 104 million lbs (47,135 mt) on January 1, 2007. Spawning stock biomass has increased since the early 1990s to 93 million lbs (42, 316 mt) on November 1, 2006, which is below the biomass threshold of one-half $SSB_{MSY}$ = 98.6 million lbs (44,706 mt). Retrospective analysis shows a tendency to overestimate the SSB in the most recent years. Over the last 3 years, the annual retrospective decrease in SSB has ranged from -8 to -22%.

The average year-class estimate from 1982 to 2006 is 37 million fish at age 0, with a median of 33 million fish. The 2006 year-class is currently estimated to be about 30 million fish. Retrospective analysis shows no trend in estimation of year-class strength in the most recent years.

A full description of stock characteristics and ecological relationships of summer flounder is presented in section 3.1.1 of Amendment 13 to the FMP (MAFMC 2002). Additional information can be found in the document entitled, "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999).

**Box 6.1.2.1 Summer Flounder Stock Status Information[a], 2000-2006.**

| Year | Updated F Estimate | Overfishing? ($F_{threshold}$=0.28) | Spawning Stock Biomass ( million lb) | Overfished? ($SSB_{threshold}$=98.6 million lb) | Year Class Estimate (millions of fish) |
|---|---|---|---|---|---|
| **2000** | 0.87 | Yes | 60.0 | Yes | 33.2 |
| **2001** | 0.67 | Yes | 68.6 | Yes | 33.4 |
| **2002** | 0.47 | Yes | 80.2 | Yes | 36.6 |
| **2003** | 0.46 | Yes | 92.8 | Yes | 27.9 |
| **2004** | 0.44 | Yes | 93.5 | Yes | 38.0 |
| **2005** | 0.47 | Yes | 97.2 | Yes | 17.0 |
| **2006** | 0.35 | Yes | 93.3 | Yes | 30.3 |

[a] Based on most recent SDWG assessment update (contained in the report entitled "Summer Flounder Stock Assessment Summary for 2007"); therefore, values in this box may not match those in the prior year's specifications document.

### 6.1.2.2 Scup

The most recent assessment on scup was completed in June, 2002 (35th SARC). At that time, the assessment indicated that scup are no longer overfished, "but stock status with respect to overfishing cannot currently be evaluated." The SARC also concluded that although "the relative exploitation rates have declined in recent years the absolute value of F cannot be determined." The SARC noted that "survey data indicate strong recruitment and some rebuilding of age structure" in recent years and commented on the "high degree of inter-annual variation in individual survey indices."

While State and federal surveys indicated an increase in stock abundance since the mid to late 1990s, the NEFSC 3-year average (2003-2005) spring survey results indicated that spawning stock decreased; the estimate for 2004 was 0.69 kg/tow. This is below the minimum biomass threshold value of 2.77 kg/tow. Therefore, the stock is considered overfished (Box 6.1.2.2). The 2006 NEFSC Spring SSB 3-year average (2005-2007) index value is 0.76 kg/tow and remains below the minimum biomass threshold of 2.77 kg/tow. The NEFSC spring survey index increased significantly in 2004 to 1.85 kg/tow relative to the low value of 0.15 kg/tow derived in 2003. In 2005, the spring index dropped to 0.10 kg/tow; however, in 2006 this value increased to 2.04. The 2006 index is the highest value in the spring survey since 1978, excluding the high value in 2002. In 2007 this value dropped to 0.14 kg/tow. Year class strength is evident in the NEFSC autumn trawl survey results. The survey indicates that strong year classes were produced from 1999-2002. The most recent information indicates a strong year class was produced in 2006.

Estimates of fishing mortality rates for scup are uncertain. The 31$^{st}$ SARC conducted several analyses that indicated that F was at least 1.0 for ages 0-3 scup for the 1984 to 2000 time series. SARC 31 could not estimate Fs on older fish because they were not well represented in the surveys. Although the magnitude of the current mortality rates is unknown, relative exploitation rates have changed over the time series. Relative exploitation rates based on total landings and the spring survey suggest a general increase in exploitation from 1981 to 1995. Since then, relative exploitation rates have declined from the 1995 value of 135.5 to single digit values for 2001 to 2003 and 2005. This relative index increased to 19.9 in 2004 but has since decreased to 9.0 in 2005. In 2006, the value increased to 15.2.

The stock characteristics and ecological relationships of scup are fully described in section 3.1.2 of Amendment 13 to the FMP (MAFMC 2002). Additional information can be found in the document titled, "Essential Fish Habitat Source Document: Scup, *Stenotomus chrysops*, Life History and Habitat Characteristics" (Steimle et al. 1999).

**Box 6.1.2.2 Scup Stock Status Information[a], 2000-2006.**

| Year | Updated F Estimate | Overfishing? ($F_{threshold}$=0.26) | NEFSC Spring SSB 3-year avg. ( kg/tow) | Overfished? ($SSB_{threshold}$=2.77 kg/tow) | Year Class Estimate NEFSC Fall SSB (kg/tow) |
|---|---|---|---|---|---|
| **2000** | Unavailable | Unknown | 0.25 | Yes | 4.79 |
| **2001** | Unavailable | Unknown | 3.30 | No | 1.11 |
| **2002** | Unavailable | Unknown | 3.31 | No | 3.79 |
| **2003** | Unavailable | Unknown | 3.74 | No | 0.80 |
| **2004** | Unavailable | Unknown | 0.69 | Yes | 0.26 |
| **2005** | Unavailable | Unknown | 1.32 | Yes | 0.07 |
| **2006** | Unavailable | Unknown | 0.76 | Yes | 1.92 |

[a]Based on most recent assessment update; therefore, values in this box may not match those in the prior year's specifications document.

### 6.1.2.3 Black Sea Bass

The most recent assessment on black sea bass was completed in June 2006 (SAW/SARC 43); however, the assessment was not approved for management use. The most recent, peer-reviewed, accepted assessment on black sea bass was completed in June 2004. At that time, it indicated that black sea bass were no longer overfished and overfishing was not occurring. Amendment 12 to the FMP (MAFMC 1998), which was partially approved by NMFS in 1999, established a biomass threshold based on the spring survey. Specifically, the biomass threshold is defined as the maximum value of a three-year moving average of the NEFSC spring survey catch-per-tow (1977-1979 average of 0.98 kg/tow). The 2006 biomass index was 0.6 (the three-year average for 2005-2007). Based on this value, the stock is overfished.

Because of the potential influence of an extremely small or large number for a single tow, Gary Shepherd, NEFSC (pers. comm.) has suggested that the survey indices be log transformed to give a better indication of stock status. The transformed series indicates a general increase in the exploitable biomass since 1996, although these values have decreased over the last few years. The index for 2002 of 0.799 is the highest value in the time series (1968-2007). The biomass index has steadily declined from this time series high to 0.493 in 2003, 0.321 in 2004, 0.374 in 2005, 0.288 in 2006, and 0.127 in 2007. The three point moving average based on these survey results for the recent time period has steadily increased from a low of 0.093 in 1997 to 0.538 in 2003. However, lower survey values resulted in a three year average value for 2006 of 0.263.

The spring survey can also be used as an index of recruitment. The survey, an indicator of age-1 fish, indicates good year classes were produced in 1987, 1989 through 1991, and 1994 and poor year classes in 1992, 1993, and 1995 through 1997. Results for 2000 indicate a strong year class was produced in 1999; the index was 0.661, the highest in the time series. The 2001 year class was good; the index was about four times the average for the period and the third largest value since 1968. The 2005 and 2006 year classes (as indicated by the 2006 and 2007 index values) were below the average for the time series (1968-2007).

Relative exploitation based on the total commercial and recreational landings and the moving average of the transformed spring survey index indicates a significant reduction in mortality from 2001 to 2006 relative to indices prior to 1997. Based on tag recapture models, the F estimated for 2003 was less than 0.26; exploitation rates for 2003 ranged from 15-20%. However, preliminary F estimates for June 2003 to March 2004 ranged from 0.24 to 0.3, and the SARC working group indicated that "uncertainty remains in the tag reporting rates and may result in under estimated exploitation rates. Also, discard losses in the commercial fisheries were not estimated and remain an uncertain component of the fishery."

A full description of stock characteristics and ecological relationships is presented in section 3.1.1 of Amendment 13 to the FMP (MAFMC 2002). Additional information can be found in the documents titled, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999) and an update of that document, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics (Second Edition)" (Drohan et al. 2007).

**Box 6.1.2.3 Black Sea Bass Stock Status Information[a], 2000-2006.**

| Year | Updated F Estimate | Overfishing? ($F_{threshold}$=0.33) | NEFSC Spring Exploitable Biomass 3-year avg. ( kg/tow) | Overfished? ($Biomass_{threshold}$=0.98 kg/tow) | Year Class Strength NEFSC Spring Recruits (no./tow) [b] |
|---|---|---|---|---|---|
| **2000** | Unavailable | Unknown | 0.35 | Yes | 0.08 |
| **2001** | Unavailable | Unknown | 0.58 | Yes | 0.55 |
| **2002** | Unavailable | Unknown | 1.25 | No | 0.15 |
| **2003** | < 0.26 [c] | No | 1.40 | No | 0.08 |
| **2004** | Unavailable | Unknown | 1.34 | No | 0.22 |
| **2005** | Unavailable | Unknown | 0.80 | Yes | 0.05 |
| **2006** | Unavailable | Unknown | 0.60 | Yes | 0.10 |

[a]Based on most recent assessment update; therefore, values in this box may not match those in the prior year's specifications document.
[b]Lagged one year (i.e. 2006 year-class strength indicated by 2007 spring recruit value)
[c]39th Northeast Regional Stock Assessment Workshop (39th SAW), 2004

### 6.1.3 Non-target Species

The summer flounder, scup and black sea bass fisheries are mixed fisheries, where squid, Atlantic mackerel, silver hake, skates, and other species are harvested with summer flounder, scup, and/or black sea bass. Section 5.1.9 of Amendment 13 to the FMP (MAFMC 2002) provides a full description of bycatch and/or non-target species in these fisheries. The term "bycatch", as defined by the MSA, means fish that are harvested in a fishery but that are not sold or kept for personal use. Bycatch includes the discard of whole fish at sea or elsewhere, including economic and regulatory discards, and fishing mortality due to an encounter with fishing gear that does not result in capture of fish (i.e., unobserved fishing mortality). Bycatch does not include fish released alive under a recreational catch-and-release fishery management program.

### 6.2 Habitat (Including Essential Fish Habitat)

A description of the habitat associated with the summer flounder, scup, and black sea bass fisheries is presented in section 3.2 of Amendment 13 to the FMP (MAFMC 2002), and a brief summary of that information is given here. The impact of fishing on summer flounder, scup, and black sea bass on habitat (and EFH) and the impact of the summer flounder, scup, and black sea bass fisheries on other species' habitat and EFH can be found in Amendment 13 to the FMP (section 3.2; MAFMC 2002). Potential impacts associated with the measures proposed in this specifications document on habitat (including EFH) are discussed in section 7.0.

### 6.2.1 Summer Flounder

Summer flounder spawn during the fall and winter over the open ocean areas of the continental shelf. Planktonic larvae are often found in the northern part of the Middle Atlantic Bight from September to February and in the southern part from November to May. From October to May, larvae and postlarvae migrate inshore, entering coastal and estuarine nursery areas. Juveniles are distributed inshore and in many estuaries throughout the range of the species during spring, summer, and fall. Summer flounder exhibit strong seasonal inshore-offshore movements. Adult flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the colder months. EFH includes pelagic waters, demersal waters, saltmarsh creeks, seagrass beds, mudflats, and open bay areas, from the Gulf of Maine through North Carolina. Additional information on summer flounder habitat requirements can be found in the document titled, "Essential Fish Habitat Source Document: Summer Flounder, *Paralichthys dentatus*, Life History and Habitat Characteristics" (Packer et al. 1999). An electronic version of this source document is available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. The current EFH designation definitions by life history stage for summer flounder are available at the following website: http://www.nero.noaa.gov/hcd/list.htm.

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (MAFMC 2002). Summer flounder are primarily landed by bottom otter trawls. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the SFA). As stated in section 3.2 of Amendment 13, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The analysis in that document also indicated that no management measures were needed, because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat, where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative, from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13 to the FMP. There have be no significant changes to the manner in which the summer flounder fishery is prosecuted, and none of the alternatives being considered in this document would adversely affect EFH (see section 7.0); therefore, the effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP, and no alternatives to minimize adverse effects on EFH are presented in this document.

### 6.2.2 Scup

Scup spawn once annually, over weedy or sand-covered areas in the spring. Scup eggs and newly hatched larvae are found in open water in bays and sounds of Southern New England during the spring-summer. Juvenile and adult scup are demersal using inshore waters in the spring and moving offshore in the winter. EFH includes demersal waters, sands, mud, mussel and seagrass beds, from the Gulf of Maine through Cape Hatteras, North Carolina. Additional information on scup habitat requirements can be found in the documents titled, "Essential Fish Habitat Source Document: Scup, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al.

1999) and an update of that document, "Essential Fish Habitat Source Document: Scup, *Centropristis striata*, Life History and Habitat Characteristics (Second Edition)" (Drohan et al. 2007). An electronic version of the source documents is available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. The current EFH designation definitions by life history stage for scup are available at the following website: http://www.nero.noaa.gov/hcd/list.htm.

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the FMP (MAFMC 2002). Scup are primarily landed by fish pots/traps, bottom and midwater trawls, and lines. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the SFA). As stated in section 3.2 of Amendment 13, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The analysis in that document also indicated that no management measures were needed, because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat, where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative, from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13 to the FMP. There have be no significant changes to the manner in which the scup fishery is prosecuted, and none of the alternatives being considered in this document would adversely affect EFH (see section 7.0); therefore, the effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP, and no alternatives to minimize adverse effects on EFH are presented in this document.

### 6.2.3 Black Sea Bass

The northern population of black sea bass spawns in the Middle Atlantic Bight continental shelf during the spring through fall. Spawning begins in the spring in the southern portion of the range of this population, i.e., off North Carolina and Virginia, and progresses north into southern New England waters in the summer-fall; these pelagic eggs are closely associated with spawning. Collections of ripe fish and egg distributions indicate that the species spawns primarily on the inner continental shelf between Chesapeake Bay and Montauk Pt., Long Island. The duration of larval stage and habitat-related settlement cues are unknown; therefore, distribution and habitat use of this pelagic stage may only partially overlap with that of the egg stage. Adult black sea bass are also very structure oriented, especially during their summer coastal residency. Unlike juveniles, they tend to enter only larger estuaries and are most abundant along the coast. Larger fish tend to be found in deeper water than smaller fish. A variety of coastal structures are known to be attractive, and these include shipwrecks, rocky and artificial reefs, mussel beds and any other object or source of shelter on the bottom. In the warmer months, inshore, resident adult black sea bass are usually found associated with structured habitats. EFH for black sea bass is pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, sand and shell, from the Gulf of Maine through Cape Hatteras, North Carolina. Additional information on black sea bass habitat requirements can be found in the document titled, "Essential Fish Habitat Source Document: Black Sea Bass, *Centropristis striata*, Life History and Habitat Characteristics" (Steimle et al. 1999; 2007). An electronic version of this source document is available at the following website: http://www.nefsc.noaa.gov/nefsc/habitat/efh/. The current EFH designation

definitions by life history stage for black sea bass are available at the following website: http://www.nero.noaa.gov/hcd/list.htm.

Any actions implemented in the FMP that affect species with overlapping EFH were considered in the EFH assessment for Amendment 13 to the FMP (MAFMC 2002). Black sea bass are primarily landed by fish pots/traps, bottom and midwater trawls, and lines. Amendment 13 included alternatives to minimize the adverse impacts of fishing gear on EFH (as required pursuant to section 303(a)(7) of the SFA). As stated in section 3.2 of Amendment 13, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The analysis in that document also indicated that no management measures were needed, because in Federal waters the fishery is conducted primarily in high energy mobile sand and bottom habitat, where gear impacts are minimal and/or temporary in nature. On that basis, the Council selected the no action alternative, from among the suite of alternatives to minimize fishing gear impacts on EFH in Amendment 13 to the FMP. There have be no significant changes to the manner in which the black sea bass fishery is prosecuted, and none of the alternatives being considered in this document would adversely affect EFH (see section 7.0); therefore, the effects of fishing on EFH have not been re-evaluated since Amendment 13 to the FMP, and no alternatives to minimize adverse effects on EFH are presented in this document.

### 6.3 Endangered and Protected Species

There are numerous species inhabiting the environment, within the management unit of the three species managed through this FMP, that are afforded protection under the Endangered Species Act (ESA) of 1973 (i.e., for those designated as threatened or endangered), the Marine Mammal Protection Act of 1972 (MMPA), and/or the Migratory Bird Act of 1918. Sixteen are classified as endangered or threatened under the ESA, while the rest are protected by the provisions of the MMPA. These species are listed below in Box 6.3. A more detailed description of the species listed as endangered or threatened, including ecological relationships and life history information, is presented in Appendix B, however information on loggerhead and green sea turtles which have had encounters with the gear used to commercially harvest summer flounder are given in this section. The potential impacts to protected species associated with the proposed measures under this specifications document are discussed in section 7.0.

The status of these and other marine mammal populations inhabiting the Northwest Atlantic has been discussed in detail in the U.S. Atlantic and Gulf of Mexico Marine Mammal Stock Assessments. Initial assessments were presented in Blaylock et al. (1995) and are updated in Waring et al. (2006). The most recent information on the stock assessment of various marine mammals through 2005 can be found at:
http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/individual_sars.html.

Three other useful websites on marine mammals are:
http://www.nmfs.noaa.gov/pr/recovery,
http://spo.nwr.noaa.gov/mfr611/mfr611.htm, and
http://www.nmfs.noaa.gov/pr/species/mammals.

Under section 118 of the MMPA of 1972, NMFS must publish, and annually update, the List of Fisheries (LOF), which places all U.S. commercial fisheries in one of three categories based on the level of incidental serious injury and mortality of marine mammals in each fishery (arranging them according to a two tiered classification system). The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The classification criteria consist of a two-tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock (Tier 1) and then addresses the impact of the individual fisheries on each stock (Tier 2).

**Box 6.3. Species protected by the ESA, MMPA, or the Migratory Bird Act that are found in the environment utilized by the summer flounder, scup, and black sea bass fisheries:**

| Species | Common name | Scientific Name | Status |
|---|---|---|---|
| **Whales** | Northern right | *Eubalaena glacialis* | Endangered |
| | Humpback | *Megaptera novaeangliae* | Endangered |
| | Fin | *Balaenoptera physalus* | Endangered |
| | Blue | *Balaenoptera musculus* | Endangered |
| | Sei | *Balaenoptera borealis* | Endangered |
| | Sperm | *Physeter macrocephalus* | Endangered |
| | Minke | *Balaenoptera acutorostrata* | Protected |
| | Beaked | *Ziphius and Mesoplodon spp.* | Protected |
| | Pilot | *Globicephala spp.* | Protected |
| **Dolphins** | Risso's | *Grampus griseus* | Protected |
| | White-sided | *Lagenorhynchus acutus* | Protected |
| | Common | *Delphinus delphis* | Protected |
| | Spotted and striped | *Stenella spp.* | Protected |
| | Bottlenose | *Tursiops truncatus* | Protected |
| **Sea Turtles** | Leatherback | *Dermochelys coriacea* | Endangered |
| | Kemp's ridley | *Lepidochelys kempii* | Endangered |
| | Green | *Chelonia mydas* | Endangered |
| | Hawksbill | *Eretmochelys imbricata* | Endangered |
| | Loggerhead | *Caretta caretta* | Threatened |
| **Fish** | Shortnose sturgeon | *Acipenser brevirostrum* | Endangered |
| | Atlantic salmon | *Salmo salar* | Endangered |
| | Smalltooth sawfish | *Pristis pectinata* | Endangered |
| **Birds** | Roseate tern | *Sterna dougallii dougallii* | Endangered |
| | Piping plover | *Charadrius melodus* | Endangered |
| **Critical Habitat Designation** | Right Whale | Cape Cod Bay and Great South Channel | |

If the total annual mortality and serious injury of all fisheries that interact with a stock is less than 10 percent of the Potential Biological Removal[3] (PBR) for the stock, then the stock is designated as Tier 1, and all fisheries interacting with this stock would be placed in Category III. Otherwise, these fisheries are subject to categorization under Tier 2. Under Tier 2, individual fisheries are subject to the following categorization:

I. Annual mortality and serious injury of a stock in a given fishery is greater than or equal to 50 percent of the PBR level;

II. Annual mortality and serious injury of a stock in a given fishery is greater than one percent and less than 50 percent of the PBR level; or

III. Annual mortality and serious injury of a stock in a given fishery is less than one percent of the PBR level.

Under Category I, there is documented information indicating a "frequent" incidental mortality and injury of marine mammals in the fishery. In Category II, there is documented information indicating an "occasional" incidental mortality and injury of marine mammals in the fishery. In Category III, there is information indicating no more than a "remote likelihood"[4] of an incidental taking of a marine mammal in the fishery or, in the absence of information indicating the frequency of incidental taking of marine mammals, other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, and species and distribution of marine mammals in the area suggest there is no more than a remote likelihood of an incidental take in the fishery. All types of commercial fishing gear are required to meet the gear restrictions detailed in the Atlantic Large Whale Take Reduction Plan, the Harbor Porpoise Take Reduction Plan, the MMPA, and the ESA. These restrictions are intended to reduce fishery interactions and incidental injury or mortality of protected resources.

The commercial fisheries for summer flounder, scup, and black sea bass are primarily prosecuted with otter trawls, otter trawls and floating traps, and otter trawls and pots/traps, respectively. These fisheries are mixed fisheries (indiscriminate), where squid, Atlantic mackerel, silver hake, skates, and other species are harvested with summer flounder, scup, and/or black sea bass.

The 2007 LOF indicates that the Mid-Atlantic bottom trawl fishery is a Category II fishery, with potential to result in incidental injury and mortality of Western North Atlantic common dolphins, short-finned pilot whales, and long-finned pilot whales. According to Waring et al. (2006), in 1999 there was one reported pilot whale taken in the Mid-Atlantic mixed species trawl fisheries fishery. The incidental take was observed on a trip that landed silver hake as the primary species. In 1997, there was one observed common dolphin incidentally taken in the Southern New

[3] PBR is the product of minimum population size, one-half the maximum productivity rate, and a “recovery” factor (MMPA Sec. 3. 16 U.S.C. 1362; Wade and Angliss 1997).

[4] A commercial fishery with 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) 10% or less of any marine mammal stock's potential biological removal level, or (2) More than 10% of any marine mammal stock's PBR level, yet that fishery by itself is responsible for the annual removal of 1 percent or less of that stock's PBR level.

England/Mid-Atlantic bottom trawl fishery reported (Waring et al. 2006); however, summer flounder, scup, and black sea bass were not the target species. The Atlantic mixed species trap/pot fishery is listed as a Category II fishery in the 2007 LOF, with potential to result in incidental injury and mortality of North Atlantic fin whales and humpback whales in the Gulf of Maine. This fishery was classified by analogy. There have been no observed interactions of fin and humpback whales with the Atlantic mixed species trap/pot fishery; however, the lobster trap/pot fishery has been involved in entanglements with large cetaceans (Waring et al. 2006). Therefore, there are no documented marine mammal species or stocks with incidental injury and mortality resulting from the Atlantic mixed species trap/pot fishery where scup or black sea bass was the target species. Smaller quantities of summer flounder are caught by the Mid-Atlantic commercial sea scallop dredge fishery, the hook and line fishery, and the pound net fishery. All three of these fisheries are listed as Category III under the 2007 LOF, and none of them have documented marine mammal takes.

The NMFS observer data for the period of January 2004 to February 2007 indicate there were eight sea turtle takes (2 green; 5 loggerhead; 1 unknown spp.) where summer flounder was the species being targeted. Of these eight takes, three loggerhead turtles were released alive and uninjured, one loggerhead was released alive and resuscitated, one loggerhead was released alive but injured, one green turtle was released alive and uninjured, one green turtle was dead, and the unknown turtle species was dead and severely decomposed (NMFS, pers. comm. July 18, 2006). The following provides more detailed descriptions of green and loggerhead sea turtles.

*Green Sea Turtle:* Green sea turtles are more tropical in distribution than loggerheads, and are generally found in waters between the northern and southern 20°C isotherms. In the western Atlantic region, the summer developmental habitat encompasses estuarine and coastal waters as far north as Long Island Sound, Chesapeake Bay, and the North Carolina sounds, and south throughout the tropics (NMFS 1998). Most of the individuals reported in U.S. waters are immature (NMFS 1998). Green sea turtles found north of Florida during the summer must return to southern waters in autumn or risk the adverse effects of cold temperatures.

There is evidence that green turtle nesting has been on the increase during the past decade. For example, increased nesting has been observed along the Atlantic coast of Florida on beaches where only loggerhead nesting was observed in the past (NMFS 1998). Recent population estimates for the western Atlantic area are not available. Green turtles are threatened by incidental captures in fisheries, pollution and marine habitat degradation, destruction/disturbance of nesting beaches, and other sources of man-induced and natural mortality.

Juvenile green sea turtles occupy pelagic habitats after leaving the nesting beach. At approximately 20 to 25 cm carapace length, juveniles leave pelagic habitats, and enter benthic foraging areas, shifting to a chiefly herbivorous diet (NMFS 1998). Post-pelagic green turtles feed primarily on sea grasses and benthic algae, but also consume jellyfish, salps, and sponges. Known feeding habitats along U.S. coasts of the western Atlantic include shallow lagoons and embayments in Florida, and similar shallow inshore areas elsewhere (NMFS 1998).

Sea sampling data from the scallop dredge fishery and southeast shrimp and summer flounder bottom trawl fisheries have recorded incidental takes of green turtles

*Loggerhead Sea Turtle:* The loggerhead sea turtle occurs throughout the temperate and tropical regions of the Atlantic, Pacific and Indian Oceans (Dodd 1998). The loggerhead turtle was listed as "threatened" under the ESA on July 28, 1978, but is considered endangered by the World Conservation Union (IUCN) and under the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). Loggerhead sea turtles are found in a wide range of habitats throughout the temperate and tropical regions of the Atlantic. These include open ocean, continental shelves, bays, lagoons, and estuaries (NMFS& FWS 1995).

Since they are limited by water temperatures, sea turtles do not usually appear on the summer foraging grounds in the Gulf of Maine until June, but are found in Virginia as early as April. They remain in these areas until as late as November and December in some cases, but the large majority leaves the Gulf of Maine by mid-September. Loggerheads are primarily benthic feeders, opportunistically foraging on crustaceans and mollusks (NMFS & FWS 1995). Under certain conditions they also feed on finfish, particularly if they are easy to catch *(e.g.,* caught in gillnets or inside pound nets where the fish are accessible to turtles).

A Turtle Expert Working Group (TEWG 2000), conducting an assessment of the status of the loggerhead sea turtle population in the Western North Atlantic (WNA), concluded that there are at least four loggerhead subpopulations separated at the nesting beach in the WNA. However, the group concluded that additional research is necessary to fully address the stock definition question. The four nesting subpopulations include the following areas: northern North Carolina to northeast Florida, south Florida, the Florida Panhandle, and the Yucatan Peninsula. Genetic evidence indicates that loggerheads from Chesapeake Bay southward to Georgia appear nearly equally divided in origin between South Florida and northern subpopulations. Additional research is needed to determine the origin of turtles found north of the Chesapeake Bay.

The TEWG (1998) analysis also indicated the northern subpopulation of loggerheads is stable or declining. A recovery goal of 12,800 nests has been assumed for the Northern Subpopulation, but TEWG (1998) reported nest number at around 6,200 (TEWG 1998). More recently, the addition of nesting data from the years 1996, 1997 and 1998, did not change the assessment of the TEWG that the number of loggerhead nests in the Northern Subpopulation is stable or declining (TEWG 2000). Since the number of nests has declined in the 1980's, the TEWG concluded that it is unlikely that this subpopulation will reach this goal given this apparent decline and the lack of information on the subpopulation from which loggerheads in the WNA originate. Continued efforts to reduce the adverse effects of fishing and other human-induced mortality on this population are necessary.

The most recent 5-year ESA sea turtle status review (NMFS & USFWS 1995) highlights the difficulty of assessing sea turtle population sizes and trends. Most long-term data comes from nesting beaches, many of which occur extensively in areas outside U.S. waters. Because of this lack of information, the TEWG was unable to determine acceptable levels of mortality. This status review supports the conclusion of the TEWG that the northern subpopulation may be

experiencing a decline and that inadequate information is available to assess whether its status has changed since the initial listing as threatened in 1978. NMFS & USFWS (1995) concluded that loggerhead turtles should remain designated threatened but noted that additional research will be necessary before the next status review can be conducted.

## 6.4 Human Communities and Economic Environment

### 6.4.1 Fishery Descriptions

A detailed description of the economic aspects of the commercial and recreational fisheries for summer flounder, scup, and black sea bass was presented in section 3.3.1, 3.3.2, and 3.3.3, respectively, of Amendment 13 to the FMP (MAFMC 2002). Recent trends in landings and ex-vessel values are presented below.

#### 6.4.1.1 Summer Flounder

The value of commercial landings of summer flounder from 2004 to 2006 averaged $29.5 million, with an average ex-vessel price of $1.79 per pound. The ex-vessel value of summer flounder landings in 2006 was $28.7 million, with an average ex-vessel price estimated at $2.06 per pound. In general, summer flounder landings for smaller tonnage vessels were higher in the summer months, while landings for larger tonnage vessels were higher in the winter months. Monthly price fluctuations were evident. On average, higher prices tend to occur during the summer months. This price fluctuation is likely in response to supply. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in section 6.4.3.

Summer flounder continues to be an important component of the recreational fishery. Estimates of primary species sought as reported by anglers in recent intercept surveys indicate that summer flounder has shown an upward trend in importance in the U.S. Summer flounder recreational trips averaged 5.1 million for the 1991 to 2006 period, ranging from 3.8 million in 1992 to 6.1 million in 2001. For the 2004 to 2006 period, summer flounder recreational fishing trips were estimated at 5.1, 5.7, and 5.4 million, respectively (section 9.11.4.1.2).

#### 6.4.1.2 Scup

Commercial scup landings were approximately 9.04 million lb (4.10 million kg; from ME to Cape Hatteras, NC) and valued at $6.82 million in 2005. In 2006, 8.57 million lb (3.89 million kg) of scup were landed and valued at $7.67 million. The average price per pound was $0.76 in 2005 and $0.89 in 2006. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in section 6.4.3. Scup ex-vessel values and landings were higher for ports located in the northern part of the coast.

#### 6.4.1.3 Black Sea Bass

Commercial black sea bass landings were approximately 2.85 million lb (1.29 million kg; from ME to Cape Hatteras, NC) and valued at $7.12 million in 2005. In 2006, 2.80 million lb (1.27

million kg) of black sea bass were landed and valued at $7.59 million. The average price per pound was $2.50 in 2005 and $2.71 in 2006. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in section 6.4.3. Black sea bass values and landings were higher for ports located along the southern part of the coast.

### 6.4.2 Description of the Areas Fished

The baseline impact of the summer flounder, scup, and black sea bass commercial fisheries on the environment is fully described in section 3.2.8 of Amendment 13 to the FMP (MAFMC 2002).

#### 6.4.2.1 Summer Flounder

NMFS 2006 VTR data indicated that 20,059 trips, by five major gear types, caught a total of 13.34 million lb (6.05 million kg) of summer flounder; landing 12.90 million lb (5.85 million kg) and discarding 0.43 million lb (0.20 million kg). The majority of the trips and catch were made by bottom otter and beam trawls (69.8 percent of trips, 97.0 percent of catch), followed by gillnets (7.4 percent of trips, 0.6 percent of catch), handline “other” (8.8 percent of trips, 1.0 percent of catch), scallop dredges (8.9 percent of trips, 0.8 percent of catch), and pots and traps (5.1 percent of trips, 0.6 percent of catch). There were eight statistical areas, which individually accounted for greater than 5 percent of the summer flounder catch in 2006 (Table 1). Collectively, these eight areas accounted for 80 percent of the summer flounder catch. There were eight statistical areas, which individually accounted for greater than 5 percent of the trips which caught summer flounder in 2006 (Table 2). Collectively, these eight areas accounted for 86 percent of the trips that caught summer flounder and 50 percent of the 2006 summer flounder catch.

#### 6.4.2.2 Scup

NMFS 2006 VTR data indicated that 12,143 trips, by five major gear types, caught a total of 7.35 million lb (3.33 million kg) of scup. Of these, 7.23 million lb (3.28 million kg) of scup were landed, and 0.12 million lb (0.05 million kg) were discarded. The majority of the trips and catch were made by bottom otter and beam trawls (56.9 percent of trips, 91.7 percent of catch), followed by pots and traps (20.5 percent of trips, 4.8 percent of catch), hand line "other" (18.0 percent of trips, 2.8 percent of catch), gillnets (4.3 percent of trips, 0.4 percent of catch), and dredges (0.1 percent of trips, 0.2 percent of catch). There were five statistical areas, which individually accounted for greater than 5 percent of the scup catch in 2006 (Table 1). Collectively, these five areas accounted for 94 percent of the scup catch. There were four statistical areas, which individually accounted for greater than 5 percent of the trips which caught scup in 2006 (Table 2). Collectively, these four areas accounted for 85 percent of the trips that caught scup and 49 percent of the 2006 scup catch.

### 6.4.2.3 Black Sea Bass

NMFS 2006 VTR data indicated that 9,666 trips, by four major gear types, caught a total of 2.40 million lb (1.09 million kg) of black sea bass. Of these, 2.32 million lb (1.05 million kg) of black sea bass were landed, and 0.08 million lb (0.04 million kg) were discarded. The majority of the trips and catch were made by bottom otter and beam trawls (48.8 percent of trips, 38.5 percent of catch), followed by pots and traps (33.5 percent of trips, 56.6 percent of catch), handline "other" (14.1 percent of trips, 4.6 percent of catch), and gillnets (3.4 percent of trips, 0.3 percent of catch). There were six statistical areas, which individually accounted for greater than 5 percent of the black sea bass catch in 2006 (Table 1). Collectively, these six areas accounted for 72 percent of the black sea bass catch. There were eight statistical areas, which individually accounted for greater than 5 percent of the trips which caught black sea bass in 2006 (Table 2). Collectively, these eight areas accounted for 89 percent of the trips that caught black sea bass and 66 percent of the 2006 black sea bass catch.

### 6.4.3 Port and Community Description

The ports and communities that are dependent on summer flounder, scup, and black sea bass are fully described in Amendment 13 to the FMP (section 3.4; MAFMC 2002).

To examine recent landings patterns among ports, 2006 NMFS dealer data are used. The top commercial landings ports for summer flounder, scup, and black sea bass by pounds landed are shown in Table 3. A "top port" is defined as any port that landed at least 100,000 lb of summer flounder, scup, or black sea bass. Related data for the recreational fisheries are shown in Table 4. However, due to the nature of the recreational database (Marine Recreational Fisheries Statistical Survey), it is inappropriate to desegregate to less than state levels. Thus port-level recreational data are not shown.

### 6.4.4 Analysis of Permit Data

***Federally Permitted Vessels***

This analysis estimates that in 2006, there were 2,253 vessels with one or more of the following three commercial or recreational Federal Northeast permits: summer flounder, scup, and black sea bass (Table 5). A total of 1,021, 884, and 928 federal commercial permits for summer flounder, scup, and black sea bass, respectively, had been issued to Northeast region fishing vessels (Table 5). For party/charter operators, a total of 872, 759, and 832 federal permits were issued for summer flounder, scup, and black sea bass, respectively (Table 5).

These three fisheries (summer flounder, scup, and black sea bass) have vessels permitted as commercial, recreational, or both. Of the 2,253 vessels with at least one federal permit, there were 1,334 that held only commercial permits for summer flounder, scup, and/or black sea bass while there were 809 vessels that held only a recreational permit. The remaining vessels (110) held some combination of recreational and commercial permits (Table 5). Whether engaged in a commercial or recreational fishing activity, vessels may hold any one of seven combinations of

summer flounder, scup, and black sea bass permits. The total number of vessels holding any one of these possible combinations of permits by species and commercial or recreational status are reported in Table 5.

Row sums in Table 5 indicate the total number of vessels that have been issued some unique combination of commercial permits. For example, there were 332 vessels whose only commercial permit was for summer flounder. By contrast, there were 518 vessels that held all three commercial permits. Column totals in Table 5 indicate the total number of vessels that have been issued some unique combination of federal recreational permits. For example, there were 12 vessels whose only recreational permit was for scup, while 704 vessels held all three recreational permits. Each cell in Table 5 reports the total number of vessels that have a unique combination of recreational and commercial permits by species. For example, the cell entry of 3 in row 2 column 2 indicates that there were 3 vessels that held the unique combination of single summer flounder commercial permit and a single summer flounder recreational permit. Note that each cell entry in row one corresponds to vessels that held no commercial permit for summer flounder, scup or black sea bass, while each cell entry in column 1 corresponds to vessels that held no such recreational permit.

In addition to summer flounder, scup, and black sea bass, there are a number of alternative commercial or recreational fisheries for which any given vessel might possess a federal permit. The total number of vessels holding any one or more of these other permits is reported in Table 6.

Of the vessels that hold at least one federal permit for summer flounder, scup, or black sea bass, the largest number of commercial permit holders are held by Massachusetts vessels, followed by New Jersey, Rhode Island, New York, North Carolina, and Virginia (Table 7). The fewest permits are held by Pennsylvania and Florida vessels. In terms of average tonnage, the largest commercial vessels are found in Pennsylvania, followed by Virginia, Connecticut, North Carolina, and New Jersey. In terms of average length, the largest commercial vessels are found in Virginia, followed by Connecticut, North Carolina, and Rhode Island. In terms of average horse power, the largest commercial vessels are found in Connecticut, followed by Virginia, New Jersey, Massachusetts, and North Carolina.

For party/charter vessels (Table 8), the largest numbers of permit holders are found in Massachusetts, followed by New Jersey and New York. The fewest permits are in Pennsylvania and Florida. As might be expected, recreational vessels are smaller on average than commercial vessels. In terms of average length, the largest party/charter vessels operate out of principal ports in the states of Pennsylvania and Virginia, followed by Connecticut, Maryland, and Florida. In terms of average horse power, the largest recreational vessels are found in Pennsylvania, North Carolina, Virginia, and Florida.

For vessels that hold a combination of commercial and party/charter permits, most vessels operate out of ports in the state of New York followed by Massachusetts, New Jersey, Rhode Island, and Virginia (Table 9). Like the vessels that hold only party/charter summer flounder,

scup, or black sea bass permits, these vessels are generally smaller than exclusively commercial vessels.

Summer flounder landings are allocated by state, though vessels are not constrained to land in their home state. It can be useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. With the exception of the state of Florida, a high percentage of commercial vessel owners list the same state as both the vessel owner's declared principal port of landing and their identified home port (Table 7). A high percentage of recreational vessel owners list the same state as both the vessel owner's declared principal port of landing and their identified home port, with the exception of Pennsylvania and Florida (Table 8). With the exception of the states of Florida and Pennsylvania, a high percentage of recreational/commercial vessel owners list the same state as both the vessel owner's declared principal port of landing and their identified home port (Table 9). Those vessels which have generally made it a practice to land in their home state may have less inherent flexibility in altering their landing state to adjust to smaller quotas in their home state.

***Dealers***

There were 275 dealers who bought summer flounder, scup and/or black sea bass in 2006. They were distributed by state as indicated in Table 10. Employment data for these specific firms are not available. In 2006, these dealers bought $27.3 million worth of summer flounder; $8.1 million worth of scup; and $7.7 million worth of black sea bass.

## 7.0 ENVIRONMENTAL CONSEQUENCES AND REGULATORY ECONOMIC EVALUATION OF ALTERNATIVES

This EA analyzes the impacts of the alternatives which specify 2008 commercial quotas and 2008 recreational harvest limits for the summer flounder, scup, and black sea bass fisheries that are necessary to achieve, but not exceed, the annual target exploitation rates established under the respective FMP rebuilding schedules. Changes to other commercial management measures for summer flounder, scup, and black sea bass were not recommended for 2008 by the Council, Board, or the Summer Flounder, Scup, or Black Sea Bass Monitoring Committees. Therefore, it is recommended that other commercial management measures in place remain unchanged (status quo) for the 2008 fishing year (see section 5.0 for additional discussion). The Council and Commission's Board will meet in December 2007 to adopt 2008 recreational management measures when more complete data regarding 2007 recreational landings are available, which will be presented at that time to the Regional Administrator in a recreational specifications document. The nature and extent of the management programs for summer flounder, scup, and black sea bass fisheries have been examined in detail in the EAs and EISs prepared for the management actions and are detailed in section 4.0. The aspects of the environment (Valued Ecosystem Components - VECs) that could be affected by the proposed actions are detailed in section 6.0, and the analysis in this section focuses on impacts relative to those (managed resources and non-target species, habitat (including EFH), protected resources, and human communities).

To conduct a more complete socioeconomic analysis, the socioeconomic impacts of the Council-preferred alternatives are analyzed in combination in section 7.5 and in section 9.11.4. Combined impacts were examined because many of the vessels active in these fisheries participate in more than one, two, or all three of these fisheries.

### 7.1 Summer Flounder Alternatives

Section 5.1 fully described the summer flounder alternatives under consideration for 2008. In addition, section 4.4 details specific methods of analysis for this section. For reference, the summer flounder alternatives are:

- **Council-Preferred Alternative 1 - TAL of 15.77 million lb** (a 9.32 million lb adjusted commercial quota; a 6.21 million lb adjusted recreational harvest limit; 233,192 lb RSA)
- **Non-preferred Alternative 2 - Monitoring Committee Recommended / Most Restrictive TAL of 11.64 million lb** (a 6.84 million lb adjusted commercial quota; a 4.56 million lb adjusted recreational harvest limit; 233,192 lb RSA)
- **Non-preferred Alternative 3 – Least Restrictive / Status Quo TAL of 17.11 million lb** (a 10.13 million lb adjusted commercial quota; a 6.75 million lb adjusted recreational harvest limit; 233,192 lb RSA)

Box 7.1 below provides the percent change in the 2008 overall TAL, preliminary adjusted commercial quotas, and recreational harvest limits for each alternative, when compared to 2007.

**Box 7.1 Comparison of the percentage change in 2008 overall TAL, preliminary adjusted commercial quotas, and recreational harvest limits for each alternative, when compared to 2007.***

| | | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| **Summer Flounder** | **Change in overall TAL** | -7.8 | -32.0 | 0 |
| | **Preliminary Adjusted Commercial Quota** | -4.8 | -30.1 | +3.5 |
| | **Preliminary Adjusted Recreational Harvest Limit** | -7.2 | -31.8 | +0.9 |

*Note that preliminary quotas are provisional and may change to account for overages according to the quota counting procedures outlined above; percent changes in status quo (alt. 3) preliminary adjusted commercial quotas and preliminary adjusted recreational harvest limits, when compared to 2007, are due to differences in RSA amounts and/or overages.

### 7.1.1 Biological Impacts

This section details the impacts of the three summer flounder alternatives on the managed resource, as well as other non-target species. Alternative 1 is the Council-preferred alternative and specifies a TAL of 15.77 million lb. This alternative is 7.8 percent less than the status quo TAL of 17.11 million lb (alternative 3; Box 7.1). Alternative 2 is the most restrictive alternative, of the three considered, and is 32.0 percent less than status quo alternative. Both alternatives 1 and 2 propose reduced fishery yields relative to 2007 to enable continued rebuilding of the stock from the current overfished state (SSB < ½ $SSB_{MSY}$; section 6.1.2) to $SSB_{MSY}$ by January 1, 2013.

The Council-preferred alternative 1 is expected to result in positive to potentially negative impacts on the managed resource in 2008, when compared to the status quo. The TAL under this alternative has a 75 percent probability of achieving the rebuilding F of 0.199 in 2008 and is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013; however, it does not correct for the retrospective pattern in F and SSB observed in the stock assessment (see section 6.1.2 for additional details). There is the potential that when the 2008 F is estimated (in 2009 when complete 2008 landings data are available) the F that is calculated may be higher than F=0.199 and may exceed the overfishing threshold of F=0.28. As such, there may be negative impacts on the stock through continued overfishing. While the stock may continue to increase under this fishing mortality rate (resulting in some positive impacts), stock rebuilding will likely be slowed if the target fishing mortality rates are exceeded. There is some uncertainty as to whether this retrospective pattern will increase or diminish and what its magnitude will be in subsequent years; therefore, the extent to which impacts may be positive or negative will depend on the extent and magnitude of these patterns in F and SSB on the assessment. Under this alternative, the 2008 adjusted commercial quota is approximately 4.8 percent lower when

compared to 2007. This slightly smaller commercial quota is not expected to result in negative impacts to other fisheries relative to the status quo. The commercial fishery for summer flounder is primarily prosecuted with otter trawls and is a mixed fishery (see section 6.1.3 for additional details). A smaller quota could result in decreased effort and reduced catches of other species. As such, this summer flounder preliminary adjusted quota could result in positive impacts on other fisheries, relative to the status quo (alternative 3). More specifically, catch-per-unit-effort could correspondingly increase with increased stock abundance, resulting in a smaller number of tows landing a larger volume of fish. While it is not known with certainty how the proposed measures will affect fishing effort, it is likely that the proposed measures will result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 1 is 7.2 percent lower than the recreational harvest limit when compared to 2007. The adjusted recreational limits under this alternative allow for less recreational landings in 2008 compared to the status quo alternative. Overall, Council-preferred alternative 1 is expected to result in positive to potentially negative biological impacts, relative to the status quo measures for summer flounder (alternative 3).

Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. This TAL has a 75 percent probability of achieving the retrospective corrected rebuilding F=0.143 in 2008 and was recommended by the Summer Flounder Monitoring Committee. This TAL is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013, and includes a correction for the retrospective pattern in F and SSB observed in the stock assessment (see section 6.1.2 for additional details). Under this alternative, it may be less likely that when the 2008 F is estimated (in 2009 when complete 2008 landings data are available), it will exceed the overfishing threshold of F=0.28. On that basis, there is potential for positive impacts on the stock due to reduced fishing pressure which is expected to allow rebuilding to continue. There is uncertainty as to the extent and magnitude of the retrospective pattern in F and SSB in subsequent years; however, the magnitude of the positive impacts associated with this alternative (alternative 2) is expected to be greater than those under alternative 1 because it would compensate for this pattern should it continue in 2008. Under this alternative, the 2008 adjusted commercial quota is approximately 30.1 percent lower when compared to 2007. The same discussion above for alternative 1 on the effects of smaller quotas on catches of other species also applies here. The proposed measures under alternative 2 will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 2 is 31.8 percent lower than the recreational harvest limit when compared to 2007. The adjusted recreational limits under this alternative allow for less recreational landings in 2008 compared to the status quo alternative. Overall, non-preferred alternative 2 is expected to result in positive biological impacts, relative to the status quo measures for summer flounder (alternative 3).

Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008 when compared to 2007. The proposed TAL has slightly greater than a 50 percent probability of achieving the rebuilding F=0.199 for summer flounder in 2008. This TAL is projected to rebuild the spawning stock biomass to $SSB_{MSY}$ by January 1, 2013; however, it does not correct for the retrospective pattern in F and SSB observed in the stock assessment (see section 6.1.2 for additional details). Under this alternative, it is possible that when the 2008 F is

estimated (in 2009 when complete 2008 landings data are available), it will exceed the overfishing threshold of F=0.28. Maintaining the status quo alternative in light of recent stock assessment information, which indicates what rebuilding rates are most appropriate under the rebuilding program, would not be utilizing the best available scientific information. For those reasons discussed above, there is potential for negative impacts on the stock due to an increased risk that overfishing will occur, resulting in slowed or negative gains in rebuilding efforts. There is uncertainty as to the extent and magnitude of the retrospective pattern in F and SSB in subsequent years; however, the magnitude of the negative impacts associated with this alternative (alternative 3) is expected to be greater than those under alternative 1. Under this alternative, the 2008 adjusted commercial quota is approximately 3.5 percent higher when compared to 2007 due to differences in RSA amounts and/or adjustments due to overages /quota restorations (Note: overall TAL 17.11 million lb in 2007 is identical to 2008 status quo). The slight increase in commercial quota under alternative 3 could potentially result in more, or longer, fishing trips, resulting in an increase in the incidental catch rates of other species relative to 2007. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same impacts on non-target species. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative. The 2008 recreational limit under alternative 3 is 0.9 percent higher than the recreational harvest limit when compared to 2007. Overall, non-preferred alternative 3 is expected to result in negative biological impacts, when compared to 2007.

### 7.1.2 Habitat Impacts

The principal commercial gear used to harvest summer flounder is the bottom otter trawl with lesser amounts in other gears, including scallop dredges, the hook and line fishery, and the pound net fishery. The nature of impacts by these gears on the ocean bottom habitat is described in Amendment 13 to the FMP (MAFMC 2002). Data on the extent of impacts by specific gear on various bottom types (including extent and duration of impacts) are limited; however, gears with the most contact with the bottom habitat (such as trawls and dredges) have the potential to impact habitat. Although the specific consequences for habitat are uncertain, it can be assumed that the extent of trawling and dredging impacts is related to fishing effort. Table 11 describes the range of potential habitat impacts that could occur under each summer flounder quota alternative with more detailed discussion below.

The Council-preferred alternative 1 includes a decrease in the summer flounder commercial quota by 4.8 percent compared to 2007 (Box 7.1). Alternative 2 is the most restrictive alternative, of the three considered, and the preliminary adjusted commercial quota is 30.1 percent lower when compared to 2007. Alternative 3 is the status quo alternative and its associated commercial quota is 3.5 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and/or adjustments due to overages/quota restorations. It is difficult to predict precisely whether the commercial quota decreases under

alternatives 1 and 2 will result in decreased fishing effort on EFH, particularly with respect to a rebuilding stock that has potential for increased availability in subsequent years. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser habitat impacts. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an equal number of fishing trips landing a smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in habitat impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced gear impacts to bottom habitats. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential habitat impacts and depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternatives are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts. As such, each of these alternatives will likely minimize the adverse effects of fishing on EFH to the extent practicable, pursuant to section 305 (a)(7) of the MSFCMA.

### 7.1.3 Impacts on Endangered and Other Protected Species

The principal commercial gear used to harvest summer flounder is the bottom otter trawl with lesser amounts in other gears, including scallop dredges, the hook and line fishery, and the pound net fishery. As discussed in section 6.3, the 2007 LOF indicates that the Mid-Atlantic bottom trawl fishery is a Category II fishery, and the three other fisheries which harvest summer flounder (sea scallop dredge, the hook and line, and pound net fishery) are listed as Category III. None of these fisheries have documented marine mammal takes where summer flounder, scup, or black sea bass were the target species. However, over the last three years there have been eight documented sea turtle takes where summer flounder was the target species (see section 6.3 for additional discussion). It is reasonable to assume that the extent of interactions between these commercial fishing gears and endangered and protected resources is related to fishing effort.

The Council-preferred alternative 1 includes a decrease in the summer flounder commercial quota by 4.8 percent compared to 2007 (Box 7.1). Alternative 2 is the most restrictive alternative of the three considered, and the preliminary adjusted commercial quota is 30.1 percent lower when compared to 2007. Alternative 3 is the status quo alternative, and its associated commercial quota is 3.5 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and/or adjustments due to overages/quota restorations. It is difficult

to predict precisely whether the commercial quota decreases under alternatives 1 and 2 will result in decreased fishing effort and thus, decreased encounters or interactions with endangered and protected resources, particularly with respect to a rebuilding summer flounder stock that has potential for increased availability in subsequent years. In addition, the availability of endangered and protected resources to summer flounder fishing gears is also affected by the stock status (i.e. increasing or decreasing stock size) and distribution of these protected species. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser impacts on protected resources. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase, resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an equal number of fishing trips landing a smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in protected resources impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced impacts to endangered and protected resources. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential impacts on endangered and protected resources and depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts. In addition, it should be noted that all fishing gears are required to meet gear restrictions as required under the Atlantic Large Whale Take Reduction Plan (ALWTRP), Harbor Porpoise Take Reduction Plan (HPTRP), MMPA, and the ESA. As such, each of these alternatives is not expected to affect endangered and threatened species in any manner not considered in a prior consultation on this fishery and will have no adverse impacts on protected resources, relative to 2007.

### 7.1.4 Socioeconomic Impacts

The proposed 2008 TAL of 15.77 million lb under Council-preferred alternative 1 is approximately 7.8 percent lower than the TAL under the status quo alternative (alternative 3). The corresponding adjusted commercial quotas, adjusted recreational harvest limits, and RSA amounts associated with each evaluated summer flounder alternative are presented at the beginning of section 7.1 for reference purposes.

The commercial quota under this alternative represents a 8.0 percent decrease relative to the quota under the status quo alternative. As a result of the lower adjusted commercial quota,

negative economic impacts on the summer flounder fishery are likely to occur, when compared to the status quo alternative. Each state's allocation (except New York) will decrease under these adjusted commercial quotas (Box 5.1). Even though the overall summer flounder TAL under alternative 1 is lower than the TAL implemented in 2007, the 2008 summer flounder quota for New York is higher than the adjusted summer flounder quota implemented for that state in 2007; this is due to the fact that the 2007 quota for that state was substantially adjusted downwards to account for overages in 2006 for that state. Overall, the projected decrease in landings in 2008 under alternative 1 will likely result in revenue reduction relative to the status quo alternative. However, it is possible that given the potential decrease in summer flounder landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for summer flounder may mitigate some of the revenue reductions associated with lower quantities of summer flounder quota availability under alternative 1. The negative economic impacts under alternative 1 are expected to be smaller than those under the most restrictive alternative (non-preferred alternative 2).

The recreational harvest limit under alternative 1 represents a 8.0 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (11.51 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. Specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. Alternative 1 will likely decrease recreational satisfaction for the summer flounder recreational fishery, relative to the status quo alternative. However, it is likely that even though anglers may face more restrictive recreational limits in 2008, they will likely be able to keep some of the fish they catch and could also engage in catch and release fishing. Anglers that choose to reduce their summer flounder effort in 2008 are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing. At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed through adjustments to the management measures. While it is likely that the proposed management measures may restrict the recreational fishery for 2008 and that these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures will lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable (see section 9.11.4.1.2). The decrease in recreational satisfaction under the Council-preferred alternative 1 is expected to be smaller than that under the most restrictive alternative (non-preferred alternative 2), when compared to the status quo alternative.

Overall, it is expected that negative social and economic impacts may occur because of the decrease in total landings (in 2008), relative to the status quo measures for summer flounder.

However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. As discussed in section 7.1.1, the TAL under this alternative may result in slowed rebuilding if target fishing mortality rates are exceeded.

Non-preferred alternative 2 contains the most restrictive measures for summer flounder. The summer flounder TAL under this alternative is 11.64 million lb for 2008. This TAL is approximately 32.0 percent lower than the TAL under the status quo alternative (alternative 3). The commercial quota under this alternative represents a 32.5 percent decrease in quota relative to the status quo alternative. As a result of lower adjusted commercial quota for summer flounder, negative economic impacts on the summer flounder fishery are likely to occur, relative to the status quo alternative. Overall, the projected decrease in landings in 2008 under this alternative will likely result in revenue reduction relative to the status quo alternative. However as with alternative 1, it is possible that given the potential decrease in summer flounder landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for summer flounder may mitigate some of the revenue reductions associated with lower quantities of summer flounder quota availability under this alternative. In general, it is expected that a significant reduction in the supply of summer flounder as the result of the lower adjusted commercial quota under this alternative may increase imports of flounders from other countries and regions of the U.S. This could in turn make traditional summer flounder suppliers lose market shares to imports. The negative economic impacts under this alternative are expected to be greater than those under the Council-preferred alternative 1.

The recreational harvest limit under alternative 2 represents a 32.4 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (11.51 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. As indicated before, specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. Alternative 2 will likely decrease recreational satisfaction for the summer flounder recreational fishery, relative to the status quo alternative. In addition, this alternative could also impact the demand of party/charter trips, when compared to the status quo alternative. The discussion regarding the impacts of fishing regulations on the demand for recreational fishing trips presented above also applies here. The decrease in recreational satisfaction under this alternative is expected to be greater than that under the Council-preferred alternative 1.

Given that the commercial quotas and recreational harvest levels are substantially lower under alternative 2 than under alternative 1, it is expected that the overall negative social and economic impacts under this alternative would be higher than those derived when comparing the Council-preferred alternative 1 to the status quo alternative. Overall, it is expected that negative social and economic impacts may occur because of the decrease in total landings (in 2008), relative to the status quo measures for summer flounder. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. As discussed in section 7.1.1, this TAL has the greatest potential to reduce fishing pressure on the stock and enable rebuilding.

The least restrictive measures for summer flounder are the status quo measures (non-preferred alternative 3). This alternative includes an increase in the adjusted summer flounder commercial quota of approximately 3.5 percent in 2008 as compared to 2007 adjusted quota. As a result of a slightly higher adjusted commercial quota for summer flounder, small positive economic impacts on the summer flounder fishery will probably occur, relative to 2007. It is important to note that even though this is the status quo alternative, the adjusted quota and recreational harvest limits under this alternative for 2008 are slightly different than those implemented in 2007 due to different levels of RSA used to make quota adjustments and/or other adjustments due to overages/quota restorations.

The least restrictive measures for summer flounder implement an adjusted recreational harvest limit of 6.75 million lb in 2008. This value is near identical to the recreational harvest limit implemented in 2007 (6.69 million lb). If recreational landings are the same in 2007 as in 2006 (11.51 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. As indicated before, specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. The discussion regarding the impacts of fishing regulations on the demand for recreational fishing trips presented above for alternative 1 also applies here. The decrease in recreational satisfaction under this alternative is expected to be smaller than that under the Council-preferred alternative (alternative 1) and most restrictive alternative (alternative 2). It is unlikely that this limit will negatively affect the demand for recreational fishing trips.

Overall, the status quo summer flounder measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the summer flounder fisheries compared to 2007. However, this alternative may result in negative biological impacts as stated above. As indicated in section 7.1.1, there is potential for negative impacts on the stock due to an increased risk that overfishing will occur resulting in slowed or negative gains in rebuilding efforts under alternative 3.

### 7.2 Scup Alternatives

Section 5.2 fully described the scup alternatives under consideration for 2008. In addition, section 4.4 details specific methods of analysis for this section. For reference, the scup alternatives are:

- **Council-Preferred Alternative 1 - Monitoring Committee Recommended TAL of 7.34 million lb** (a 5.30 million lb adjusted commercial quota; a 1.82 million lb adjusted recreational harvest limit; 214,000 lb RSA)
- **Non-preferred Alternative 2 - Most Restrictive TAL of 5.02 million lb** (a 3.54 million lb adjusted commercial quota; a 1.33 million lb adjusted recreational harvest limit; 150,600 lb RSA)
- **Non-preferred Alternative 3 – Least Restrictive / Status Quo TAL of 12.00 million lb** (a 8.94 million lb adjusted commercial quota; a 2.85 million lb adjusted recreational harvest limit; 214,000 lb RSA)

Box 7.2 below provides the percent change in the 2008 overall TAL, preliminary adjusted commercial quotas and recreational harvest limits for each alternative, when compared to 2007.

**Box 7.2 Comparison of the percentage change in 2008 overall TAL, preliminary adjusted commercial quotas and recreational harvest limits for each alternative, when compared to 2007.***

| | | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| **Scup** | **Change in overall TAL** | -38.8 | -58.2 | 0 |
| | **Preliminary Adjusted Commercial Quota** | -40.4 | -60.2 | +0.4 |
| | **Preliminary Adjusted Recreational Harvest Limit** | -33.6 | -51.5 | +4.0 |

*Note that preliminary quotas are provisional and may change to account for overages according to the quota counting procedures outlined above; percent changes in status quo (alt. 3) preliminary adjusted commercial quotas and preliminary adjusted recreational harvest limits, when compared to 2007, are due to differences in RSA amounts and overages.

### 7.2.1 Biological Impacts

This section details the impacts of the three scup alternatives on the managed resource, as well as other non-target species. Alternative 1 is the Council-preferred alternative and specifies a TAL of 7.34 million lb. This alternative is 38.8 percent less than the status quo TAL of 12.00 million lb (alternative 3; Box 7.2). Alternative 2 is the most restrictive alternative, of the three considered, and is 58.2 percent less than status quo alternative. Both alternatives 1 and 2 propose reduced fishery yields relative to 2007 to enable continued rebuilding of the stock from the current overfished state to $B_{MSY}$ (or an appropriate proxy) by January 1, 2015.

The Council-preferred alternative 1 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. This TAL was recommended by the Scup Monitoring Committee and would achieve the rebuilding fishing mortality rate under the current 7-year rebuilding plan of F=0.10. Under this alternative, the 2008 adjusted commercial quota is approximately 40.4 percent lower when compared to 2007. This smaller commercial quota is not expected to result in negative impacts to other fisheries relative to the status quo. The commercial fishery for scup is primarily prosecuted with otter trawls and floating traps and is a mixed fishery (see section 6.1.3 for additional details). A smaller quota could result in decreased effort and reduced catches of other species. As such, this scup preliminary adjusted quota could result in positive impacts on other fisheries, relative to the status quo (alternative 3). More specifically, catch-per-unit-effort could correspondingly increase with increased stock

abundance, resulting in a smaller number of tows landing a larger volume of fish. While it is not known with certainty how the proposed measures will affect fishing effort, it is likely that the proposed measures will result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 1 is 33.6 percent lower than the recreational harvest limit when compared to 2007. The adjusted recreational limits under this alternative allow for less recreational landings in 2008 compared to the status quo alternative. Overall, Council-preferred alternative 1 is expected to result in positive biological impacts, relative to the status quo measures for scup (alternative 3).

Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. This TAL would achieve the fishing mortality rate of F=0.067, which is expected to rebuild the scup stock within 5-years (as detailed under Amendment 14 to the FMP). The scup stock will be starting year-1 of a 7-year rebuilding program under the 2008 specifications document; therefore, this alternative may be more restrictive than necessary to achieve rebuilding, and the positive impacts would be greater than those under alternative 1. Under this alternative, the 2008 adjusted commercial quota is approximately 60.2 percent lower when compared to 2007. The same discussion above for alternative 1 on the effects of smaller quotas on catches of other species also applies here. The proposed measures under alternative 2 will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 2 is 51.5 percent lower than the recreational harvest limit when compared to 2007. The adjusted recreational harvest limit is expected to constrain recreational landings in 2008 and allow for less recreational landings in 2008 compared to the status quo alternative. Overall, non-preferred alternative 2 is expected to result in positive biological impacts, relative to the status quo measures for scup (alternative 3).

Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008, when compared to 2007. Maintaining the status quo alternative and a TAL that is inconsistent with the rebuilding F under Amendment 14 to the FMP would not be utilizing the best available scientific information. For this reason, there is potential for negative impacts on the stock due to an increased risk that overfishing will occur, resulting in slowed or negative gains in rebuilding efforts. Under this alternative, the 2008 adjusted commercial quota is approximately 0.4 percent higher when compared to 2007 due to differences in RSA amounts and/or adjustments due to overages/quota restorations (Note: overall TAL 12.00 million lb in 2007 is identical to 2008 status quo). The slight increase in quota under alternative 3 could potentially result in more, or longer, fishing trips, resulting in an increase in the incidental catch rates of other species relative to 2007. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or slightly higher impacts on non-target species. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative. The 2008 recreational limit under alternative 3 is 4.0

percent higher than the recreational harvest limit when compared to 2007. Overall, non-preferred alternative 3 is expected to result in negative biological impacts, when compared to 2007.

### 7.2.2 Habitat Impacts

The principal commercial gears used to harvest scup are otter trawls and floating traps. The nature of impacts by these gears on the ocean bottom habitat is described in Amendment 13 to the FMP (MAFMC 2002). Data on the extent of impacts by specific gear on various bottom types (including extent and duration of impacts) are limited; however, gears with the most contact with the bottom habitat (such as trawls and dredges) have the potential to impact habitat. Although the specific consequences for habitat are uncertain, it can be assumed that the extent of trawling and dredging impacts is related to fishing effort. Table 12 describes the range of potential habitat impacts that could occur under each scup quota alternative with more detailed discussion below.

The Council-preferred alternative 1 includes a decrease in the scup commercial quota by 40.4 percent compared to 2007 (Box 7.2). Alternative 2 is the most restrictive alternative of the three considered, and the preliminary adjusted commercial quota is 60.2 percent lower when compared to 2007. Alternative 3 is the status quo alternative, and its associated commercial quota is 0.4 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and/or adjustments due overages/quota restorations. It is difficult to predict precisely whether the commercial quota decreases under alternatives 1 and 2 will result in decreased fishing effort on EFH, particularly with respect to a rebuilding stock that has potential for increased availability in subsequent years. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser habitat impacts. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase, resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an equal number of fishing trips landing a smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in habitat impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced gear impacts to bottom habitats. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential habitat impacts and depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternatives are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts. As such, each of these alternatives will

likely minimize the adverse effects of fishing on EFH to the extent practicable, pursuant to section 305 (a)(7) of the MSFCMA.

### 7.2.3 Impacts on Endangered and Other Protected Species

The principal commercial gears used to harvest scup are otter trawls and floating traps. As discussed in section 6.3, the 2007 LOF indicates that the Mid-Atlantic bottom trawl and the Atlantic mixed species trap/pot fishery are listed as Category II fisheries. There are no documented marine mammal species or stocks with incidental injury and mortality resulting from these fisheries where scup was the target species.

The Council-preferred alternative 1 includes a decrease in the scup commercial quota by 40.4 percent compared to 2007 (Box 7.2). Alternative 2 is the most restrictive alternative of the three considered, and the preliminary adjusted commercial quota is 60.2 percent lower when compared to 2007. Alternative 3 is the status quo alternative, and its associated commercial quota is 0.4 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and/or adjustments due to overages/quota restorations. It is difficult to predict precisely whether the commercial quota decreases under alternatives 1 and 2 will result in decreased fishing effort and thus, decreased encounters or interactions with endangered and protected resources, particularly with respect to a rebuilding scup stock that has potential for increased availability in subsequent years. In addition, the availability of endangered and protected resources to scup fishing gears is also affected by the stock status (i.e. increasing or decreasing stock size) and distribution of these protected species. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser impacts on protected resources. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase, resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an equal number of fishing trips landing a smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in protected resources impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced impacts to endangered and protected resources. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential impacts on endangered and protected resources and depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when

compared to existing impacts. In addition, it should be noted that all fishing gears are required to meet gear restrictions as required under the ALWTRP, HPTRP, MMPA, and the ESA. As such, each of these alternatives is not expected to affect endangered and threatened species in any manner not considered in a prior consultation on this fishery and will have no adverse impacts on protected resources, relative to 2007.

### 7.2.4 Socioeconomic Impacts

The proposed 2008 TAL of 7.34 million lb under Council-preferred alternative is 38.8 percent lower than the TAL under the status quo alternative (alternative 3). The corresponding adjusted commercial quotas, adjusted recreational harvest limits, and RSA amounts associated with each evaluated scup alternative are presented at the beginning of section 7.2 for reference purposes.

The commercial quota under this alternative represents a 40.7 percent decrease in quota relative to the status quo alternative. As a result of lower adjusted commercial quota for scup, negative economic impacts on the scup fishery are likely to occur, relative to the status quo alternative. However, it is possible that given the potential decrease in scup landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for scup may mitigate some of the revenue reductions associated with lower quantities of scup quota availability under alternative 1. The negative economic impacts under alternative 1 are expected to be smaller than those under the most restrictive alternative (non-preferred alternative 2), when compared to the status quo alternative.

The recreational harvest limit under alternative 1 represents a 36.1 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (2.95 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. Specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. Alternative 1 will likely decrease recreational satisfaction for the scup recreational fishery, relative to the status quo alternative. However, it is likely that even though anglers may face more restrictive recreational limits in 2008, they will likely be able to keep some of the fish they catch and could also engage in catch and release fishing. Anglers that choose to reduce their scup effort in 2008 are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing. At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed through adjustments to the management measures. While it is likely that the proposed management measures may restrict the recreational fishery for 2008 and that these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed

season), there is no indication that any of these measures will lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable (see section 9.11.4.1.2). The decrease in recreational satisfaction under the Council-preferred alternative 1 is expected to be smaller than that under the most restrictive alternative (non-preferred alternative 2), when compared to the status quo alternative.

Overall, it is expected that negative social and economic impacts may occur because of the decrease in total landings (in 2008), relative to the status quo measures for scup. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. As discussed in section 7.2.1, this TAL is consistent with the target fishing mortality rates in the current rebuilding plan for scup.

Non-preferred alternative 2 contains the most restrictive measures for scup. The scup TAL under this alternative is 5.02 million lb for 2008. This TAL is approximately 58.2 percent lower than the TAL under the status quo alternative (alternative 3). The commercial quota under this alternative represents a 60.4 percent decrease in quota relative to the status quo alternative. As a result of lower adjusted commercial quota for scup, negative economic impacts on the scup fishery are likely to occur, relative to the status quo alternative. However as with alternative 1, it is possible that given the potential decrease in scup landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for scup may mitigate some of the revenue reductions associated with lower quantities of scup quota availability under this alternative.

The recreational harvest limit under alternative 2 represents a 53.3 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (2.95 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. As indicated before, specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. Alternative 2 will likely decrease recreational satisfaction for the scup recreational fishery, relative to the status quo alternative. In addition, this alternative could also impact the demand of party/charter trips when compared to the status quo alternative. The discussion regarding the impacts of fishing regulations on the demand for recreational fishing trips presented above also applies here. The decrease in recreational satisfaction under this alternative is expected to be greater than that under the Council-preferred alternative 1, when compared to the status quo.

Given that the commercial quotas and recreational harvest levels are substantially lower under alternative 2 than under alternative 1 when compared to the status quo, it is expected that the overall negative social and economic impacts under this alternative would be higher than those derived when comparing the Council-preferred alternative 1 to the status quo alternative. Overall, it is expected that negative social and economic impacts may occur because of the decrease in total landings (in 2008), relative to the status quo measures for scup. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt

to sustainable levels. As discussed under section 7.2.1, this TAL would be expected to rebuild the stock at a faster rate than is proposed in the current rebuilding plan for scup.

The least restrictive measures for scup are the status quo measures (non-preferred alternative 3). The scup TAL under this alternative is 12.00 million lb for 2008. This alternative includes an increase in the adjusted summer flounder commercial quota of < 1 percent in 2008 as compared to 2007 adjusted quota. It is not expected that this slight change in landings would result in significant revenue changes relative to 2007. It is important to note that even though this is the status quo alternative, the adjusted quota and recreational harvest limits under this alternative for 2008 are slightly different than those implemented in 2007 due to different levels of RSAs used to make quota adjustments between these two time periods (and/or other adjustments due to overages/quota restorations) and discard levels used to derive the overall TAL.

The least restrictive measures for scup implement an adjusted recreational harvest limit of 2.85 million lb in 2008. This value is near identical to the recreational harvest limit implemented in 2007 (2.74 million lb). If recreational landings are the same in 2007 as in 2006 (2.95 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. As indicated before, specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. The discussion regarding the impacts of fishing regulations on the demand for recreational fishing trips presented above also applies here. The decrease in recreational satisfaction under this alternative is expected to be smaller than that under the Council-preferred alternative (alternative 1) and most restrictive alternative (alternative 2). It is unlikely that this limit will negatively affect the demand for recreational fishing trips.

Overall, the status quo scup measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the scup fisheries compared to 2007. However, this alternative may result in negative biological impacts as stated above. As indicated in section 7.2.1, there is potential for negative impacts on the stock due to an increased risk that overfishing will occur, resulting in slowed or negative gains in rebuilding efforts under alternative 3.

## 7.3 Black Sea Bass Alternatives

Section 5.3 fully described the black sea bass alternatives under consideration for 2008. In addition, section 4.4 details specific methods of analysis for this section. For reference, the black sea bass alternatives are:

- **Council-Preferred Alternative 1 - Monitoring Committee Recommended TAL of 4.22 million lb** (a 2.03 million lb adjusted commercial quota; a 2.11 million lb adjusted recreational harvest limit; 85,790 lb RSA)
- **Non-preferred Alternative 2 - Most Restrictive TAL of 3.75 million lb** (a 1.80 million lb adjusted commercial quota; a 1.87 million lb adjusted recreational harvest limit; 85,790 lb RSA)
- **Non-preferred Alternative 3 – Least Restrictive / Status Quo TAL of 5.00 million lb** (a 2.41 million lb adjusted commercial quota; a 2.51 million lb adjusted recreational harvest limit; 85,790 lb RSA)

Box 7.3 below provides the percent change in the 2008 overall TAL, preliminary adjusted commercial quotas and recreational harvest limits for each alternative, when compared to 2007.

**Box 7.3 Comparison of the percentage change in 2008 overall TAL, preliminary adjusted commercial quotas and recreational harvest limits for each alternative, when compared to 2007.***

| | | Alternative 1 | Alternative 2 | Alternative 3 |
|---|---|---|---|---|
| **Black Sea Bass** | **Change in overall TAL** | -15.6 | -25.0 | 0 |
| | **Preliminary Adjusted Commercial Quota** | -14.7 | -24.4 | +1.3 |
| | **Preliminary Adjusted Recreational Harvest Limit** | -14.6 | -24.3 | +1.6 |

*Note that preliminary quotas are provisional and may change to account for overages according to the quota counting procedures outlined above; percent changes in status quo (alt. 3) preliminary adjusted commercial quotas and preliminary adjusted recreational harvest limits, when compared to 2007, are due to differences in RSA amounts and overages.

### 7.3.1 Biological Impacts

This section details the impacts of the three black sea bass alternatives on the managed resource, as well as other non-target species. Alternative 1 is the Council-preferred alternative and specifies a TAL of 4.22 million lb. This alternative is 15.6 percent less than the status quo TAL of 5.00 million lb (alternative 3; Box 7.3). Alternative 2 is the most restrictive alternative, of the three considered, and is 25.0 percent less than status quo alternative. Both alternatives 1 and 2

propose reduced fishery yields relative to 2007 to enable continued rebuilding of the stock from the current overfished state to $B_{MSY}$ (or an appropriate proxy) by January 1, 2010.

The Council-preferred alternative 1 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. This TAL was recommended by the Black Sea Bass Monitoring Committee and is based on the target exploitation rate under the rebuilding plan and is the average of the TALs associated with the 2005 and 2006 three-year moving average for the NEFSC spring survey index. Under this alternative, the 2008 adjusted commercial quota is approximately 14.7 percent lower when compared to 2007. The commercial fishery for black sea bass is primarily prosecuted with otter trawls and pots and traps and is a mixed fishery (see section 6.1.3 for additional details). This smaller commercial quota is not expected to result in negative impacts to other fisheries relative to the status quo. A smaller quota could result in decreased effort and reduced catches of other species. As such, this preliminary adjusted quota could result in positive impacts on other fisheries, relative to the status quo (alternative 3). More specifically, catch-per-unit-effort could correspondingly increase with increased stock abundance, resulting in a smaller number of tows landing a larger volume of fish. While it is not known with certainty how the proposed measures will affect fishing effort, it is likely that the proposed measures will result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 1 is 14.6 percent lower than the recreational harvest limit when compared to 2007. If recreational landings are the same in 2007 as in 2006 (2.10 million lb), the adjusted recreational harvest limit is nearly identical to the recreational landings in 2008. Therefore, the adjusted recreational limits under this alternative should allow for the same recreational landings opportunities in 2008 compared to 2007. Overall, Council-preferred alternative 1 is expected to result in positive biological impacts, relative to the status quo measures for black sea bass (alternative 3).

Non-preferred alternative 2 is expected to result in positive impacts on the managed resource in 2008, when compared to the status quo. This TAL was based on the target exploitation rate under the rebuilding plan and the 2006 three-year moving average for the NEFSC spring survey index. This alternative may be more restrictive than necessary to achieve rebuilding, and the positive impacts would be greater than those under alternative 1. Under this alternative, the 2008 adjusted commercial quota is approximately 24.4 percent lower when compared to 2007. The same discussion above for alternative 1 on the effects of smaller quotas on catches of other species also applies here. The proposed measures under alternative 2 will likely result in a decrease in the incidental catch rates of other species relative to the status quo alternative. The 2008 recreational limit under alternative 2 is 24.3 percent lower than the recreational harvest limit when compared to 2007. The adjusted recreational limits under this alternative allow for less recreational landings in 2008 compared to 2007. Overall, non-preferred alternative 2 is expected to result in positive biological impacts, relative to the status quo measures for black sea bass (alternative 3).

Non-preferred alternative 3 is expected to result in negative impacts on the managed resource in 2008, when compared to 2007. Maintaining the status quo alternative and a TAL that is inconsistent with the target exploitation rate under the rebuilding plan would not be utilizing the best available scientific information. For this reason, there is potential for negative impacts on

the stock due to an increased risk that overfishing will occur, resulting in slowed or negative gains in rebuilding efforts. Under this alternative, the 2008 adjusted commercial quota is approximately 1.3 percent higher when compared to 2007 due to differences in RSA amounts and/or adjustments due to overages/quota restorations (Note: overall TAL 5.00 million lb in 2007 is identical to 2008 status quo). The slight increase in quota under alternative 3 could potentially result in more, or longer, fishing trips, resulting in an increase in the incidental catch rates of other species relative to 2007. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same impacts on non-target species. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative. The 2008 recreational limit under alternative 3 is 1.6 percent higher than the recreational harvest limit when compared to 2007. The adjusted recreational limits under this alternative allow for slightly higher recreational landings in 2008 compared to 2007. Overall, non-preferred alternative 3 is expected to result in negative biological impacts, when compared to those measures in 2007.

### 7.3.2 Habitat Impacts

The principal commercial gears used to harvest black sea bass are otter trawls and pots and traps. The nature of impacts by these gears on the ocean bottom habitat is described in Amendment 13 to the FMP (MAFMC 2002). Data on the extent of impacts by specific gear on various bottom types (including extent and duration of impacts) are limited; however, gears with the most contact with the bottom habitat (such as trawls and dredges) have the potential to impact habitat. Although the specific consequences for habitat are uncertain, it can be assumed that the extent of trawling and dredging impacts related to fishing effort. Table 13 describes the range of potential habitat impacts that could occur under each black sea bass quota alternative with more detailed discussion below.

The Council-preferred alternative 1 includes a decrease in the black sea bass commercial quota by 14.7 percent compared to 2007 (Box 7.3). Alternative 2 is the most restrictive alternative of the three considered, and the preliminary adjusted commercial quota is 24.4 percent lower when compared to 2007. Alternative 3 is the status quo alternative, and its associated commercial quota is 1.3 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and any overages that may have been deducted. It is difficult to predict precisely whether the commercial quota decreases under alternatives 1 and 2 will result in decreased fishing effort on EFH, particularly with respect to a rebuilding stock that has potential for increased availability in subsequent years. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser habitat impacts. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an

equal number of fishing trips landing a smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in habitat impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced gear impacts to bottom habitats. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential habitat impacts and depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternative are expected to have effects on habitat and EFH that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts. As such, each of these alternative will likely minimize the adverse effects of fishing on EFH to the extent practicable, pursuant to section 305 (a)(7) of the MSFCMA.

### 7.3.3 Impacts on Endangered and Other Protected Species

The principal commercial gears used to harvest black sea bass are otter trawls and pots and traps. As discussed in section 6.3, the 2007 LOF indicates that the Mid-Atlantic bottom trawl and the Atlantic mixed species trap/pot fishery are listed as Category II fisheries. There are no documented marine mammal species or stocks with incidental injury and mortality resulting from these fisheries where black sea bass was the target species.

The Council-preferred alternative 1 includes a decrease in the black sea bass commercial quota by 14.7 percent compared to 2007 (Box 7.3). Alternative 2 is the most restrictive alternative of the three considered, and the preliminary adjusted commercial quota is 24.4 percent lower when compared to 2007. Alternative 3 is the status quo alternative, and its associated commercial quota is 1.3 percent higher than the 2007 commercial quota due to differences in the RSA amount requested for 2008 and any overages that may have been deducted. It is difficult to predict precisely whether the commercial quota decreases under alternatives 1 and 2 will result in decreased fishing effort and thus, decreased encounters or interactions with endangered and protected resources, particularly with respect to a rebuilding black sea bass stock that has potential for increased availability in subsequent years. In addition, the availability of endangered and protected resources to black sea bass fishing gears is also affected by the stock status (i.e. increasing or decreasing stock size) and distribution of these protected species. Several possibilities associated with decreased fishing effort exist. A smaller quota could result in fewer fishing trips, or shorter fishing trips, with a corresponding potential for lesser impacts on protected resources. Similarly, with increased species abundance/availability, catch-per-unit-effort could increase, resulting in a smaller number of tows landing a larger volume of fish and thus, reducing effort due to the smaller quota. Conversely, a smaller quota may mean that states establish lower possession limits, which could result in an equal number of fishing trips landing a

smaller volume of fish. The slight increase in quota under alternative 3 could potentially result in more, or longer fishing trips, with a corresponding increase in protected resources impacts. Conversely, a slightly larger quota may mean that states establish higher possession limits, which could result in an equal number of fishing trips landing a larger volume of fish. Similarly, with increased species abundance, catch-per-unit-effort could increase, which results in the same number of tows landing a larger volume of fish. In these instances, the proposed quota results in the same or reduced impacts to endangered and protected resources. However, given that the proposed commercial quota under alternative 3 is nearly identical to the commercial quota implemented in 2007, it is not expected that changes in fishing effort will occur as a consequence of this alternative.

Given the range of potential impacts on endangered and protected resources, depending upon whether fishing effort increases or decreases relative to changes in the commercial quota, these three alternatives are expected to have effects that range from the same (as expected under alternative 3 status quo) to impacts that are the same to slightly positive on endangered and protected resources through reduced fishing effort (as expected under alternatives 1 and 2), when compared to existing impacts. In addition, it should be noted that all fishing gears are required to meet gear restrictions as required under the ALWTRP, HPTRP, MMPA, and the ESA. As such, each of these alternatives is not expected to affect endangered and threatened species in any manner not considered in a prior consultation on this fishery and will have no adverse impacts on protected resources, relative to 2007.

### 7.3.4 Socioeconomic Impacts

The proposed 2008 TAL of 4.22 million lb under Council-preferred alternative 1 is 15.6 percent lower than the TAL under the status quo alternative (alternative 3). The corresponding adjusted commercial quotas, adjusted recreational harvest limits, and RSA amounts associated with each evaluated black sea bass alternative are presented at the beginning of section 7.3 for reference purposes.

The commercial quota under this alternative represents a 15.8 percent decrease in quota relative to the status quo alternative. As a result of lower adjusted commercial quota for black sea bass, negative economic impacts on the black sea bass fishery are likely to occur, relative to the status quo alternative. However, it is possible that given the potential decrease in black sea bass landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for black sea bass may mitigate some of the revenue reductions associated with lower quantities of black sea bass quota availability under alternative 1. The negative economic impacts under alternative 1 are expected to be smaller than those under the most restrictive alternative (non-preferred alternative 2), when compared to the status quo alternative.

The recreational harvest limit under alternative 1 represents a 15.9 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (2.10 million lb), the adjusted recreational harvest limit is nearly identical to the recreational landings in 2008. Therefore, the adjusted recreational limits under this alternative

should allow for the same recreational landings opportunities in 2008 compared to 2007. Overall, it is expected that small negative social and economic impacts may occur because of the decrease in commercial landings in 2008, relative to the status quo alternative. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. As discussed under section 7.3.1, this TAL is consistent with the target fishing mortality rates in the current rebuilding plan for black sea bass.

Non-preferred alternative 2 contains the most restrictive measures for black sea bass. The black sea bass TAL under this alternative is 3.75 million lb for 2008. This TAL is 25.0 percent lower than the TAL under the status quo alternative (alternative 3). The commercial quota under this alternative represents a 25.3 percent decrease in quota relative to the status quo alternative. As a result of lower adjusted commercial quota for black sea bass, negative economic impacts on the black sea bass fishery are likely to occur, relative to the status quo alternative. However, as with alternative 1, it is possible that given the potential decrease in black sea bass landings, price for this species may increase if all other factors are held constant. If this occurs, an increase in the price for black sea bass may mitigate some of the revenue reductions associated with lower quantities of black sea bass quota availability under this alternative.

The recreational harvest limit under alternative 2 represents a 25.5 percent decrease in harvest limit relative to the status quo alternative. If recreational landings are the same in 2007 as in 2006 (2.10 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may be required to prevent anglers from exceeding the recreational harvest limit in 2008. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) be required to prevent anglers from exceeding the recreational harvest limit in 2008. Specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. Alternative 2 could also decrease recreational satisfaction for the black sea bass recreational fishery, relative to the status quo alternative. However, it is likely that even though anglers may face more restrictive recreational limits in 2008, they will likely be able to keep some of the fish they catch and could also engage in catch and release fishing. Anglers that choose to reduce their black sea bass effort in 2008 are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing. At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed through adjustments to the management measures. While it is likely that proposed management measures may restrict the recreational fishery for 2008, and that these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures will lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable (see section 9.11.4.1.2). The decrease in recreational satisfaction under the Council-

preferred alternative 2 is expected to be larger than under the other black sea bass alternatives (non-preferred alternative 2), when compared to the status quo alternative.

Given that the commercial quotas and recreational harvest levels are substantially lower under alternative 2 than under alternative 1 when compared to the status quo, it is expected that the overall negative social and economic impacts under this alternative would be higher than those derived when comparing the Council-preferred alternative 1 to the status quo alternative. Overall, it is expected that small negative social and economic impacts may occur because of the decrease in commercial landings in 2008, relative to the status quo alternative. However, positive social and economic impacts will be realized in the long-term, once the stock is rebuilt to sustainable levels. As discussed under section 7.3.1, this TAL would be expected to rebuild the stock at a faster rate but may be more restrictive than necessary to rebuild black sea bass.

The least restrictive measures for black sea bass are the status quo measures (non-preferred alternative 3). The black sea bass TAL under this alternative is 5.00 million lb for 2008. Maintaining the status quo alternative and a TAL could potentially produce negative impacts on the stock due to an increased risk that overfishing will occur, resulting in slowed or negative gains in rebuilding efforts, as this TAL is inconsistent with the target exploitation rate under the rebuilding plan (see section 7.3.1).

This alternative includes a decrease in the adjusted black sea bass commercial quota of slightly over 1 percent in 2008 as compared to 2007 adjusted quota. It is not expected that this slight change in landings would result in revenue changes relative to 2007. It is important to note that even though this is the status quo alternative, the adjusted quota and recreational harvest limits under this alternative for 2008 are slightly different than those implemented in 2007 due to different levels of RSAs used to make quota adjustments between these two time periods (and/or other adjustments due to overages/quota restorations) and discard levels used to derive the overall TAL.

The least restrictive measures for black sea bass implement an adjusted recreational harvest limit of 2.51 million lb in 2008. This value is slightly higher than the recreational harvest limit implemented in 2007 (2.47 million lb). If recreational landings are the same in 2007 as in 2006 (2.10 million lb), more restrictive measures (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) may not be required to prevent anglers from exceeding the recreational harvest limit in 2008. As indicated before, specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. The discussion regarding the impacts of fishing regulations on the demand for recreational fishing trips presented above also applies here.

Overall, the status quo black sea bass measures under this alternative (also least restrictive) will likely result in no or negligible negative social and economic impacts on the black sea bass fisheries compared to 2007. As indicated in section 7.3.1, there is potential for negative impacts on the stock due to an increased risk that overfishing will occur resulting in slowed or negative gains in rebuilding efforts under alternative 3.

## 7.4 Research Set-Aside Measures

Section 5.4 fully described the RSA alternatives under consideration for 2008. In addition, section 4.4 details specific methods of analysis for this section. For reference, the research set aside alternatives are:

- Non-preferred Alternative 1 – No research set-aside / No action
- Council-Preferred Alternative 2 - Specify Research Set-Asides / Status Quo

The Council recommended a maximum summer flounder, scup, and black sea bass RSA of 3 percent of the implemented TAL for each species. There are three research projects submitted to NMFS requesting set-asides for these species for 2008. The approved 2008 RSA projects have requested summer flounder, scup, and black sea bass RSAs in the following amounts: 233,192 lb, 214,000 lb, and 85,790 lb, respectively. For analysis of the impacts of the alternatives in this specifications document, the RSA amounts deducted from each initial TAL are either the approved RSA amount, or 3 percent of the TAL, whichever is less. A summary of the RSA projects requesting summer flounder, scup, and black sea bass for 2008 is presented in Appendix A.

To expedite the implementation of projects, the impacts of any summer flounder, scup, and black sea bass exemptions on the environment are analyzed in this document. The impacts of the RSAs for other species are addressed in their respective species specifications packages, e.g., bluefish in the 2008 bluefish specifications package.

### 7.4.1 Biological Impacts

Under alternative 1, there would not be a summer flounder, scup, or black sea bass RSA implemented for 2008, and the RSA amounts would not be deducted from their respective commercial quotas and recreational harvest limits. Because all summer flounder, scup, and black sea bass landings count against the overall quota regardless of whether or not an RSA is implemented, the biological impacts of alternative 1 would not change relative to 2007. However under this alternative, there would also be no indirect positive effects from broadening the scientific base upon which management decisions are made.

Under alternative 2, the RSA amounts would be specified and deducted from their respective commercial quotas and recreational harvest limits. This is expected to result in similar biological impacts when compared to 2007 because the RSA amounts count against the overall quota. However, this alternative could result in indirect positive effects as new data or other information pertaining to these fisheries are obtained for management and/or stock assessment purposes.

RSA projects, depending on the specific proposals, allow for landings of summer flounder, scup, and black sea bass in excess of Federal or state possession limits (but not in excess of the requested amounts), and/or may be exempt from other specific regulations (e.g. gear or net mesh requirements) for the purposes of research. The extent of RSA activity under these three projects (e.g., fishing trips, no. of tows, landings) are negligible when compared to the overall activity of

the directed fisheries for the managed resources; therefore, overall impacts of research trips and compensation trips are expected to be negligible. Comprehensive descriptions of summer flounder, scup, and black sea bass regulations as detailed in the CFR are available through the website for the NERO of NMFS: http://www.nero.noaa.gov/nero/regs/

In addition, non-target species may be encountered during the course of RSA research projects. A summary of the stock status of potential non-target species for the 2008 Mid-Atlantic RSA projects are provided in Table 15. The research vessels do not intend to bring back to the dock any fish below legal size, as a result of using smaller mesh gear, or in excess of a quota, except for a few specimens that may be retained for scientific purposes or transferred to NMFS/NEFSC (Thompson, pers. comm. 2007). The extent of RSA activity under these three projects (e.g., fishing trips, no. of tows, landings) are negligible when compared to the overall activity of the directed fisheries for the managed resources; therefore, overall impacts of research trips and compensation trips are expected to be negligible. Under this alternative, the collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made will continue. The Nation would receive the benefit derived when data or other information about these fisheries is obtained for management or stock assessment purposes that would not otherwise be obtained.

### 7.4.2 Habitat Impacts

The impacts of these two alternatives (alternative 1 and alternative 2) on habitat and EFH are not expected to change relative to 2007. In sections 7.1.2, 7.2.2, and 7.3.2, the impacts of the quota specification alternatives and the potential effects of changes in fishing effort on habitat are described. Because all summer flounder, scup, and black sea bass landings count against the overall quota regardless of whether or not an RSA is implemented, neither alternative is expected to change the level of fishing effort for these species. In addition, it is not expected that effort will be redistributed by gear type or change the manner in which these fisheries are prosecuted under either of these alternatives. The extent of RSA activity under these three projects (e.g., fishing trips, no. of tows, landings) are negligible when compared to the overall activity of the directed fisheries for the managed resources; therefore, overall impacts of research trips and compensation trips are expected to be negligible. Therefore, the overall impact to habitat (including EFH) is not expected to change relative to 2007.

As such, each of these alternatives will likely minimize the adverse effects of fishing on EFH to the extent practicable, pursuant to section 305 (a)(7) of the MSFCMA.

### 7.4.3 Impacts on Endangered and Other Protected Species

The impacts of these two alternatives (alternative 1 and alternative 2) on protected and endangered resources are not expected to change relative to 2007. In sections 7.1.3, 7.2.3, and 7.3.3 the impacts of the quota specification alternatives and the potential effects of changes in fishing effort on protected resources are described. Because all summer flounder, scup, and black sea bass landings count against the overall quota regardless of whether or not an RSA is implemented, neither alternative is expected to change the level of fishing effort for these

species. In addition, it is not expected that effort will be redistributed by gear type or change the manner in which these fisheries are prosecuted under either of these alternatives. There are numerous species which inhabit the management unit of this FMP that are afforded protection under the ESA and/or the MMPA (described in section 6.3 and Appendix B). The extent of RSA activity under these three projects (e.g., fishing trips, no. of tows, landings) are negligible when compared to the overall activity of the directed fisheries for the managed resources; therefore, overall impacts of research trips and compensation trips are expected to be negligible. The degree of impacts on protected resources resulting from RSA fishing activities, if any, are not precisely known but are believed to be minimal.

Therefore, neither alternative is expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries nor will have any adverse impacts on marine animals or other protected resources, relative to 2007.

### 7.4.4 Socioeconomic Impacts

Under non-preferred alternative 1, there will be no RSA deducted from the overall TALs for summer flounder, scup, and black sea bass. Therefore, the initial commercial quotas and recreational harvest limits for these species do not need to be adjusted downward as would be done under a situation when an RSA is established. In fisheries where the entire quota is taken and the fishery is prematurely closed (i.e., the quota is constraining), the economic and social costs of the program are shared among the non-RSA participants in the fishery. That is, each participant in a fishery that utilizes a resource that is limited by the annual quota relinquishes a share of the amount of quota retained in the RSA quota. Since no RSA is implemented under this alternative, there are no direct economic or social costs as described above. Under non-preferred alternative 1, the collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made will cease. In addition, the Nation will not receive the benefit derived from data or other information about these fisheries for management or stock assessment purposes.

Under Council-preferred alternative 2, RSAs for each species would be specified. Under the RSA program, successful applicants receive a share of the annual quota for the purpose of conducting scientific research. However, as describe above, the economic and social costs of the program are shared among the non-RSA participants in the fishery. The evaluation of the socioeconomic impacts of the commercial quotas in sections 7.1, 7.2, and 7.3 was based on adjusted commercial quotas that account for the RSA proposed under Council-preferred alternative 2. The MAFMC recommended research set aside quotas of up to 3 percent of the overall TALs for summer flounder, scup, and black sea bass for 2008. NMFS has conditionally approved Mid-Atlantic RSA research proposals requesting 233,192 lb, 214,000 lb, and 85,790 lb of summer flounder, scup, and black sea bass for the 2008 fishing year, respectively. However, scup non-preferred alternative 2 cannot support the requested poundage for the 2008 conditionally-approved projects. This is due to the fact that the requested research set aside amount would be greater than 3 percent for that species. Therefore, the research set aside for scup under non-preferred alternative 2 was set at the maximum allowable level of 3 percent.

More specifically, RSA of 233,192 lb (139,915 lb for commercial and 93,277 lb for recreational) was assumed for all summer flounder alternatives evaluated. For scup alternatives 1 and 3, RSA of 214,000 lb (159,140 lb for commercial and 54,860 lb for recreational) was assumed. For scup alternative 2, the maximum 3 percent allowable RSA of 150,600 lb (5.02 million lb TAL x 3 percent; 109,572 lb for commercial and 41,028 lb for recreational) was assumed. Finally, an RSA of 85,790 lb (42,037 lb for commercial and 43,753 lb for recreational) was assumed for all black sea bass alternatives evaluated.

NMFS dealer data from Maine to Virginia and NMFS general canvass data for North Carolina were used to derive the ex-vessel prices for summer flounder from Maine through North Carolina and for scup and black sea bass from Maine through Cape Hatteras, North Carolina. Assuming these 2006 ex-vessel prices (summer flounder -- $1.79/lb; scup -- $0.89/lb; and black sea bass -- $2.50/lb), the 2008 RSA for the commercial component of the fishery could be worth as much as $250,448 under each of the summer flounder alternatives evaluated. For scup, the commercial component of the RSA could be worth as much as $141,635 under alternatives 1 and 3, and $97,519 under scup alternative 2. Lastly, for black sea bass, the commercial component of the RSA could be worth as much as $105,093 under each of the black sea bass alternatives evaluated.

As such, on a per vessel basis, the commercial RSAs could result in a potential decrease in summer flounder revenues of $341 under each of the alternatives evaluated for that species. The potential decrease in revenue for scup is $338 under alternatives 1 and 3, and $233 under alternative 2. Lastly, the potential decrease in revenue for black sea bass is $196 per vessel under each of the alternatives evaluated for that species. The overall reduction in ex-vessel gross revenue associated with the three species combined under alternatives 1 and combined under 3 in 2008 as the result of the RSA is $497,176, when compared to commercial quotas without RSA in place. If this is distributed among the 903 vessels that landed summer flounder, scup, and black sea bass in 2006, the average decrease in revenue is approximately $551/vessel. The overall reduction associated with the three species combined under alternatives 2 in 2008 as the result of the research set asides is $453,060 ($602/vessel) compared to the commercial quotas without RSA in place. The values estimated above assume an equal decrease in revenue among all active vessels in 2006, i.e., 735, 419, and 536 commercial vessels that landed summer flounder, scup, and black sea bass, respectively. The adjusted commercial quotas analyzed in sections 7.1, 7.2, and 7.3 account for the RSAs (as described in sections 4.4 and 5.0). If RSAs are not used, the landings would be included in the overall TAL for each fishery. As such, the estimated economic impacts would be smaller than those estimated under each alternative discussed in sections 7.1 through 7.3.

Changes in the recreational harvest limit will be small; the limit changes from 6.31 to 6.21 million lb (a 1.6 percent decrease) under summer flounder alternative 1, from 4.66 to 4.56 million lb (a 2.1 percent decrease) under summer flounder alternative 2, and from 6.84 to 6.75 million lb (a 1.3 percent decrease) under summer flounder alternative 3. For the analyzed scup alternatives, the changes in the recreational harvest limits are from 1.88 to 1.82 million lb (a 3.2 percent decrease) under alternative 1, from 1.37 to 1.33 million lb (a 2.9 percent decrease) under alternative 2, and from 2.90 to 2.85 million lb (a 1.7 percent decrease) under alternative 3.

Lastly, for the analyzed black sea bass alternatives, the changes in the recreational harvest limits are from 2.15 to 2.11 million lb (a 1.9 percent decrease) under alternative 1, from 1.91 to 1.87 million lb (a 2.1 percent decrease) under alternative 2, and from 2.55 to 2.51 million lb (a 1.6 percent decrease) under alternative 3. It is unlikely that the possession, size or seasonal limits will change as the result of this RSA, and there will be no negative impacts.

Given the substantial decrease in the quotas in 2008 relative to 2007 for all three species under alternative 2 (most restrictive), the cost of any premature closure of the fishery (pounds of summer flounder, scup, and black sea bass allocated for set-aside) would be shared among the non-RSA participants in the fishery. In addition, it is possible that the vessels that will be used by researchers will not be vessels that have traditionally fished for summer flounder, scup, and/or black sea bass. As such, permit holders that land these species during a period where the quota has been reached and the fishery closed could be disadvantaged. However, the extent of RSA activity under these three projects (e.g., fishing trips, no. of tows, landings) are negligible when compared to the overall activity of the directed fisheries for the managed resources; therefore, overall impacts of research trips and compensation trips are expected to be negligible. The impacts of the RSAs for other species are addressed in their respective species specifications packages, e.g., bluefish in the 2008 bluefish specifications package.

### 7.5 Impacts of the Combined Preferred Alternatives

In order to conduct a more thorough socioeconomic analysis, overall impacts on the managed resources combined were examined. The analyses conducted examined the measures recommended by the Council for each of the three species combined. Overall impacts (i.e., combined impacts of summer flounder, scup, and black sea bass) were examined because many of the vessels active in these fisheries participate in some or all three of these fisheries. The 2008 Council-preferred alternatives, analyzed in combination, are presented below. For example, for 2008, quota alternative 1 (preferred alternative) would include the three preferred alternatives for summer flounder, scup, and black sea bass combined; quota alternative 2 (most restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined; and quota alternative 3 (least restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined. Detailed analysis of the combined impact of the Council-preferred as well as the non-preferred management measures for the three species combined is presented under section 9.11.4 of this document.

The analysis of the harvest levels under the combined Council-preferred alternative indicate that the economic impacts ranged from expected revenue losses on the order of < 5 percent for 115 vessels to revenue losses of ≥ 50 percent for 2 vessels. While the conducted analysis indicates that in relative terms a large number of vessels (733) are likely to be impacted with revenue reductions of 5 percent or more, 35 percent of these vessels (259 vessels) had gross sales of $1,000 or less, and 58 percent of the impacted vessels (424 vessels) had gross sales of $10,000 or less, likely indicating that the dependence on fishing for some of these vessels is very small. The number of vessels projected to be impacted with revenue reductions of 5 percent or more under

combined alternative 2 was 903. Under combined alternative 3, there were no vessels projected to incur revenue reductions of 5 percent or more (see section 9.11.4).

Assuming 2006 ex-vessel prices and the effect of potential changes in fishing opportunities in 2008 versus 2007, the 2008 quotas in combined alternative 1 (after overages and RSA have been applied) would decrease summer flounder, scup, and black sea bass revenues by approximately $0.84, $3.2, and $0.88 million, respectively, relative to the quota implemented in 2007. On a per vessel level, the average decrease in revenue associated with the decrease in summer flounder, scup, and black sea bass quotas is $1,143, $7,637, and $1,642. The overall reduction in ex-vessel gross revenue associated with these species combined in 2008 relative to quotas implemented in 2007 is approximately $4.92 million or approximately $5,449/vessel. The combined overall reduction in revenues under the Council-preferred alternative is lower than under combined alternative 2 ($12,735/vessel) but higher than under combined alternative 3 ($808/vessel; see section 9.11.4).

The summer flounder, scup, and black sea bass recreational harvest limits under combined Council-preferred alternative are approximately 7, 34, and 15 percent lower than the limits implemented in 2007, respectively. It is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) be required to prevent anglers from exceeding the recreational harvest limit in 2008. Specific recreational management measures will be determined in December when more complete data regarding 2007 recreational landings are available. It is expected that this alternative will likely decrease recreational satisfaction for these species when compared to the combined recreational measures relative to the status quo alternative. At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed by way of adjustments to the management measures. While it is likely that proposed management measures may restrict the recreational fishery for 2008, and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures may lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable (see recreational fishing trends under section 9.11.4). It is unlikely that these measures will result in any substantive decreases in the demand for party/charter boat trips. However, it is likely that even though anglers may face more restrictive recreational limits in 2008, they will likely be able to keep some of the fish they catch and could also engage in catch and release fishing. Anglers that choose to reduce their effort in 2008 as a consequence of these recreational harvest limits are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing.

## 7.6 Cumulative Effects Analysis

A cumulative effects analysis (CEA) is required by the Council on Environmental Quality (CEQ) (40 CFR part 1508.7). The purpose of CEA is to consider the combined effects of many actions on the human environment over time that would be missed if each action were evaluated separately. CEQ guidelines recognize that it is not practical to analyze the cumulative effects of an action from every conceivable perspective, but rather, the intent is to focus on those effects that are truly meaningful. A formal cumulative impact assessment is not necessarily required as part of an EA under NEPA as long as the significance of cumulative impacts have been considered (U.S. EPA 1999). The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed summer flounder, scup, and black sea bass fisheries.

### 7.6.1 Consideration of the VECs

In section 6.0 (Description of the Affected Environment), the valued ecosystem components (VECs) that exist within the summer flounder, scup, and black sea bass fishery environment are identified. Therefore, the significance of the cumulative effects will be discussed in relation to the VECs listed below.

1. Managed resources (summer flounder, scup, and black sea bass)
2. Non-target species
3. Habitat including EFH for the managed resource and non-target species
4. Endangered and protected species
5. Human communities

### 7.6.2 Geographic Boundaries

The analysis of impacts focuses on actions related to the harvest of summer flounder, scup, and black sea bass. The core geographic scope for each of the VECs is focused on the Western Atlantic Ocean (section 6.0). The core geographic scope for the managed resources is from Maine through North Carolina, as this represents the typical biological range for these stocks. For non-target species, those ranges may be expanded and would depend on the biological range of each individual non-target species in the Western Atlantic Ocean. For habitat, the core geographic scope is focused on EFH within the EEZ but includes all habitat utilized by summer flounder, scup, black sea bass and other non-target species in the Western Atlantic Ocean. The core geographic scope for endangered and protected resources can be considered the overall range of these VECs in the Western Atlantic Ocean. For human communities, the core geographic boundaries are defined as those U.S. fishing communities directly involved in the harvest or processing of the managed resources, which were found to occur in coastal states from Maine through North Carolina (section 6.5).

### 7.6.3 Temporal Boundaries

The temporal scope of past and present actions for the managed resources, non-target species, habitat and human communities is primarily focused on actions that have occurred after FMP

implementation (1988 for summer flounder; 1996 for scup and black sea bass). For endangered and other protected resources, the scope of past and present actions is on a species-by-species basis (section 6.4) and is largely focused on the 1980s and 1990s through the present, when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. The temporal scope of future actions for all five VECs extends about seven years (2015) into the future. This period was chosen because it is the longest time frame of the three rebuilding programs for these stocks. Scup is to be rebuilt by January 1, 2015 (seven years of specifications), summer flounder is to be rebuilt by January 1, 2013 (five years of specifications), and black sea bass is to be rebuilt by January 1, 2010 (two years specifications). In addition, the temporal scope does not extend beyond seven years because the dynamic nature of resource management and lack of information on projects that may occur in the future make it very difficult to predict impacts beyond this timeframe with any certainty.

### 7.6.4 Actions Other Than Those Proposed in this Amendment

The impacts of each of the alternatives considered in this specifications document are given in section 7.1 through 7.5. Box 7.6.4 presents meaningful past (P), present (Pr), or reasonably foreseeable future (RFF) actions to be considered other than those actions being considered in this specifications document. These impacts are described in chronological order and qualitatively, as the actual impacts of these actions are too complex to be quantified in a meaningful way. When any of these abbreviations occur together (i.e., P, Pr, RFF), it indicates that some past actions are still relevant to the present and/or future actions.

***Past and Present Actions***

The historical management practices of the Council (described in section 4.2) have resulted in positive impacts on the health of the summer flounder, scup, and black sea bass stocks. Numerous actions have been taken to manage the commercial and recreational fisheries for these three species through amendment and framework adjustment actions. In addition, the annual specifications process is intended to provide the opportunity for the Council and NMFS to regularly assess the status of the fishery and to make necessary adjustments to ensure that there is a reasonable expectation of meeting the objectives of the FMP and the targets associated with any rebuilding programs under the FMP. The statutory basis for Federal fisheries management is the MSA. To the degree with which this regulatory regime is complied, the cumulative impacts of past, present, and reasonably foreseeable future Federal fishery management actions on the VECs should generally be associated with positive long-term outcomes. Constraining fishing effort through regulatory actions can often have negative short-term socio-economic impacts. These impacts are usually necessary to bring about long-term sustainability of a given resource, and as such, should, in the long-term, promote positive effects on human communities, especially those that are economically dependent upon the summer flounder, scup, and black sea bass stocks.

Non-fishing activities that introduce chemical pollutants, sewage, changes in water temperature, salinity, dissolved oxygen, and suspended sediment into the marine environment pose a risk to all of the identified VECs. Human-induced non-fishing activities tend to be localized in

nearshore areas and marine project areas where they occur. Examples of these activities include, but are not limited to agriculture, port maintenance, beach nourishment, coastal development, marine transportation, marine mining, dredging and the disposal of dredged material. Wherever these activities co-occur, they are likely to work additively or synergistically to decrease habitat quality and, as such, may indirectly constrain the sustainability of the managed resources, non-target species, and protected resources. Decreased habitat suitability would tend to reduce the tolerance of these VECs to the impacts of fishing effort. Mitigation of this outcome through regulations that would reduce fishing effort could then negatively impact human communities. The overall impact to the affected species and their habitats on a population level is unknown, but likely neutral to low negative, since a large portion of these species have a limited or minor exposure to these local non-fishing perturbations.

In addition to guidelines mandated by the MSA, NMFS reviews these types of effects through the review process required by Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act for certain activities that are regulated by Federal, state, and local authorities. The jurisdiction of these activities is in "waters of the U.S." and includes both riverine and marine habitats.

***Reasonably Foreseeable Future Actions***

In terms of Reasonably Foreseeable Future (RFF) Actions that relate to the federally-managed summer flounder, scup, and black sea bass fisheries, several warrant additional discussion. The development of Amendment 15 to the Summer Flounder, Scup, and Black Sea Bass FMP would continue to manage these resources in accordance with the National Standards required under the MSA. The Council has identified many issues to be addressed in Amendment 15 which include commercial and recreational overcapacity, fishery allocation issues (potentially involving sector allocation), as well as others, and that Amendment will likely address annual catch limits (ACLs) and accountability measures (AMs) to ensure that ACLs are not exceeded.

For many of the proposed non-fishing activities to be permitted under other Federal agencies (such as beach nourishment, offshore wind facilities, etc.), those agencies would conduct examinations of potential impacts on the VECs. The MSA (50 CFR 600.930) imposes an obligation on other Federal agencies to consult with the Secretary of Commerce on actions that may adversely affect EFH. The eight Fishery Management Councils are engaged in this review process by making comments and recommendations on any Federal or state action that may affect habitat, including EFH, for their managed species and by commenting on actions likely to substantially affect habitat, including EFH.

In addition, under the Fish and Wildlife Coordination Act (Section 662), “whenever the waters of any stream or other body of water are proposed or authorized to be impounded, diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the U.S., or by any public or private agency under Federal permit or license, such department or agency first shall consult with the U.S. Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the

particular State wherein the" activity is taking place. This act provides another avenue for review of actions by other Federal and state agencies that may impact resources that NMFS manages in the reasonably foreseeable future.

In addition, NMFS and the USFWS share responsibility for implementing the ESA. ESA requires NMFS to designate "critical habitat" for any species it lists under the ESA (i.e. areas that contain physical or biological features essential to conservation, which may require special management considerations or protection) and to develop and implement recovery plans for threatened and endangered species. The ESA provides another avenue for NMFS to review actions by other entities that may impact endangered and protected resources whose management units are under NMFS' jurisdiction.

### 7.6.5 Magnitude and Significance of Cumulative Effects

In determining the magnitude and significance of the cumulative effects, the additive and synergistic effects of the proposed action, as well as past, present, and future actions, must be taken into account. The following section discusses the effects of these actions on each of the VECs.

| **Box 7.6.4. Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).** | | | | | | |
|---|---|---|---|---|---|---|
| **Action** | **Description** | **Impacts on Managed Resource** | **Impacts on Non-target Species** | **Impacts on Habitat and EFH** | **Impacts on Protected Species** | **Impacts on Human Communities** |
| **P, Pr** Original FMP and subsequent Amendments and Frameworks to the FMP | Established commercial and recreational management measures | **Indirect Positive** Regulatory tool available to rebuild and manage stocks | **Indirect Positive** Reduced fishing effort | **Indirect Positive** Reduced fishing effort | **Indirect Positive** Reduced fishing effort | **Indirect Positive** Benefited domestic businesses |
| **P, Pr** Summer Flounder, Scup, and Black Sea Bass Specifications | Establish annual quotas, RHLs, other fishery regulations (commercial and recreational) | **Indirect Positive** Regulatory tool to specify annual quotas, RHLs, and other regulations; allows response to annual stock updates | **Indirect Positive** Reduced effort levels and gear requirements | **Indirect Positive** Reduced effort levels and gear requirements | **Indirect Positive** Reduced effort levels and gear requirements | **Indirect Positive** Benefited domestic businesses |
| **P,Pr** Develop Standardized Bycatch Reporting Methodology (2007) | Established acceptable level of precision and accuracy for monitoring of bycatch in fisheries | **Neutral** May improve data quality for monitoring total removals of managed resource | **Neutral** May improve data quality for monitoring removals of non-target species | **Neutral** Will not affect distribution of effort | **Neutral** May increase observer coverage and will not affect distribution of effort | **Potentially Indirect Negative** May impose an inconvenience on vessel operations |
| **Pr, RFF** Amendment 15 to the FMP (~2012) | Comprehensive review of management system | **Potentially Indirect Positive** Pending full analysis | **Potentially Indirect Positive** Pending full analysis | **Potentially Indirect Positive** Pending full analysis | **Potentially Indirect Positive** Pending full analysis | **Potentially Indirect Positive** Pending full analysis |
| **P, Pr, RFF** Agricultural runoff | Nutrients applied to agricultural land are introduced into aquatic systems | **Indirect Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality | **Direct Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality negatively affects resource |
| **P, Pr, RFF** Port maintenance | Dredging of coastal, port and harbor areas for port maintenance | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Direct Negative** Dependent on mitigation effects | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Mixed** Dependent on mitigation effects |

| **Box 7.6.4. Continued. Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).** | | | | | | |
|---|---|---|---|---|---|---|
| **Action** | **Description** | **Impacts on Managed Resource** | **Impacts on Non-target Species** | **Impacts on Habitat and EFH** | **Impacts on Protected Species** | **Impacts on Human Communities** |
| P, Pr, RFF Offshore disposal of dredged materials | Disposal of dredged materials | **Indirect Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality | **Direct Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality | **Indirect Negative** Reduced habitat quality negatively affects resource viability |
| P, Pr, RFF Beach nourishment | Offshore mining of sand for beaches | **Indirect Negative** Localized decreases in habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Direct Negative** Reduced habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Mixed** Positive for mining companies, possibly negative for fishing industry |
| | Placement of sand to nourish beach shorelines | **Indirect Negative** Localized decreases in habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Direct Negative** Reduced habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Positive** Beachgoers like sand; positive for tourism |
| P, Pr, RFF Marine transportation | Expansion of port facilities, vessel operations and recreational marinas | **Indirect Negative** Localized decreases in habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Direct Negative** Reduced habitat quality | **Indirect Negative** Localized decreases in habitat quality | **Mixed** Positive for some interests, potential displacement for others |
| P, Pr, RFF Installation of pipelines, utility lines and cables | Transportation of oil, gas and energy through pipelines, utility lines and cables | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Direct Negative** Reduced habitat quality | **Potentially Direct Negative** Dependent on mitigation effects | **Uncertain – Likely Mixed** Dependent on mitigation effects |
| RFF National Offshore Aquaculture Act of 2007 | Bill that would grant DOC authority to issue permits for offshore aquaculture in Federal waters | **Potentially Indirect Negative** Localized decreases in habitat quality possible | **Potentially Indirect Negative** Localized decreases in habitat quality possible | **Direct Negative** Localized decreases in habitat quality possible | **Potentially Indirect Negative** Localized decreases in habitat quality possible | **Uncertain – Likely Mixed** Costs/benefits remain unanalyzed |

| **Box 7.6.4. Continued. Impacts of Past (P), Present (Pr), and Reasonably Foreseeable Future (RFF) Actions on the five VECs (not including those actions considered in this specifications document).** | | | | | | |
|---|---|---|---|---|---|---|
| **Action** | **Description** | **Impacts on Managed Resource** | **Impacts on Non-target Species** | **Impacts on Habitat and EFH** | **Impacts on Protected Species** | **Impacts on Human Communities** |
| RFF Offshore Wind Energy Facilities (within 5 years) | Construction of wind turbines to harness electrical power (Several facilities proposed from ME through NC, including off the coast of NY/NJ, DE, and VA) | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Potentially Direct Negative** Localized decreases in habitat quality possible | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Mixed** Dependent on mitigation effects |
| RFF Liquefied Natural Gas (LNG) terminals (within 5 years) | Transportation of natural gas via tanker to terminals located offshore and onshore (Several LNG terminals are proposed, including RI, NY, NJ and DE) | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Potentially Direct Negative** Localized decreases in habitat quality possible | **Uncertain – Likely Indirect Negative** Dependent on mitigation effects | **Uncertain – Likely Mixed** Dependent on mitigation effects |
| RFF Convene Atlantic Trawl Gear Take Reduction Team (2006) | Recommend measures to reduce mortality and injury to marine mammals | **Indirect Positive** Will improve data quality for monitoring total removals | **Indirect Positive** Reducing availability of gear could reduce bycatch | **Indirect Positive** Reducing availability of gear could reduce gear impacts | **Indirect Positive** Reducing availability of gear could reduce encounters | **Indirect Negative** Reducing availability of gear could reduce revenues |
| RFF Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (w/in next 5 years) | May recommend strategies to prevent the bycatch of sea turtles in commercial fisheries operations | **Indirect Positive** Will improve data quality for monitoring total removals | **Indirect Positive** Reducing availability of gear could reduce bycatch | **Indirect Positive** Reducing availability of gear could reduce gear impacts | **Indirect Positive** Reducing availability of gear could reduce encounters | **Indirect Negative** Reducing availability of gear could reduce revenues |

### 7.6.5.1 Managed Resources

Those past, present, and reasonably foreseeable future actions, whose effects may impact the managed resources and the direction of those potential impacts, are summarized in Box 7.6.5.1. The indirectly negative actions described in Box 7.6.5.1 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on the managed resources is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on productivity of the managed resources is unquantifiable. As described above (section 7.6.4), NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources under NMFS' jurisdiction.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on the managed resources. It is anticipated that the future management actions, described in Box 7.6.5.1, will result in additional indirect positive effects on the managed resources through actions which reduce and monitor bycatch, protect habitat, and protect ecosystem services on which summer flounder, scup, and black sea bass productivity depends. In addition, the development of Amendment 15 to the FMP, which will include issues such as commercial and recreational overcapacity, fishery allocation issues (potentially involving sector allocation), and annual catch limits (ACLs)/accountability measures (AMs) has the potential to implement significant changes to the current management program and lead to improvements in resource sustainability over the long-term. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to summer flounder, scup, and black sea bass have had a positive cumulative effect.

The specifications of annual TALs for each of the managed resources which ensure each of the rebuilding schedules are met supports the long-term sustainability of the summer flounder, scup, and black sea bass stocks and is consistent with the objectives of the FMP under the guidance of the MSA. The impacts from annual specification of management measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting their intended objectives (i.e. annual F targets) and the extent to which mitigating measures were effective. Section 6.1.1 describes the history of overages for these fisheries and how overages are currently mitigated. The proposed action in this document would positively reinforce the past and anticipated positive cumulative effects on the summer flounder, scup, and black sea bass stock, by promoting rebuilding of each stock by the deadline specified in the FMP. Therefore, the proposed action would not have any significant effect on the managed resources individually or in conjunction with other anthropogenic activities (see Box 7.6.6).

| **Box 7.6.5.1. Summary of the effects of past, present, and reasonably foreseeable future actions on the managed resource.** | | |
|---|---|---|
| **Action (see Box 7.6.4 for more detailed description)** | **Past to the Present** | **Reasonably Foreseeable Future** |
| Original FMP and subsequent Amendments and Frameworks to the FMP | **Indirect Positive** | |
| Summer Flounder, Scup and Black Sea Bass Specifications | **Indirect Positive** | |
| Develop Standardized Bycatch Reporting Methodology | **Neutral** | |
| Amendment 15 to the Summer Flounder, Scup and Black Sea Bass FMP | | **Potentially Indirect Positive** |
| Agricultural runoff | **Indirect Negative** | |
| Port maintenance | **Uncertain – Likely Indirect Negative** | |
| Offshore disposal of dredged materials | **Indirect Negative** | |
| Beach nourishment – Offshore mining | **Indirect Negative** | |
| Beach nourishment – Sand placement | **Indirect Negative** | |
| Marine transportation | **Indirect Negative** | |
| Installation of pipelines, utility lines and cables | **Uncertain – Likely Indirect Negative** | |
| National Offshore Aquaculture Act of 2007 | | **Potentially Indirect Negative** |
| Offshore Wind Energy Facilities (within 5 years) | | **Uncertain – Likely Indirect Negative** |
| Liquefied Natural Gas (LNG) terminals (within 5 years) | | **Uncertain – Likely Indirect Negative** |
| Convene Atlantic Trawl Gear Take Reduction Team (2006) | | **Indirect Positive** |
| Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 5 years) | | **Indirect Positive** |
| **Summary of past, present, and future actions excluding those proposed in this specifications document** | **Overall, actions have had, or will have, positive impacts on the managed resources<br>* See section 7.6.5.1 for explanation.** | |

### 7.6.5.2 Non-Target Species or Bycatch

Those past, present, and reasonably foreseeable future actions, whose effects may impact non-target species and the direction of those potential impacts, are summarized in Box 7.6.5.2. The effects of indirectly negative actions described in Box 7.6.5.2 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on non-target species is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on productivity of non-target resources and the oceanic ecosystem is unquantifiable. As described above (section 7.6.4), NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources prior to permitting or implementation of those projects. At this time, NMFS can consider impacts to non-target species (federally-managed or otherwise) and comment on potential impacts. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on resources within NMFS' jurisdiction.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on non-target species. Implementation of a standardized bycatch reporting methodology would have a particular impact on non-target species by improving the methods which can be used to assess the magnitude and extent of a potential bycatch problem. Better assessment of potential bycatch issues allows more effective and specific management measures to be developed to address a bycatch problem. The development of Amendment 15 to the FMP may significantly modify the current management programs and may lead to improvements in how these fisheries deal with bycatch. Any proposed actions would be consistent with the objectives of the FMP and the National Standards, and the amendment document would include an EIS. The EIS will describe the potential impacts for non-target species from the proposed action and therefore, provide an opportunity for NMFS to implement actions which minimize those impacts. It is therefore anticipated that the future management actions, described in Box 7.6.5.2, will result in additional indirect positive effects on non-target species through actions which reduce and monitor bycatch, protect habitat, and protect ecosystem services on which the productivity of many of these non-target resources depend. The impacts of these future actions could be broad in scope, and it should be noted the managed resource and non-target species are often coupled in that they utilize similar habitat areas and ecosystem resources on which they depend. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful have had a positive cumulative effect on non-target species.

The specifications of annual TALs for each of the managed resources are necessary to ensure each of the rebuilding schedules are met supports the long-term sustainability of the summer flounder, scup, and black sea bass stocks and is consistent with the objectives of the FMP under the guidance of the MSA. The proposed actions in this document have a neutral impact and would not change the past and anticipated positive cumulative effects on non-target species and thus, would not have any significant effect on these species individually or in conjunction with other anthropogenic activities (see Box 7.6.6).

| **Box 7.6.5.2. Summary of the effects of past, present, and reasonably foreseeable future actions on the non-target species.** | | |
|---|---|---|
| **Action (see Box 7.6.4 for more detailed description)** | **Past to the Present** | **Reasonably Foreseeable Future** |
| Original FMP and subsequent Amendments and Frameworks to the FMP | **Indirect Positive** | |
| Summer Flounder, Scup and Black Sea Bass Specifications | **Indirect Positive** | |
| Develop Standardized Bycatch Reporting Methodology | **Neutral** | |
| Amendment 15 to the Summer Flounder, Scup and Black Sea Bass FMP | | **Potentially Indirect Positive** |
| Agricultural runoff | **Indirect Negative** | |
| Port maintenance | **Uncertain – Likely Indirect Negative** | |
| Offshore disposal of dredged materials | **Indirect Negative** | |
| Beach nourishment – Offshore mining | **Indirect Negative** | |
| Beach nourishment – Sand placement | **Indirect Negative** | |
| Marine transportation | **Indirect Negative** | |
| Installation of pipelines, utility lines and cables | **Uncertain – Likely Indirect Negative** | |
| National Offshore Aquaculture Act of 2007 | | **Potentially Indirect Negative** |
| Offshore Wind Energy Facilities (within 5 years) | | **Uncertain – Likely Indirect Negative** |
| Liquefied Natural Gas (LNG) terminals (within 5 years) | | **Uncertain – Likely Indirect Negative** |
| Convene Atlantic Trawl Gear Take Reduction Team (2006) | | **Indirect Positive** |
| Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 5 years) | | **Indirect Positive** |
| **Summary of past, present, and future actions excluding those proposed in this specifications document** | **Overall, actions have had, or will have, positive impacts on the non-target species<br>* See section 7.6.5.2 for explanation.** | |

### 7.6.5.3 Habitat (Including EFH)

Those past, present, and reasonably foreseeable future actions, whose effects may impact habitat (including EFH) and the direction of those potential impacts, are summarized in Box 7.6.5.3. The direct and indirect negative actions described in Box 7.6.5.3 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on habitat is expected to be limited due to a lack of exposure to habitat at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on habitat and EFH is unquantifiable. As described above (section 7.6.4), NMFS has several means under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' managed resources and the habitat on which they rely prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of direct and indirect negative impacts those actions could have on habitat utilized by resources under NMFS' jurisdiction.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on habitat and EFH. The actions have constrained fishing effort at a large scale and locally, and have implemented gear requirements, which may reduce habitat impacts. As required under these FMP actions, EFH and HAPCs were designated for the managed resources. It is anticipated that the future management actions, described in Box 7.6.5.3, will result in additional direct or indirect positive effects on habitat through actions which protect EFH for federally-managed species and protect ecosystem services on which these species' productivity depends. These impacts could be broad in scope. All of the VECs are interrelated; therefore, the linkages among habitat quality and EFH, managed resources and non-target species productivity, and associated fishery yields should be considered. For habitat and EFH, there are direct and indirect negative effects from actions which may be localized or broad in scope; however, positive actions that have broad implications have been, and it is anticipated will continue to be, taken to improve the condition of habitat. There are some actions, which are beyond the scope of NMFS and Council management such as coastal population growth and climate changes, which may indirectly impact habitat and ecosystem productivity. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to habitat have had a neutral to positive cumulative effect.

The specifications of annual TALs for each of the managed resources are necessary to ensure each of the rebuilding schedules are met supports the long-term sustainability of the summer flounder, scup, and black sea bass stocks and is consistent with the objectives of the FMP under the guidance of the MSA. The proposed actions in this document would not change the past and anticipated cumulative effects on habitat and thus, would not have any significant effect on habitat individually or in conjunction with other anthropogenic activities (see Box 7.6.6).

| **Box 7.6.5.3. Summary of the effects of past, present, and reasonably foreseeable future actions on the habitat.** | | | |
|---|---|---|---|
| **Action (see Box 7.6.4 for more detailed description)** | **Past to the Present** | | **Reasonably Foreseeable Future** |
| Original FMP and subsequent Amendments and Frameworks to the FMP | **Indirect Positive** | | |
| Summer Flounder, Scup and Black Sea Bass Specifications | **Indirect Positive** | | |
| Develop Standardized Bycatch Reporting Methodology | **Neutral** | | |
| Amendment 15 to the Summer Flounder, Scup and Black Sea Bass FMP | | **Potentially Indirect Positive** | |
| Agricultural runoff | **Direct Negative** | | |
| Port maintenance | **Uncertain – Likely Direct Negative** | | |
| Offshore disposal of dredged materials | **Direct Negative** | | |
| Beach nourishment – Offshore mining | **Direct Negative** | | |
| Beach nourishment – Sand placement | **Direct Negative** | | |
| Marine transportation | **Direct Negative** | | |
| Installation of pipelines, utility lines and cables | **Uncertain – Likely Direct Negative** | | |
| National Offshore Aquaculture Act of 2007 | | | **Direct Negative** |
| Offshore Wind Energy Facilities (within 5 years) | | | **Potentially Direct Negative** |
| Liquefied Natural Gas (LNG) terminals (within 5 years) | | | **Potentially Direct Negative** |
| Convene Atlantic Trawl Gear Take Reduction Team (2006) | | | **Indirect Positive** |
| Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 5 years) | | | **Indirect Positive** |
| **Summary of past, present, and future actions excluding those proposed in this specifications document** | **Overall, actions have had, or will have, neutral to positive impacts on habitat, including EFH<br>* See section 7.6.5.3 for explanation.** | | |

### 7.6.5.4 Protected and Endangered Species

Those past, present, and reasonably foreseeable future actions, whose effects may impact the protected resources and the direction of those potential impacts, are summarized in Box 7.6.5.4. The indirectly negative actions described in Box 7.6.5.4 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on protected resources, relative to the range of many of the protected resources, is expected to be limited due to a lack of exposure to the population at large. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude, although the impact on protected resources either directly or indirectly is unquantifiable. As described above (section 7.6.4), NMFS has several means, including ESA, under which it can review non-fishing actions of other Federal or state agencies that may impact NMFS' protected resources prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on protected resources under NMFS' jurisdiction.

Past fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on protected resources through the reduction of fishing effort (potential interactions) and implementation of gear requirements. It is anticipated that the future management actions, specifically those recommended by the Atlantic Trawl Gear Take Reduction Team and the development of strategies for sea turtle conservation described in Box 7.6.5.4, will result in additional indirect positive effects on the protected resources. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to protected resources have had a positive cumulative effect.

The specifications of annual TALs for each of the managed resources are necessary to ensure each of the rebuilding schedules are met supports the long-term sustainability of the summer flounder, scup, and black sea bass stocks and is consistent with the objectives of the FMP under the guidance of the MSA. The proposed actions in this document would not change the past and anticipated cumulative effects on protective resources and thus, would not have any significant effect on protected resources individually or in conjunction with other anthropogenic activities (see Box 7.6.6).

| **Box 7.6.5.4. Summary of the effects of past, present, and reasonably foreseeable future actions on the protected resources.** | | | |
|---|---|---|---|
| **Action (see Box 7.6.4 for more detailed description)** | **Past to the Present** | | **Reasonably Foreseeable Future** |
| Original FMP and subsequent Amendments and Frameworks to the FMP | **Indirect Positive** | | |
| Summer Flounder, Scup and Black Sea Bass Specifications | **Indirect Positive** | | |
| Develop Standardized Bycatch Reporting Methodology | **Neutral** | | |
| Amendment 15 to the Summer Flounder, Scup and Black Sea Bass FMP | | **Potentially Indirect Positive** | |
| Agricultural runoff | **Indirect Negative** | | |
| Port maintenance | **Uncertain – Likely Indirect Negative** | | |
| Offshore disposal of dredged materials | **Indirect Negative** | | |
| Beach nourishment – Offshore mining | **Indirect Negative** | | |
| Beach nourishment – Sand placement | **Indirect Negative** | | |
| Marine transportation | **Indirect Negative** | | |
| Installation of pipelines, utility lines and cables | **Potentially Direct Negative** | | |
| National Offshore Aquaculture Act of 2007 | | | **Potentially Indirect Negative** |
| Offshore Wind Energy Facilities (within 5 years) | | | **Uncertain – Likely Indirect Negative** |
| Liquefied Natural Gas (LNG) terminals (within 5 years) | | | **Uncertain – Likely Indirect Negative** |
| Convene Atlantic Trawl Gear Take Reduction Team (2006) | | | **Indirect Positive** |
| Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 5 years) | | | **Indirect Positive** |
| **Summary of past, present, and future actions excluding those proposed in this specifications document** | **Overall, actions have had, or will have, positive impacts on protected resources**<br>*** See section 7.6.5.4 for explanation.** | | |

### 7.6.5.5 Human Communities

Those past, present, and reasonably foreseeable future actions, whose effects may impact human communities and the direction of those potential impacts, are summarized in Box 7.6.5.5. The indirectly negative actions described in Box 7.6.5.5 are localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on human communities is expected to be limited in scope. It may, however, displace fishermen from project areas. Agricultural runoff may be much broader in scope, and the impacts of nutrient inputs to the coastal system may be of a larger magnitude. This may result in indirect negative impacts on human communities by reducing resource availability; however, this effect is unquantifiable. As described above (section 7.6.4), NMFS has several means under which it can review non-fishing actions of other Federal or state agencies prior to permitting or implementation of those projects. This serves to minimize the extent and magnitude of indirect negative impacts those actions could have on human communities.

Past fishery management actions taken through the FMP and annual specification process have had both positive and negative cumulative effects by benefiting domestic fisheries through sustainable fishery management practices, while at the same time potentially reducing the availability of the resource to all participants. Sustainable management practices are, however, expected to yield broad positive impacts to fishermen, their communities, businesses, and the nation as a whole. It is anticipated that the future management actions, described in Box 7.6.5.5, will result in positive effects for human communities due to sustainable management practices, although additional indirect negative effects on the human communities could occur through management actions that may implement gear requirements or area closures and thus, reduce revenues. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to human communities have had an overall positive cumulative effect.

The specifications of annual TALs which ensure each of the rebuilding schedules are met supports the long-term sustainability of the summer flounder, scup, and black sea bass stocks and is consistent with the objectives of the FMP under the guidance of the MSA. The impacts from annual specification measures established in previous years on the managed resources are largely dependent on how effective those measures were in meeting their intended objectives (i.e. annual F targets) and the extent to which mitigating measures were effective. Section 6.1.1 described the history of overages for these fisheries and how overages are currently mitigated for these managed resources. Overages may alter the timing of fishery revenues (revenues realized a year earlier), and there may be impacts on some fishermen caused by unexpected reductions in their opportunities to earn revenues in the commercial fisheries in the year during which the overages are deducted. Recreational fisheries may have decreased harvest opportunities due to more restrictive recreational management measures that must be implemented (i.e. minimum fish size, possession limits, fishing seasons).

Despite the potential for slight negative short-term effects on human communities, the expectation is that there would be a positive long-term effect on human communities when the stocks are rebuilt. Overall, the proposed actions in this document would not change the past and anticipated cumulative effects on human communities and thus, would not have any significant effect on human communities individually, or in conjunction with other anthropogenic activities (see Box 7.6.6).

| **Box 7.6.5.5. Summary of the effects of past, present, and reasonably foreseeable future actions on human communities.** | | | |
|---|---|---|---|
| **Action (see Box 7.6.4 for more detailed description)** | **Past to the Present** | | **Reasonably Foreseeable Future** |
| Original FMP and subsequent Amendments and Frameworks to the FMP | **Indirect Positive** | | |
| Summer Flounder, Scup and Black Sea Bass Specifications | **Indirect Positive** | | |
| Develop Standardized Bycatch Reporting Methodology | **Potentially Indirect Negative** | | |
| Amendment 15 to the Summer Flounder, Scup and Black Sea Bass FMP | | **Potentially Indirect Positive** | |
| Agricultural runoff | **Indirect Negative** | | |
| Port maintenance | **Uncertain – Likely Mixed** | | |
| Offshore disposal of dredged materials | **Indirect Negative** | | |
| Beach nourishment – Offshore mining | **Mixed** | | |
| Beach nourishment – Sand placement | **Positive** | | |
| Marine transportation | **Mixed** | | |
| Installation of pipelines, utility lines and cables | **Uncertain – Likely Mixed** | | |
| National Offshore Aquaculture Act of 2007 | | | **Uncertain – Likely Mixed** |
| Offshore Wind Energy Facilities (within 5 years) | | | **Uncertain – Likely Mixed** |
| Liquefied Natural Gas (LNG) terminals (within 5 years) | | | **Uncertain – Likely Mixed** |
| Convene Atlantic Trawl Gear Take Reduction Team (2006) | | | **Indirect Negative** |
| Strategy for Sea Turtle Conservation for the Atlantic Ocean and the Gulf of Mexico Fisheries (within next 5 years) | | | **Indirect Negative** |
| **Summary of past, present, and future actions excluding those proposed in this specifications document** | **Overall, actions have had, or will have, positive impacts on human communities<br>* See section 7.6.5.5 for explanation.** | | |

### 7.6.6 Preferred Action on all the VECS

The Council has identified its preferred action alternatives in section 5.0. The cumulative effects of the range of actions considered in this document can be considered to make a determination if significant cumulative effects are anticipated from the preferred action.

**Box 7.6.6. Magnitude and significance of the cumulative effects; the additive and synergistic effects of the proposed action, as well as past, present, and future actions**

| VEC | Status in 2007 | Net Impact of P, Pr, and RFF Actions | Impact of the Proposed Action | Significant Cumulative Effects |
|---|---|---|---|---|
| **Managed Resource** | Complex and variable (Section 6.1) | Positive (Sections 7.6.4 and 7.6.5.1) | Negative to positive (Sections 7.1, 7.2, 7.3, 7.4, and 7.5) | **None** |
| **Non-target Species** | Complex and variable (Section 6.1) | Positive (Sections 7.6.4 and 7.6.5.2) | Neutral to positive (Sections 7.1, 7.2, 7.3, 7.4, and 7.5) | **None** |
| **Habitat** | Complex and variable (Section 6.2) | Neutral to positive (Sections 7.6.4 and 7.6.5.3) | Neutral to positive (Sections 7.1, 7.2, 7.3, 7.4, and 7.5) | **None** |
| **Protected Resources** | Complex and variable (Section 6.3) | Positive (Sections 7.6.4 and 7.6.5.4) | Neutral to positive (Sections 7.1, 7.2, 7.3, 7.4, and 7.5) | **None** |
| **Human Communities** | Complex and variable (Section 6.4) | Positive (Sections 7.6.4 and 7.6.5.5) | Short-term-Negative to positive; Long-term-Negative to Positive (Sections 7.1, 7.2, 7.3, 7.4, and 7.5) | **None** |

The direct and indirect impacts of the proposed action on the VECs are described in sections 7.1 through 7.5. The magnitude and significance of the cumulative effects, which include the additive and synergistic effects of the proposed action, as well as past, present, and future actions, have been taken into account throughout this section 7.6. The action proposed in this annual specifications document builds off action taken in the original FMP and subsequent amendments and framework documents. When this action is considered in conjunction with all the other pressures placed on fisheries by past, present, and reasonably foreseeable future actions, it is not expected to result in any significant impacts, positive or negative. Based on the information and analyses presented in these past FMP documents and this document, there are no significant cumulative effects associated with the action proposed in this document.

## 8.0 APPLICABLE LAWS

### 8.1 Magnuson-Stevens Fishery Conservation and Management Act (MSA)

#### 8.1.1 National Standards

Section 301 of the MSA requires that FMPs contain conservation and management measures that are consistent with the ten National Standards. The most recent FMP amendments 12, 13, and 14 (MAFMC 1998, 2002, 2007, respectively) address how the management actions implemented comply with the National Standards. First and foremost, the Council continues to meet the obligations of National Standard 1 by adopting and implementing conservation and management measures that will continue to prevent overfishing, while achieving, on a continuing basis, the optimum yield for summer flounder, scup, and black sea bass and the U.S. fishing industry. The Council uses the best scientific information available (National Standard 2) and manages all three species throughout their range (National Standard 3). These management measures do not discriminate among residents of different states (National Standard 4), they do not have economic allocation as their sole purpose (National Standard 5), the measures account for variations in these fisheries (National Standard 6), they avoid unnecessary duplication (National Standard 7), they take into account the fishing communities (National Standard 8) and they promote safety at sea (National Standard 10). Finally, actions taken are consistent with National Standard 9, which addresses bycatch in fisheries. The Council has implemented many regulations that have indirectly acted to reduce fishing gear impacts on EFH. By continuing to meet the National Standards requirements of the MSA through future FMP amendments, framework actions, and the annual specification setting process, the Council will insure that cumulative impacts of these actions will remain positive overall for the ports and communities that depend on these fisheries, the Nation as a whole, and certainly for the resources.

### 8.2 NEPA (FONSI)

National Oceanic and Atmospheric Administration Administrative Order 216-6 (May 20, 1999) contains criteria for determining the significance of the impacts of a proposed action. In addition, the Council on Environmental Quality regulations at 40 C.F.R. '1508.27 state that the significance of an action should be analyzed both in terms of “context” and “intensity.” Each criterion listed below is relevant to making a finding of no significant impact and has been considered individually, as well as in combination with the others. The significance of this action is analyzed based on the NAO 216-6 criteria and CEQ's context and intensity criteria. These include:

*1) Can the proposed action reasonably be expected to jeopardize the sustainability of any target species that may be affected by the action?*

None of the proposed specifications or RSA projects presented in this document is expected to jeopardize the sustainability of any target species affected by the action. The preferred quota specifications for each species are consistent with the FMP objectives. The proposed summer flounder quota has a 75% probability of achieving the rebuilding F. The proposed scup and black

sea bass quotas are consistent with the FMP overfishing definitions and may achieve the target fishing mortality levels, which are sustainable in the long-term. The proposed actions will ensure the long-term sustainability of harvests from the summer flounder, scup, and black sea bass stocks.

*2) Can the proposed action reasonably be expected to jeopardize the sustainability of any non-target species?*

None of the proposed specifications or RSA projects presented in this document is expected to jeopardize the sustainability of any non-target species. The proposed measures are not expected to alter fishing methods or activities. In addition, none of the proposed specifications or RSA projects is expected to increase fishing effort.

*3) Can the proposed action reasonably be expected to cause substantial damage to the ocean and coastal habitats and/or essential fish habitat as defined under the Magnuson-Stevens Act and identified in FMPs?*

The proposed action as described in section 7.0 of the EA is not expected to cause damage to the ocean, coastal habitats, and/or EFH as defined under the Magnuson-Stevens Act and identified in the FMP. In general, bottom-tending mobile gear, primarily otter trawls, has the potential to adversely affect EFH for the species detailed in section 6.2 of the EA. The quota-setting measures proposed in this action will either reduce the amount of time that bottom trawling vessels spend fishing for summer flounder, scup, and black sea bass, or maintain it at the same level as the status quo alternative. In either case, no adverse impacts to the marine habitats or EFH are expected. Similarly, none of the other measures included in the proposed action will have any adverse habitat impact.

*4) Can the proposed action be reasonably expected to have a substantial adverse impact on public health or safety?*

None of the measures alters the manner in which the industry conducts fishing activities for the target species. Therefore, no changes in fishing behavior that would affect safety are anticipated. The overall effect of the proposed actions on these fisheries, including the communities in which they operate, will not impact adversely public health or safety. NMFS will consider comments received concerning safety and public health issues.

*5) Can the proposed action reasonably be expected to adversely affect endangered or threatened species, marine mammals, or critical habitat of these species?*

None of the proposed specifications or RSA projects is expected to alter fishing methods or activities. None of the proposed specifications or RSA projects is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort (see section 7.0). Therefore, this action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on the fisheries.

*6) Can the proposed action be expected to have a substantial impact on biodiversity and/or ecosystem function within the affected area (e.g., benthic productivity, predator-prey relationships, etc.)?*

The proposed action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. This action merely revises the proposed annual commercial quotas and other management measures in 2008 for the summer flounder, scup, and black sea bass fisheries. None of the proposed specifications or RSA projects is expected to alter fishing methods or activities. None of the proposed specifications or RSA projects is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort.

*7) Are significant social or economic impacts interrelated with natural or physical environmental effects?*

The proposed action is not expected to have a substantial impact on the natural or physical environment. Commercial capture of summer flounder occurs predominately in the Mid-Atlantic mixed trawl fishery; in the Mid-Atlantic mixed trawl, pot/trap, and hook and line fisheries for scup; and in the pot/trap, Mid-Atlantic mixed trawl, and hook and line fisheries for black sea bass. Bottom otter trawls have a potential to impact bottom habitat. In addition, a number of non-target species are taken incidentally in the prosecution of these fisheries. However, none of the proposed specifications or RSA projects is expected to alter fishing methods or activities or is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, there are no social or economic impacts interrelated with significant natural or physical environmental effects.

*8) Are the effects on the quality of the human environment likely to be highly controversial?*

The impacts of the proposed measures on the human environment are described in section 7.0 of the EA. The proposed action merely revises the annual commercial quotas and recreational harvest limits in 2008 for the summer flounder, scup, and black sea bass fisheries. The proposed action is based on measures contained in the FMP, which have been in place for many years. In addition, the scientific information upon which the annual quotas are based has been peer reviewed and is the most recent information available. Thus, the measures contained in this action are not expected to be highly controversial.

*9) Can the proposed action reasonably be expected to result in substantial impacts to unique areas, such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas?*

This action merely revises the annual commercial quotas and recreational harvest limits in 2008 for the summer flounder, scup, and black sea bass fisheries. These fisheries are not known to be prosecuted in any unique areas such as historic or cultural resources, park land, prime farmlands, wetlands, wild and scenic rivers or ecologically critical areas. Therefore, the proposed action is not expected to have a substantial impact on any of these areas.

*10) Are the effects on the human environment likely to be highly uncertain or involve unique or unknown risks?*

The impacts of the proposed measures on the human environment are described in section 7.0 of the EA. The proposed action merely revises the annual commercial quota, recreational harvest limit, and other management measures in 2008 for the summer flounder, scup, and black sea bass fisheries. None of the proposed specifications or RSA projects is expected to alter fishing methods or activities or is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The measures contained in this action are not expected to have highly uncertain effects or to involve unique or unknown risks on the human environment.

*11) Is the proposed action related to other actions with individually insignificant, but cumulatively significant impacts?*

As discussed in section 7.6, the proposed action is not expected to have individually insignificant, but cumulatively significant impacts. The synergistic interaction of improvements in the efficiency of the fishery is expected to generate positive impacts overall. The proposed actions, together with past, present, and future actions, are not expected to result in significant cumulative impacts on the biological, physical, and human components of the environment.

*12) Is the proposed action likely to adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural or historical resources?*

The impacts of the proposed measures on the human environment are described in section 7.0 of the EA. The proposed action merely revises the annual commercial quota, recreational harvest limit, and other management measures in 2008 for the summer flounder, scup, and black sea bass fisheries. These summer flounder, scup, and black sea bass fisheries are not known to be prosecuted in any areas that might affect districts, sites, highways, structures, or objects listed in, or eligible for listing in, the National Register of Historic Places or cause the loss or destruction of significant scientific, cultural or historical resources. Therefore, the proposed action is not expected to affect any of these areas.

*13) Can the proposed action reasonably be expected to result in the introduction or spread of a nonindigenous species?*

This action proposes a commercial quota, a recreational harvest limit, and other management measures in 2008 for the summer flounder, scup, and black sea bass fisheries. There is no evidence or indication that these fisheries have ever resulted in the introduction or spread of nonindigenous species. None of the proposed specifications or RSA projects is expected to alter fishing methods or activities. None of the proposed specifications or RSA projects is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. Therefore, it is highly unlikely that the proposed action would be expected to result in the introduction or spread of a non-indigenous species.

*14) Is the proposed action likely to establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration?*

This action merely revises the proposed annual commercial quotas and recreational harvest limits 2008 for the summer flounder, scup, and black sea bass fisheries. None of the proposed specifications or RSA projects is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. When new stock assessment or other biological information about these species becomes available in the future, then the annual specifications will be adjusted according to the overfishing definitions contained in the FMP. None of these specifications or RSA projects results in significant effects, nor do they represent a decision in principle about a future consideration.

*15) Can the proposed action reasonably be expected to threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment?*

This action proposes commercial quotas and recreational harvest limits in 2008 for the summer flounder, scup, and black sea bass fisheries. None of the proposed specifications or RSA projects is expected to alter fishing methods or activities such that they threaten a violation of Federal, State, or local law or requirements imposed for the protection of the environment. In fact, the proposed measures have been found to be consistent with other applicable laws (see sections 8.2 - 8.11 below).

*16) Can the proposed action reasonably be expected to result in cumulative adverse effects that could have a substantial effect on the target species or non-target species?*

The impacts of the proposed alternatives on the biological, physical, and human environment are described in section 7.0. The cumulative effects of the proposed action on target and non-target species are detailed in section 7.6 of the EA. None of the proposed specifications or RSA projects is expected to increase fishing effort or the spatial and/or temporal distribution of current fishing effort. The synergistic interaction of improvements in the efficiency of the fishery through implementation of annual quotas based on the overfishing definitions contained in the FMP is expected to generate positive impacts overall.

**DETERMINATION**

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the 2008 summer flounder, scup, and black sea bass fisheries specifications, it is hereby determined that the proposed actions in this specification package will not significantly impact the quality of the human environment as described above and in the Environmental Assessment. In addition, all beneficial and adverse impacts of the proposed action have been addressed to reach the conclusion of no significant impacts. Accordingly, preparation of an EIS for this action is not necessary.

_____ _____

*Regional Administrator for NERO, NMFS, NOAA* *Date*

### 8.3 Endangered Species Act

Sections 6.3 and 7.0 should be referenced for an assessment of the impacts of the proposed action on endangered species and protected resources. None of the specifications proposed in this document are expected to alter fishing methods or activities. Therefore, this action is not expected to affect endangered or threatened species or critical habitat in any manner not considered in previous consultations on the fisheries.

### 8.4 Marine Mammal Protection Act

Sections 6.3 and 7.0 should be referenced for an assessment of the impacts of the proposed action on marine mammals. None of the specifications proposed in this document are expected to alter fishing methods or activities. Therefore, this action is not expected to affect marine mammals or critical habitat in any manner not considered in previous consultations on the fisheries.

### 8.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972, as amended, provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals. The Council has developed this specifications document and will submit it to NMFS; NMFS must determine whether this action is consistent to the maximum extent practicable with the CZM programs for each state (Maine through North Carolina).

### 8.6 Administrative Procedure Act

Sections 551-553 of the Federal Administrative Procedure Act establish procedural requirements applicable to informal rulemaking by federal agencies. The purpose is to ensure public access to the federal rulemaking process and to give the public notice and opportunity to comment before the agency promulgates new regulations.

The Administrative Procedure Act requires solicitation and review of public comments on actions taken in the development of an FMP and subsequent amendments and framework adjustments. Development of this specifications document provided many opportunities for public review, input, and access to the rulemaking process. This action and the proposed specifications document was developed through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during the Summer Flounder, Scup, and Black Sea Bass Monitoring Committee Meeting held on July 19, 2007 and during the MAFMC meeting held on August 6-9, 2007 in Port Jefferson, New York. In addition, the public will have further opportunity to comment on this specifications document once NMFS publishes a request for comments notice in the Federal Register (FR).

## 8.7 Section 515 (Data Quality Act)

### *Utility of Information Product*

This action proposes annual commercial quotas and recreational harvest limits in 2008 for the summer flounder, scup, and black sea bass fisheries. This document includes: A description of the alternatives considered, the Council-preferred action and rationale for selection, and any changes to the implementing regulations of the FMP. As such, this document enables the implementing agency (NMFS) to make a decision on implementation of annual specifications (i.e. management measures) and this document serves as a supporting document for the proposed rule.

The action contained within this specifications document was developed to be consistent with the FMP, MSA, and other applicable laws, through a multi-stage process that was open to review by affected members of the public. The public had the opportunity to review and comment on management measures during the Summer Flounder, Scup, and Black Sea Bass Monitoring Committee Meeting held on July 19, 2007 and during the MAFMC meeting held on August 6-9, 2007 in Port Jefferson, New York. The public will have further opportunity to comment once NMFS publishes a request for comments on the proposed regulations in the FR.

### *Integrity of Information Product*

The information product meets the standards for integrity under the following types of documents: Other/Discussion (e.g., Confidentiality of Statistics of the MSA; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the Marine Mammal Protection Act).

### *Objectivity of Information Product*

The category of information product that applies here is “Natural Resource Plans.” This section (section 8.0) describes how this document was developed to be consistent with any applicable laws, including MSA with any of the applicable National Standards. The analyses used to develop the alternatives (i.e. policy choices) are based upon the best scientific information available and the most up to date information is used to develop the EA which evaluates the impacts of those alternatives (see sections 4.4 and 7.0 of this document for additional details). The specialists who worked with these core data sets and population assessment models are familiar with the most recent analytical techniques and are familiar with the available data and information relevant to the summer flounder, scup, and black sea bass fisheries.

The review process for this specifications document involves MAFMC, NEFSC, NERO, and NOAA Fisheries headquarters. The NEFSC technical review is conducted by senior level scientists with specialties in fisheries ecology, population dynamics and biology, as well as economics and social anthropology. The MAFMC review process involves public meetings at which affected stakeholders have the opportunity to comments on proposed management measures. Review by NERO is conducted by those with expertise in fisheries management and

policy, habitat conservation, protected resources, and compliance with the applicable law. Final approval of the specifications document and clearance of the rule is conducted by staff at NOAA Fisheries Headquarters, the Department of Commerce, and the U.S. Office of Management and Budget.

### 8.8 Paperwork Reduction Act

The Paperwork Reduction Act (PRA) concerns the collection of information. The intent of the PRA is to minimize the Federal paperwork burden for individuals, small businesses, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the PRA.

### 8.9 Impacts of the Plan Relative to Federalism/EO 13132

This specifications document does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order (EO) 13132.

### 8.10 Environmental Justice/EO 12898

This EO provides that "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations." EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic, and social effects of Federal actions on minority populations, low-income populations, and Indian tribes, when such analysis is required by NEPA. Agencies are further directed to "identify potential effects and mitigation measures in consultation with affected communities, and improve the accessibility of meetings, crucial documents, and notices."

The proposed actions are not expected to affect participation in the summer flounder, scup, and black sea bass fisheries. Since the proposed action represents no changes relative to the current levels of participation in these fisheries, no negative economic or social effects are anticipated as a result (section 7.0). Therefore, the proposed action is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian tribes.

### 8.11 Regulatory Impact Review / Initial Regulatory Flexibility Analysis

NMFS requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement or significantly amend an FMP. The RIR in section 8.11.1 provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. This analysis reviews the problems and policy objectives prompting the regulatory proposals and evaluates the alternatives presented as a solution. This analysis

ensures that the regulatory agency systematically and comprehensively considers all available alternatives so public welfare can be enhanced in the most efficient and cost-effective way. This RIR addresses multiple items in the regulatory philosophy and principles of Executive Order (EO) 12866.

Also included under section 8.11.2 is an Initial Regulatory Flexibility Analysis (IRFA) which evaluates the economic impacts of the alternatives on small business entities. This analysis supports a more thorough analysis (RFA) which will be completed for the commercial specifications for the FMP species in 2008. The economic analyses presented for the various alternatives are principally for the commercial fishery. General statements on potential changes in the recreational fishery due to changes in recreational harvest limits for summer flounder, scup, and black sea bass are made in this document; however, the effects of specific recreational management measures (i.e., bag limits, size limits, and seasonal closures) will be analyzed and submitted along with the Council and Boards recommendations in a recreational specifications document after the December Council meeting.

### 8.11.1 Evaluation of EO 12866 Significance

#### 8.11.1.1 Description of the Management Objectives

A complete description of the purpose and need and objectives of this proposed rule is found under section 4.0. This action is taken under the authority of the MSA and regulations at 50 CFR part 648.

#### 8.11.1.2 Description of the Fishery

A description of the summer flounder, scup, and black sea bass fisheries is presented in section 6.0. A description of ports and communities that are dependent on summer flounder, scup, and black sea bass is found in section 3.4.2 of Amendment 13 to the FMP (MAFMC 2002). Recent landing patterns among ports are examined in section 6.4.3. An analysis of permit data is found in section 6.4.4.

#### 8.11.1.3 A Statement of the Problem

A statement of the problem for resolution is presented under section 4.0.

#### 8.11.1.4 A Description of Each Alternative

A full description of the alternatives analyzed in this section and the TAL derivation process is presented in sections 4.0 and 5.0.

### 8.11.1.5 The Economic Effects of Summer Flounder, Scup, and Black Sea Bass Effort Reductions

The economic benefits of the FMP have been reevaluated periodically. These analyses were conducted at the time a major amendment, framework adjustments, or annual specifications documents are developed and may be presumed to leave the conclusions reached in the initial FMP benefit-cost analyses unchanged, provided the original conservation and economic objectives of the plan are being met. The objectives of the FMP are detailed in section 4.2. All three species are currently under rebuilding plans as discussed in section 4.1; summer flounder, scup, and black sea bass are to be rebuilt by January 1, 2013, January 1, 2015, and January 1, 2010, respectively. Detailed description of stock status is provided in section 6.1. Commercial quotas and recreational harvest limits (based on overall TACs and/or TALs) are proposed through this specifications document to ensure overfishing does not occur and these stocks continues to grow towards their respective rebuilding targets. A fully rebuilt stock which allows fishing at $F_{MSY}$ should provide the maximum economic benefits to participants of these fisheries while ensuring sustainability. For summer flounder, scup, and black sea bass, coastwide commercial quotas have been implemented since 1993, 1997, and 1998 (section 4.1). While in some years overages have occurred in the commercial and/or recreational sectors for each of the managed species (see section 6.1 for additional discussion), adjustments have been made to bring overall landings within the quota specifications and continue to meet the objectives of the FMP.

### 8.11.1.6 Analysis of Alternatives

In order to conduct a more thorough socioeconomic analysis, overall impacts of the three species were examined in combination. For example, for 2008, quota alternative 1 (preferred alternative) would include the three preferred alternatives for summer flounder, scup, and black sea bass combined; quota alternative 2 (most restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined; and quota alternative 3 (least restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined. Overall impacts (i.e., combined impacts of summer flounder, scup, and black sea bass) were examined because many of the vessels active in these fisheries participate in more than one or even all three of these fisheries.

For each alternative, potential impacts on several areas of interest are discussed such that the economic effects of the various alternatives are comprehensively evaluated. The types of effects that should be considered include the following changes in landings, prices, consumer and producer benefits, harvesting costs, enforcement costs, and distributional effects. Due to the lack of an empirical model for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was adopted. Nevertheless, quantitative measures are provided whenever possible. A more detailed description of the economic concepts involved can be found in "Guidelines for Economic Review of National Marine Fisheries Service Regulatory Actions" (NMFS 2007), as only a brief summary of key concepts will be presented here.

Benefit-cost analysis is conducted to evaluate the net social benefit from changes in consumer and producer surpluses that are expected to occur upon implementation of a regulatory action. Total Consumer Surplus (CS) is the difference between the amounts consumers are willing to pay for products or services and the amounts they actually pay. Thus CS represents net benefit to consumers. When the information necessary to plot the supply and demand curves for a particular commodity is available, CS is represented by the area that is below the demand curve and above the market clearing price where the two curves intersect. Since an empirical model describing the elasticities of supply and demand for these species is not available, it was assumed that the price for these species was determined by the market clearing price or the intersection of the supply and demand curves. These prices were the base prices used to determine potential changes in prices due to changes in landings.

Net benefit to producers is producer surplus (PS). Total PS is the difference between the amounts producers actually receive for providing goods and services and the economic cost producers bear to do so. Graphically, it is the area above the supply curve and below the market clearing price where supply and demand intersect. Economic costs are measured by the opportunity cost of all resources including the raw materials, physical and human capital used in the process of supplying these goods and services to consumers.

One of the more visible societal costs of fisheries regulation is that of enforcement. From a budgetary perspective, the cost of enforcement is equivalent to the total public expenditure devoted to enforcement. However, the economic cost of enforcement is measured by the opportunity cost of devoting resources to enforcement vis à vis some other public or private use, and/or by the opportunity cost of diverting enforcement resources from one fishery to another.

***Methodology***

For purposes of this analysis, all alternatives are evaluated under assuming the primary measure for achieving the conservation objectives will be through changes in quota levels. All alternatives will be evaluated against a base line. The base line condition provides the standard against which all other alternative actions are compared. In this analysis, the base line condition is the adjusted quotas for 2007 (quotas adjusted for RSAs, and other adjustments due to transfers, overages, and/or quota restorations). This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative versus the fishing opportunities that were in place in 2007. Aggregate changes in fishing opportunities in 2008 (quotas adjusted for overages and RSAs) versus adjusted quotas for 2007 are shown in Table 16. Overages were determined and deducted appropriately from the upcoming fishing year's quota, e.g., by state for summer flounder, period for scup, or coastwide for black sea bass. In addition, 2008 quotas were also adjusted to account for RSAs and/or overages for those species. A detailed description of this process is presented in sections 4.0 and 5.0. The information presented in Table 16 was used to determine potential changes in landings (i.e., fishing opportunities) associated with the proposed quota levels associated with each of the alternatives evaluated in this analysis.

#### 8.11.1.6.1 Quota Alternative 1 (Preferred Alternative)

Under alternative 1, the preferred management measures are analyzed for summer flounder, scup, and black sea bass.

*Landings* - Under the preferred alternative, aggregate commercial landings for summer flounder, scup, and black sea bass are expected to be approximately 5, 40, and 15 percent lower in 2008 relative to 2007 adjusted quota, respectively.

*Prices* - It is possible that given the potential decrease in summer flounder, scup, and black sea bass landings, price for these species may increase if all other factors are held constant.

*Consumer Surplus* - Assuming the potential increase in the price of summer flounder, scup, and black sea bass, it is possible that CS associated with these fisheries may decrease.

*Harvest Costs* - No changes in harvest costs were identified under this alternative.

*Producer Surplus* - If there is a change in the price of summer flounder, scup, and black sea bass, there will be associated changes in PS. The magnitude of the PS change will be associated with the price elasticity of demand for the species in question.

The law of demand states that price and quantity demanded is inversely related. Given a demand curve for a commodity (good or service), the elasticity of demand is a measure of the responsiveness of the quantity that will be taken by consumers giving changes in the price of that commodity (while holding other variables constant). There are several major factors that influence the elasticity for a specific commodity. These factors largely determine whether demand for a commodity is price elastic or inelastic[5]: 1) the number and closeness of substitutes for the commodity under consideration, 2) the number of uses to which the commodity can be put; and 3) the price of the commodity relative to the consumer's purchasing power (income). There are other factors that may also determine the elasticity of demand but they are not mentioned here because they are beyond the scope of this discussion. As the number and closeness of substitutes and/or the number of uses for a specific commodity increase, the demand for the specific commodity will tend to be more elastic. Demand for commodities that take a large amount of the consumer's income are likely to be elastic compared to services with lower prices relative to the consumer's income. It has been argued that the availability of substitutes is the most important of the factors listed in determining the elasticity of demand for a specific commodity (Leftwich 1973; Awk 1988). Seafood demand in general appears to be elastic. In fact, for most species, product groups, and product forms, demand is elastic (Asche and Bjørndal 2003). For example, an increase in the ex-vessel price of summer flounder may increase PS. A decrease in the ex-vessel price of summer flounder may also increase PS if we assumed that the demand for summer flounder is moderate to highly elastic. However, the magnitude of these

[5] Price elasticity of demand is elastic when a change in quantity demanded is large relative to the change in price. Price elasticity of demand is inelastic when a change in quantity demanded is small relative to the change in price. Price elasticity of demand is unitary when a change in quantity demanded and price are the same.

changes cannot be fully assessed without knowledge of the exact shape of the market demand curve for these species.

*Enforcement Costs* - Properly defined, enforcement costs are not equivalent to the budgetary expense of dockside or at-sea inspection of vessels. Rather, enforcement costs from an economic perspective are measured by opportunity cost in terms of foregone enforcement services that must be diverted to enforcing summer flounder, scup, and black sea bass regulations. The proposed measures are not expected to change enforcement costs.

*Distributive Effects* - There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

**8.11.1.6.2 Quota Alternative 2 (Most Restrictive)**

Under alternative 2, the most restrictive measures are analyzed for summer flounder, scup, and black sea bass.

*Landings* - Under the most restrictive alternative, aggregate landings for summer flounder, scup, and black sea bass are expected to be approximately 30, 60, and 24 percent lower in 2008 relative to 2007 adjusted quota, respectively.

*Prices* - It is possible that given the substantial decrease in summer flounder, scup, and black sea bass landings, price for these species may increase if all other factors are held constant.

*Consumer Surplus* - Assuming the potential increase in the price of summer flounder, scup, and black sea bass, it is expected that CS associated with these fisheries may decrease.

*Harvest Costs* - No changes in harvest costs are identified under this alternative.

*Producer Surplus* - The discussion regarding the effects of elasticity of demand on PS given price changes presented under alternative 1 also apply here.

*Enforcement Costs* - The same definitions and assumptions regarding enforcement costs presented in alternative 1 also apply here. The proposed measures are not expected to change enforcement costs.

*Distributive Effects* - There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

**8.11.1.6.3 Quota Alternative 3 (Status Quo/Least Restrictive)**

Under alternative 3, the least restrictive measures are analyzed for summer flounder, scup, and black sea bass among. The overall quotas under this alternative are also the status quo measures for each FMP species.

*Landings* - Under the least restrictive alternative, aggregate landings for summer flounder, scup, and black sea bass are expected to be approximately 4, < 1, and 1 percent higher in 2008 relative to 2007. Note that even though the summer flounder, scup, and black sea bass quotas under alternative 3 are the status quo measures, the 2008 adjusted commercial quotas for these species are slightly different than the adjusted quotas implemented in 2007 mainly due to different levels of RSAs and/or other adjustments due to overages/quota restorations.

*Prices* - Given the likelihood that this alternative will result in small changes in landings for scup and black sea bass, it is assumed that there will not be a change in the price for these species. However, it is possible that the ex-vessel price for summer flounder may slightly decrease as a consequence of increased landings for that species.

*Consumer Surplus* - Assuming that prices behave as stated above, it is expected that there will not be a change in the CS associated with the scup and black sea bass fisheries. However, if summer flounder ex-vessel prices decrease, the CS associated with that fishery may increase.

*Harvest Costs* - No changes in harvest costs are identified under this alternative.

*Producer Surplus* - The discussion regarding the effects of elasticity of demand on PS given price changes presented under alternative 1 also apply here. Assuming that prices behave as stated above, it is expected that there will not be a change in the PS associated with the scup and black sea bass fisheries. However, a decrease in ex-vessel price of summer flounder may increase PS if we assumed that the demand curve for that species is moderately to highly elastic.

*Enforcement Costs* - The same definitions and assumptions regarding enforcement costs presented in alternative 1 also apply here. The proposed measures are not expected to change enforcement costs.

*Distributive Effects* - There are no changes to the quota allocation process for any of the species. As such, no distributional effects are identified under this alterative.

**8.11.1.6.4 Other Management Measures**

In addition to the quota alternatives discussed above, RSA measures are also proposed by the in this specifications document. These measures are fully described in sections 5.4 and 7.4. Under the RSA program, successful applicants receive a share of the annual quota for the purpose of conducting scientific research. The Nation will receive benefits from data and information produced through the RSA program that can be utilized for fisheries management or stock assessment purposes.

**8.11.1.6.5 Summary of Impacts**

The overall impacts of summer flounder, scup, and black sea bass landings on prices, consumer surplus, and producer surplus are difficult to determine without detailed knowledge of the relationship between supply and demand factors for these fisheries. In the absence of detailed

empirical models for these fisheries and knowledge of elasticities of supply and demand, a qualitative approach was employed to assess potential impacts of the proposed management measures.

The impact of each of the regulatory quota alternatives relative to the base year is summarized in Table 17. A "-1" indicates that the level the feature would be reduced given the action when compared to the base year. A "+1" indicates that the level a given feature would increase relative to the base year and a "0" indicates no change. In this analysis, the base line conditions are the adjusted quotas for 2007. This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative in 2008 versus the fishing opportunities that were in place in 2007.

Quota alternatives for 2008 - The preferred alternative (alternative 1) and the most restrictive alternative (alternative 2) may be expected to have similar overall directional impacts for summer flounder and black sea bass. However, the magnitude of impacts is expected to be higher under alternative 2 than alternative 1. These alternatives show a potential increase in the ex-vessel price for summer flounder, scup, and black sea bass, and thus potential decrease in consumer surplus in 2008 relative to the 2007 base year (except for scup under alternative 1). No significant changes in scup or black sea bass landings are expected under alternative 3. Thus, no changes in prices, producer surplus or consumer surplus are expected under the least restrictive alternative (alternative 3). However, it is possible that given the increase in landings under summer flounder alternative 3, the ex-vessel price for that species may decrease. Under this scenario CS may decrease and PS may increase (if it is assumed that that the demand curve for that species is moderately to highly elastic).

Overall, no changes in the competitive nature of these fisheries are expected to occur if any of these management measures are implemented in 2008. All the alternatives would maintain the competitive structure of the fishery, that is, there are no changes in the manner the quotas are allocated by region, period, or state from the base year. However, large reductions in quota levels from year to year may affect vessels differently due to their capability to adjust to quota changes.

No changes in enforcement costs or harvest costs have been identified for any of the evaluated alternatives.

Since empirical models describing the elasticities of supply and demand for these species are not available, we cannot determine with certainty the impact of changes in landings on prices, consumer surplus, or producer surplus. Therefore, in order to assess the potential net benefits of each of the combined quota alternatives, changes in ex-vessel gross revenues associated with each alternative were evaluated. More specifically, combined changes in landings for summer flounder, scup, and black sea bass in 2008 relative to the 2007 base year were derived to assess the potential changes in fishing opportunities between these two time periods. Potential changes in landings (i.e., fishing opportunities) for summer flounder, scup, and black sea bass were then multiplied by the overall 2006 ex-vessel price for each species to derive changes in net revenues which are used as a proxy for changes in net benefits. NMFS dealer data from Maine to Virginia

and NMFS general canvass data for North Carolina were used to derive the ex-vessel price for summer flounder from Maine through North Carolina, and for scup and black sea bass from Maine through Cape Hatteras, North Carolina. The ex-vessel prices for summer flounder, scup, and black sea bass in 2006 were estimated at $1.79/lb, $0.89/lb, and $2.50/lb, respectively. The aggregate percent change in landings in 2008 for summer flounder, scup, and black sea bass relative to the base year is presented in Table 16. The overall change in gross revenue in 2008 relative to 2007 is an approximate reduction of $4.92 and $11.43 million under alternatives 1 and 2, respectively; and an increase in revenue of $0.72 million under alternatives 3. These changes in revenues assume that the overall quota for each species will be taken in 2008, constant ex-vessel price (static prices) for each species, and that the overall quota for summer flounder, scup, and black sea bass will be taken in 2007. However, if prices for these species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated.

The changes in gross revenues indicate that alternative 3 will likely provide a small net benefit gain; while alternative 1 would provide the smallest benefit loss and alternative 2 would provide the largest benefit loss in 2008. While alternative 3 provides the largest net benefits among all the evaluated alternatives, it was not chosen as the preferred alternative because it does not meet the overall recovery objectives of the FMP. Alternative 1 (preferred) on the other hand establishes required commercial landings limits that address the objectives of the FMP. It is important to mention that the estimated benefits derived above are likely to correspond to the upper/lower limits due to the fact that it was assumed in the derivation that all available commercial TALs would be harvested and 2006 ex-vessel prices are constant.

It is important to mention that although the commercial measures that are evaluated in this specifications document are for 2008 only, these measures could have potential cumulative impacts. The extent of any cumulative impacts from measures established in previous years is largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures compensated for any quota overages such as those detailed in section 6.1. Section 7.6 discusses the cumulative impacts of the measures established in previous years. This information is important because it allows for the evaluation of projected results from the implementation of specific management measures versus actual results.

The proposed action does not constitute a significant regulatory action under EO 12866 for the following reasons. First, it will not have an annual effect on the economy of more than $100 million. The total value of all commercial landings of these species combined is approximately $44.0 million. Based on preliminary unpublished NMFS dealer data from Maine to Virginia, and South Atlantic unpublished General Canvass for North Carolina, the 2006 total commercial value for summer flounder was estimated at $28.7 million from Maine through North Carolina, and at $7.7 million and $7.6 million for scup and black sea bass from Maine to Cape Hatteras, NC, respectively. As estimated above, assuming 2006 ex-vessel prices and the potential change in landings due to the adjusted quotas in 2008 (relative to the adjusted 2007 quotas), the overall reduction in gross revenue under the preferred alternative would be $4.92 million in 2008 relative to 2007. The preferred alternative, and RSA measures, being considered by this action are necessary to advance the recovery of summer flounder, scup and black sea bass stocks, and to

establish the harvest of these species at sustainable levels. The action benefits in a material way the economy, productivity, competition and jobs. The action will not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. Second, the action will not create a serious inconsistency or otherwise interfere with an action taken or planned by another agency. No other agency has indicated that it plans an action that will affect the summer flounder, scup or black sea bass fisheries in the EEZ. Third, the actions will not materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of their participants. And, fourth, the actions do not raise novel, legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in EO 12866.

### 8.11.2 Initial Regulatory Flexibility Analysis

The Regulatory Flexibility Act (RFA) requires the federal rulemaker to examine the impacts of proposed and existing rules on small businesses, small organizations, and small governmental jurisdictions. In reviewing the potential impacts of proposed regulations, the agency must either certify that the rule "will not, if promulgated, have a significant economic impact on a substantial number of small entities." A determination of substantial depends on the context of the proposed action, the problem to be addressed, and the structure of the regulated industry. Standards for determining significance are discussed below. Negative economic impacts are anticipated as a result of this action due to quota decrease in the summer flounder (5 percent), scup (40 percent), and black sea bass (15 percent) fisheries contained in the preferred alternative. An IRFA was prepared to further evaluate the economic impacts of the three quota alternatives and other non-quota measures (i.e., gear requirements and possession limits) on small business entities. This analysis is undertaken in support of a more thorough analysis for the 2008 commercial specifications for fishing for summer flounder, scup, and black sea bass.

#### 8.11.2.1 Description of the Reasons Why Action by the Agency is being Considered

A complete description of the purpose and need and objectives of this proposed rule is found under section 4.0. A statement of the problem for resolution is presented under section 4.0.

#### 8.11.2.2 The Objectives and legal basis of the Proposed Rule

A complete description of the objectives of this proposed rule is found under section 4.0. This action is taken under the authority of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) and regulations at 50 CFR part 648.

#### 8.11.2.3 Estimate of the Number of Small Entities

The potential number of small entities that may be affected by the proposed rule is presented below.

### 8.11.2.4 Reporting Requirements

There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

### 8.11.2.5 Conflict with Other Federal Rules

This action does not duplicate, overlap, or conflict with other federal rules.

A description of the summer flounder, scup, and black sea bass fisheries is presented in section 6.0 of this document and section 3.0 of Amendment 13 to the FMP (MAFMC 2002). A description of ports and communities that are dependent on summer flounder, scup, and black sea bass is found in section 3.4.2 of Amendment 13 to the FMP (MAFMC 2002). Recent landing patterns among ports are presented in section 6.4.3 and an analysis of permit data is found in section 6.4.4. A full description of the alternatives analyzed in this section and the TAL derivation process is presented in sections 4.4 and 5.0. A brief description of each alternative is presented below for reference purposes.

The Small Business Administration (SBA) defines a small business in the commercial fishing and recreational fishing activity, as a firm with receipts (gross revenues) of up to $4.0 and $6.5 million, respectively. The proposed measures regarding the 2008 summer flounder, scup, and black sea bass quotas could affect any vessel holding an active federal permit for summer flounder, scup, or black sea bass as well as vessels that fish for any one of these species in state waters. Data from the Northeast permit application database shows that in 2006 there were 2,253 vessels that were permitted to take part in the summer flounder, scup, and/or black sea bass fisheries (both commercial and party/charter sectors). These permitted vessels may be further categorized depending upon which permits or combinations of permits that were held (see section 6.4.4). Table 5 reports the number of vessels by possible combination of permits. For example, the proposed quota for scup could potentially affect all scup permit holders. However, active participants are more likely to be affected in the near term. All permitted vessels readily fall within the definition of small business.

Since all permit holders may not be actively fishing and land any of the three species, the more immediate impact of the rule may be felt by the 903 commercial vessels that are active participants in these fisheries (Table 18). An active participant was defined as being any vessel that reported having landed one or more pounds of any one of the three species in the Northeast dealer data during calendar year 2006. The dealer data covers activity by unique vessels that hold a federal permit (of any kind) and provides summary data for vessels that fish exclusively in state waters. This means an active vessel may be a vessel that holds a valid federal summer flounder, scup, or black sea bass permit; a vessel that holds a valid federal permit but no summer flounder, scup or black bass permit; a vessel that holds a federal permit other than summer flounder, scup, or black sea bass and fishes for those species exclusively in state waters; or may be vessel that holds no federal permit of any kind. Of the four possibilities the number of vessels in the latter two categories cannot be estimated because the dealer data provides only summary

information for state waters vessels, and because the vessels in the last category do not have to report landings. Of the active vessels reported in Table 18, 230 commercial vessels did not hold a valid federal permit for summer flounder, scup, or black sea bass during calendar year 2006.

In this IRFA, the primary unit of observation when performing a threshold analysis is vessels that participated in any one or more of the three fisheries (summer flounder, scup, and black sea bass) during calendar year 2006, irrespective of their current permit status. Not all landings and revenues reported through the federal dealer data can be attributed to a specific vessel. Vessels without federal permits are not subject to any federal reporting requirements with which to corroborate the dealer reports. Similarly, dealers that buy exclusively from state waters only vessels and have no federal permits, are also not subject to federal reporting requirements. Thus, it is possible that some vessel activity cannot be tracked with the landings and revenue data that are available. Therefore, these vessels cannot be included in the threshold analysis, unless each state was to report individual vessel activity through some additional reporting system - which currently does not exist. This problem has two consequences for performing threshold analyses. First, the stated number of entities subject to the regulation is a lower bound estimate, since vessels that operate strictly within state waters and sell exclusively to non-federally permitted dealers cannot be counted. Second, the portion of activity by these uncounted vessels may cause the estimated economic impacts to be over- or underestimated.

The effects of actions were analyzed by employing quantitative approaches to the extent possible. Where quantitative data were not available, qualitative analyses were conducted. In the current analysis, effects on profitability associated with the proposed management measures should be evaluated by looking at the impact the proposed measures on individual vessel costs and revenues. However, in the absence of cost data for individual vessels engaged in these fisheries, changes in gross revenues are used a proxy for profitability.

In order to conduct a more thorough socioeconomic analysis, overall impacts of the three species combined were examined in combination. For example, for 2008, quota alternative 1 (preferred alternative) would include the three preferred alternatives for summer flounder, scup, and black sea bass combined; quota alternative 2 (most restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined; and quota alternative 3 (least restrictive alternative) would include the three most restrictive alternatives for summer flounder, scup, and black sea bass combined. Overall impacts (i.e., combined impacts of summer flounder, scup, and black sea bass) were examined because many of the vessels active in these fisheries participate in more than one or even all three of these fisheries.

Procedurally, the economic effects of the quota alternatives were estimated using four steps. First, the Northeast dealer data were queried to identify all vessels that landed at least one or more pounds of summer flounder, scup, or black sea bass in calendar year 2006. The fact that individual owners' business organization may differ from one another is reflected in the different combinations of species landed by these vessels. Thus, for purposes of the threshold analysis, active vessels were grouped into seven classes or tiers (Table 18) based on combinations of summer flounder, scup and black sea bass landings. In this manner, the original universe of vessels is treated as seven distinct "sub-universes" with a separate threshold analysis conducted

for each. Note that the States of Connecticut and Delaware report canvas (summary) data to NMFS, so landings and revenues by individual vessels cannot be included. Thus, vessels that land exclusively in those states cannot be analyzed. Vessels that land in these, plus other states, are analyzed - but landings and revenues represent only that portion of business conducted in states other than Connecticut and Delaware. It is presumed that the impacts on vessels that cannot be identified will be similar to the participating vessels that are analyzed herein.

The second step was to estimate total revenues from all species landed by each vessel during calendar year 2006. This estimate provides the base from which subsequent quota changes and their associated effects on vessel revenues were compared. Since 2006 is the last full year of data available (partial year data from 2007 could miss seasonal fisheries), it was chosen as the base year for the analysis. As such, 2006 data were used as a proxy for 2007.

The third step was to deduct or add, as appropriate, the expected change in vessel revenues depending upon which of the three quota alternatives were evaluated. This was accomplished by estimating proportional reductions or increases in the three quota alternatives for 2008 for all three species versus the base quota year 2007. Landings to date, overages/quota restorations, and RSA estimates were employed to adjust the 2008 quotas. For the purpose of estimating the 2008 quotas and revenue changes, the following assumptions were made: a) states with overages at the time of the analysis will harvest no additional summer flounder, and the industry will fully harvest, and not exceed, the remaining 2007 state allocations; b) no additional summer flounder overages will occur in 2007; c) the black sea bass and scup quotas will be fully harvested and not to exceed the 2007 allocation; and d) the entire summer flounder, scup, and black sea bass quota allocations will be taken in 2008. Detailed description of the 2008 quota derivation process is presented in sections 4.4 and 5.0.

The fourth step was to compare the estimated 2008 revenues from all species to the 2007 base revenues for every vessel in each of the seven classes to assess potential changes. For each quota alternative a summary table was constructed that report the results of the threshold analysis by class when necessary. These results were further summarized by home state as defined by permit application data, when appropriate.

The threshold analysis just described is intended to identify impacted vessels and to characterize the potential economic impact on directly affected entities. In addition to evaluating if the proposed regulations reduce profit for a significant number of small entities, the RFA also requires that disproportionality be evaluated. Disproportionality is judged to occur when a proportionate affect on profits, costs, or net revenue is expected to occur for a substantial number of small entities when compared to large entities; that is, if a regulation places a substantial number of small entities at a significant competitive disadvantage. According to the SBA definition of small business presented above, all permitted vessels in these fisheries readily fall within the definition of small business. Therefore, there are no disproportionality issues.

To further characterize the potential impacts on indirectly impacted entities and the larger communities where owners of impacted vessels reside, selected county profiles are typically constructed. Each profile is based on impacts under the most restrictive possible because it

would identify the maximum number possible and thus include the broadest possible range of counties in the analysis. The following criteria was employed to derive the range of counties profiled: a) the number of vessels with revenue losses exceeding 5 percent per county was either greater than 4, or b) all vessels with losses exceeding 5 percent in a given state were from the same home county. It is expected that this system will allow for a county profile that may include a wide range of potentially affected areas.

Based on these criteria, a total of 30 counties were identified to be impacted in 2008: New London, CT; Sussex, DE; Barnstable, Bristol, Dukes, Essex, Plymouth, and Suffolk, MA; Cumberland, ME; Atlantic, Cape May, Monmouth, and Ocean, NJ; Nassau, New York, and Suffolk, NY; Beaufort, Carteret, Craven, Dare, Hyde, and Pamlico, NC; Philadelphia, PA; Newport, and Washington, RI; Accomak, City of Hampton, City of Newport News, Virginia Beach City , and City of Norfolk, VA. Counties not included in this analysis (e.g., Fairfield, CT; Kent, DE; York and Lincoln, ME; Nantucket, MA; Rockingham, NH; Queens, NY; Kent, RI; City of Newport News and York, VA) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county. The target counties were identified based on the county associated with the vessels homeport as listed in the owner's 2006 permit application.

Counties are typically selected as the unit of observation because a variety of secondary economic and demographic statistical data were available from several different sources. Limited data are available for place names (i.e., by town or city name) but in most instances reporting is too aggregated or is not reported due to confidentiality requirements. Reported statistics include demographic statistics, employment, and wages.

### 8.11.3 Description of Quota Alternatives

#### 8.11.3.1 Quota and Non-Quota Alternatives

Alternative 1 includes the harvest levels recommended for summer flounder, scup, and black sea bass on vessels that are permitted to catch any of these three species. Harvest levels were recommended to achieve the target fishing mortality or exploitation rates specified in the rebuilding schedule for each species. This alternative contains the scup and black sea bass monitoring committee recommended TALs. A detailed description of all of these measures for the three species was presented under section 5.0. A brief discussion and impact of these measures is presented below.

Alternative 2 includes the most restrictive harvest levels, i.e., those that would result in the greatest reductions in landings (relative to 2007) for summer flounder, scup, and black sea bass. This alternative includes non-preferred alternatives for all three species. This alternative contains the summer flounder monitoring committee recommended TAL.

Alternative 3 includes the least restrictive harvest levels, i.e., those that would result in the least reductions (or greatest increases) in landings (relative to 2007) for all species. This alternative includes non-preferred alternatives for all three species. The quotas under this alternative are the

status quo quotas for all three species. These limits resulted in the highest possible landings for 2008, regardless of their probability of achieving the biological targets.

### 8.11.4 Analyses of Impacts of Alternatives

In the analysis of the following alternatives, several assumptions were made. First, average revenue changes noted in this analysis were evaluated using 2006 dealer data and participation. In addition to this, 2006 permit files were used to describe permit holders in these fisheries. It is important to mention that revenue changes for 2008 are dependent upon previous landings and overages. Overages were determined and deducted appropriately from the upcoming fishing year's quota, i.e., by state for summer flounder, period for scup, or coastwide for black sea bass. In addition, 2008 quotas were also adjusted to account for RSAs.

For the analyses themselves, reductions are estimated by examining the total revenue earned by an individual vessel in 2006, and comparing it to its potential revenue in 2008, given the changes in fishing opportunity (harvest levels) from 2007 to 2008. Generally, the percent of a vessel's revenue reduction varies considerably based on the permits it holds (i.e., based on the fisheries in which it was able to participate) and species it landed. Diversity in the fleet helps to balance loss in one fishery with revenue generated from other fisheries. Lastly, it is important to keep in mind that while the analyses are based on landings for federally permitted vessels only, those vessels may be permitted to, and frequently do, fish in state waters for a species of fish for which it does not hold a federal permit.

#### 8.11.4.1 Quota Alternative 1 (Council-Preferred)

This alternative examines the impacts on industry that would result from the preferred harvest levels for summer flounder, scup, and black sea bass. To analyze the economic effects of this alternative, the total harvest levels specified under section 5.0 were employed. Alternative 1 contains adjusted commercial quotas of 9.32, 5.30, 2.03 million lb for summer flounder, scup, and black sea bass, respectively. This alternative also specifies adjusted recreational landings limits of 6.21, 4.56, and 2.11 million lb for flounder, scup, and black sea bass, respectively.

Under this alternative, the summer flounder specifications would result in an aggregate 5 percent decrease in allowable commercial landings and a 7 percent decrease in recreational harvest limit relative to the 2007 allocations (Tables 16 and 19). The scup specifications would result in a 40 percent decrease allowable commercial landings and a 34 percent decrease in the recreational harvest limit relative to the 2007 allocations (Tables 16 and 20). The black sea bass specifications would result in approximately aggregate 15 percent decrease in both allowable commercial landings and recreational harvest limit relative to the 2007 allocations (Tables 16 and 21).

##### 8.11.4.1.1 Commercial Impacts

The results of the threshold analysis are presented in Table 22. The analysis of the harvest levels under this alternative indicate that the economic impacts ranged from expected revenue losses on

the order of < 5 percent for 115 vessels (relative to 2007) that landed combinations of summer flounder with scup, or summer flounder with black sea bass, or landed combinations of summer flounder, scup, and black, or landed summer flounder only to revenue losses of $\geq$ 50 percent for 2 vessels that landed summer flounder only. In total, 733 vessels are projected to incur revenue reduction of $\geq$ 5 percent. More specifically, 374 vessels are projected to incur revenue reductions in the order of 5-9 percent, 249 vessels are projected to incur revenue reductions in the order of 10-19 percent, 60 vessels are projected to incur revenue reductions in the order of 20-29 percent, 29 vessels are projected to incur revenue reductions in the order of 30-39 percent, 19 vessels are projected to incur revenue reductions in the order of 40-49 percent, and 2 vessels are projected to incur revenue reductions in the order of $\geq$ 50 percent. In addition, 55 vessels were projected to be impacted by revenue increase that landed summer flounder only or in combination with scup and/or black sea bass. .

It is important to mention that while summer flounder state allocations for 2008 under alternative 1 are lower in 2008 compared to 2007, the 2008 adjusted quota allocation to New York is 15 percent higher than the adjusted quota for that state in 2007 (see Table 16 and section 7.1.4). As such, some vessels are projected to incur in revenue increases even thought the overall commercial adjusted quotas for all three species are lower in 2008 compared to 2007 under this alternative

Given that a large number of vessels are projected to incur large revenue reduction, Council staff further examined the level of ex-vessel revenues for the impacted vessel to assess further impacts. For example, according to dealer data, it was estimated that 40 percent of the vessels (149 out of 374 vessels) projected to incur revenue reductions of 5-9 percent had total gross sales (all possible species combined not just summer flounder, scup, and black sea bass in 2006) of $1,000 or less and 63 percent (236 vessels) had total gross sales of $10,000 or less. Furthermore, 33 percent of the vessels (82 out of 249 vessels) projected to incur revenue losses of 10-19 percent had total gross sales of approximately $1,000 or less and 55 percent (138 vessels) had total gross sales of $10,000 or less; 13 percent of the vessels (8 out of 60 vessels) projected to incur revenue losses of 20-29 percent had total gross sales of approximately $1,000 or less and 28 percent (17 vessels) had total gross sales of $10,000 or less; 28 percent of the vessels (8 out of 29 vessels) projected to incur revenue losses of 30-39 percent had total gross sales of approximately $1,000 or less and 55 percent (16 vessels) had total gross sales of $10,000 or less; 53 percent of the vessels (10 out of 19 vessels) projected to incur revenue losses of 40-49 percent had total gross sales of approximately $1,000 or less and 89 percent (17 out of 19 vessels) had total gross sales of $10,000 or less; and 100 percent of the vessels (2 out of 2 vessels) projected to incur revenue losses of $\geq$ 50 percent had total gross sales of $1,000 or less.

While the analysis presented above indicates that in relative terms a large number of vessels (733) are likely to be impacted with revenue reductions of more than 5 percent or more, 35 percent of these vessels (259 vessels) had gross sales of $1,000 or less and 58 percent of the impacted vessels (424 vessels) had gross sales of $10,000 or less, thus likely indicating that the dependence on fishing for some of these vessels is very small.

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 23). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of vessels with revenue reduction of < 5 percent by home state ranged from less than 1 in most states to 77 in Massachusetts. The number of vessels with revenue reduction of ≥ 5 percent, ranged from 2 vessels in Virginia to 135 vessels in New Jersey.

By virtue of holding a valid federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries, a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allows.

The majority of the revenue losses of 5 percent or higher are attributed to quota reductions associated with the three fisheries. Since there is a number of vessels that could experience large revenue reductions under this alternative, additional analysis regarding these vessels is presented below (e.g., evaluation of permit status, geographic distribution of permitted vessel).

Of the 733 vessels showing revenue reduction of ≥ 5 percent, 523 are identified as holders of federal summer flounder, scup, or black sea bass permits. The 523 vessels holding various combinations of summer flounder, scup, and black sea bass permits are described in Table 24. It is most common for vessels to have permits for all 3 species and summer flounder only permits.

Many of the vessels projected to have revenue reductions in the ≥ 5 percent range hold permits in other fisheries (Table 25). In particular, most vessels have bluefish, squid-mackerel-butterfish, dogfish, skate, and tilefish incidental permits. As a result, they have access to some alternative fisheries, although some like multispecies, dogfish, and scallops, are already under heavy regulation and likely to have increasingly stringent catch limits for the near future.

The majority of the impacted vessels (revenue reduction of ≥ 5 percent) with federal permits for summer flounder, scup and/or black sea bass have home ports in New Jersey, Rhode Island, North Carolina, and Massachusetts. The principal ports of landing for these vessels are also mainly located New Jersey, Rhode Island, North Carolina, and Massachusetts (Table 26).

Although the summer flounder quota is allocated to the individual states, vessels are not necessarily constrained to land in their home state. It is useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. Thus, of the various states home-porting vessels projected to have revenue reductions in

the ≥ 5 percent range, vessels in those states are likely to land in their home port state (85-100 percent; Table 26). This information is important because impacts will occur both in the community of residence and in the community where the vessel's catch is landed and sold.

The largest vessels are found in Connecticut, North Carolina, Maine, Massachusetts, and Pennsylvania (Table 26). Larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes to remain profitable.

Most commercial vessels showing revenue reductions in the ≥ 5 percent range are concentrated in New Jersey, Rhode Island, North Carolina, New York, Massachusetts, and Virginia (Table 27). Within these states, the most impacted counties (largest number of impacted vessels) are: Ocean, Cape May, and Monmouth counties in New Jersey; Washington and Newport counties in Rhode Island; Dare, Carteret, Pamlico, and Hyde counties in North Carolina; Suffolk and New York City in New York; Bristol and Suffolk counties in Massachusetts; and City of Norfolk and Virginia Beach City counties in Virginia. Some individual ports with large numbers of impacted vessels (10 or more) in these counties are: New Bedford (Bristol county) and Boston (Suffolk county) in Massachusetts; Cape May (Cape May county), Belford (Monmouth county), Barnegat Light, and Point Pleasant (Ocean county) in New Jersey; New York (New York City county) and Montauk (Suffolk county) in New York; Beaufort (Carteret county), Wanchese (Dare county), and Oriental (Pamlico county) in North Carolina; Point Judith (Washington county) in Rhode Island; and Nortfolk (City of Norfolk county) in Virginia. If communities having larger numbers of impacted vessels also have a larger total numbers of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole.

To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles were constructed. The profile is based on impacts under the most restrictive possible alternative. The most restrictive alternative is chosen to identify impacted counties because it would identify the maximum number possible and thus include the broadest possible range of counties in the analysis. Reported statistics including demographic statistics, employment, and wages for these counties is presented in section 8.11.5 below. In addition, a description of important ports and communities to the summer flounder, scup, and black sea bass fisheries is presented in Amendment 13 to the FMP (MAFMC 2002). Recent landings patterns among ports are examined in section 6.4.3.

In addition to the threshold analysis described above, the Council also analyzed changes in total ex-vessel gross revenue that would occur as a result of the quota alternatives. NMFS dealer data from Maine to Virginia and NMFS general canvass data for North Carolina were used to derive the ex-vessel price for summer flounder from Maine through North Carolina, and for scup and black sea bass from Maine through Cape Hatteras, North Carolina. Assuming 2006 ex-vessel prices (summer flounder -- $1.79/lb; scup -- $0.89/lb; and black sea bass -- $2.50/lb), the 2008 quotas associated with the preferred alternative would decrease summer flounder, scup, and

black sea bass revenues by approximately $0.84, $3.20, and $0.88 million, respectively, relative to the quota implemented in 2007.

Assuming the decrease in summer flounder total ex-vessel gross revenues associated with the preferred alternative is distributed equally among the 735 vessels that landed summer flounder in 2006, the average decrease in revenue associated with the decrease in summer flounder quota is approximately $1,143/vessel. Assuming the decrease in scup total ex-vessel gross revenues associated with this alternative is distributed equally among the 419 vessels that landed scup in 2006, the average decrease in revenue associated with the decrease in scup quota is approximately $7,637/vessel. Finally, assuming the decrease in black sea bass total ex-vessel gross revenues associated with this alternative is distributed equally among the 536 vessels that landed black sea bass in 2006, the average decrease in revenue associated with the decrease in black sea bass quota is approximately $1,642/vessel.

The overall reduction in ex-vessel gross revenue associated with summer flounder, scup, and black sea bass combined in 2008 relative to quotas implemented in 2007 is approximately $4.92 million (assuming 2006 ex-vessel prices) under the preferred alternative. If this is distributed among the 903 vessels that landed summer flounder and black sea bass in 2006, the average decrease in revenue is approximately $5,449/vessel. The changes in ex-vessel gross revenues associated with the potential changes in quotas in 2008 versus 2007 assumed static prices for summer flounder, scup, and black sea bass. However, if prices for these species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated above.

Overall, the projected decrease in landings in 2008 under this alternative will likely result in revenue reduction for summer flounder, scup, and black sea bass. However, it is possible that given the potential decrease in summer flounder, scup, and black sea bass landings, price for these species may increase holding all other factors constant. If this occurs, an increase in the price for these species may mitigate some of the revenue reductions associated with lower quantities of quota availability under this alternative.

It is important to stress that these changes as well as those described under the other alternatives represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to possession limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2008 for quota overages in 2007 that were not accounted for here.

#### 8.11.4.1.2 Recreational Impacts

As indicated in the executive summary, the management measures addressed in this specifications document include commercial quotas, recreational harvest limits, and other measures to ensure that the annual fishing targets specified in the FMP for these species are attained. The economic analyses presented for the various alternatives are principally for the commercial fisheries. While general statements regarding potential changes in the recreational

fisheries due to changes in recreational harvest limits for summer flounder, scup, and black sea bass are made in this document, the effects of specific recreational management measures (i.e., bag limits, size limits, seasonal closures) will be analyzed when the Mid-Atlantic Fishery Management Council (Council) and Atlantic States Marine Fisheries Commission's (Commission) Summer Flounder, Scup and Black Sea Bass Board (Board) submit recommendations for 2008 recreational measures. The Council and the Board will meet in December 2007 to adopt 2008 recreational management measures, when more complete data regarding 2007 recreational landings are available. A comprehensive document for the recreational specifications for summer flounder, scup, and black sea bass will be prepared after the December Council meeting.

Landing statistics from the last several years show that recreational summer flounder landings have generally exceeded the recreational harvest limits, ranging from 5 percent in 1993 to 122 percent in 2000. In 1994-1995, summer flounder landings were below the recreational harvest limit by approximately 20 percent for both years combined. In 2004 and 2005, recreational landings were 0.34 (3 percent) and 1.40 million lb (12 percent) below the limits for those years, respectively. For 2006, recreational landings were 2.22 million lb (24 percent) above the limit for that year (Table 19).

Summer flounder continues to be an important component of the recreational fishery. Estimation of primary species sought as reported by anglers in recent intercept surveys indicate that summer flounder has shown an upward trend in importance in the U.S. from Maine through North Carolina combined. The number of trips for which recreational anglers targeted summer flounder have shown an upward trend from the early 1990s to the early/mid 2000s. Summer flounder recreational trips averaged 5.1 million for the 1991 to 2006 period, ranging from 3.8 million in 1992 to 6.1 in 2001. For the 2004 to 2006 period, summer flounder recreational fishing trips were estimated at 5.1, 5.7, and 5.4 million, respectively (Table 19).

Under this alternative, the summer flounder 2007 recreational harvest limit (adjusted for RSA) is 6.21 million lb. Thus, the harvest limit in 2008 would represent a decrease of approximately 7 percent (0.47 million lb) from the 2007 limit. If recreational landings are the same in 2007 as in 2006 (11.51 million lb), the adjusted recreational harvest limits will not constrain recreational landings in 2008. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) be required to prevent anglers from exceeding the recreational harvest limit in 2008. It is expected that this alternative will likely decrease recreational satisfaction for the summer flounder recreational fishery, relative to the status quo alternative. At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed by way of adjustments to the management measures. While it is likely that proposed management measures may restrict the recreational fishery for 2008, and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures may lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable (see recreational

fishing trends below). It is unlikely that these measures will result in any substantive decreases in the demand for party/charter boat trips. However, it is likely that even thought anglers may face more restrictive recreational limits in 2008, they will likely be able to keep some of the fish they catch and could also engage in catch and release fishing. Anglers that choose to reduce their effort in 2008 as a consequence of these recreational harvest limits are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.) resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing.

Scup recreational landings have declined over 89 percent for the period 1991 to 1998, then increased by 517 percent from 1998 to 2000 (Table 20). The number of fishing trips has also declined over 73 percent from 1991 to 1998, and then increased by 127 percent from 1998 to 2000. The decrease in the recreational fishery in the 1990s occurred both with and without any recreational harvest limits, and it is perhaps a result of the stock being over-exploited and at a low biomass level during that period. In addition, it is possible that party/charter boats may have targeted other species that were relatively more abundant than scup (e.g., striped bass), thus accounting for the decrease in the number of fishing trips in this fishery in the 1990s. Recreational landings decreased from 5.44 million lb in 2000 to 3.62 million lb in 2002 (33 percent decrease). In 2003, recreational landings increased to 8.43 million lb (133 percent), these landings were the highest for the 1991 to 2006 period. Recreational landings decreased in 2005 and 2006 to 2.5 and 3.0 million lb respectively. The number of trips for which recreational anglers targeted scup have shown a slight upward trend from the early 1990s to the early/mid 2000s. Scup recreational trips averaged 456 thousand for the 1991 to 2006 period, ranging from 199 thousand in 1997 to 972 thousand in 2003. For 2005 and 2006, scup recreational fishing trips were estimated at 479 and 467 thousand, respectively (Table 20).

Under this alternative, the scup 2008 recreational harvest limit (adjusted for RSA) is 1.82 million lb. Thus, the harvest limit in 2008 would represent a decrease of approximately 34 percent from the 2007 recreational limit. If recreational landings are the same in 2007 as in 2006 (2.95 million lb), the adjusted recreational harvest limit is not expected to constrain recreational landings in 2008. As such, it is likely that more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) be required to prevent anglers from exceeding the recreational harvest limit in 2008. It is likely decrease recreational satisfaction for the scup recreational fishery, relative to the status quo alternative. However, it is not expected that this will result in any substantive decreases in the demand for party/charter boat trips. As indicated above, the market demand for this sector is relatively stable (see recreational fishing trends below).

Black sea bass recreational fishing trips have shown a slight downward trend from the early to Mid-1990's (Table 21). However, for the last 10 years black sea bass recreational trips have leveled. Black sea bass recreational landings have shown a slight upward trend from 1991 to 1997. Black sea bass landings decreased considerably from 1995-1996 to 1998-1999, but then substantially increased in 2002 to 4.35 million lb. In 2003-2006, recreational landings were

3.45, 1.95, 2.10, and 1.77 million lb, respectively. For the 2005 and 2006 period combined, recreational landings were 3.92 million pounds (48 percent) below the harvest limit. Black sea bass recreational fishing trips have averaged 247 thousand for the 1991 to 2006 period, ranging from approximately 136,000 in 1999 to 314,000 in 1995. In 2006, recreational trips for this species were approximately 252,000 (Table 21).

Under this alternative, the black sea bass 2008 recreational harvest limit (adjusted for RSA) is 2.11 million lb. Thus, the harvest limit in 2008 would represent a decrease of 15 percent from the 2007 recreational harvest limit. However, if recreational landings are the same in 2007 as in 2006 (2.10 million lb), the adjusted recreational harvest limit is expected to constrain recreational landings in 2008. As such, more restrictive limits (i.e., lower possession limits, greater minimum size limits, and/or shorter seasons) are not necessary to prevent anglers from exceeding this recreational harvest limit in 2008.

*General Effort Trends*

Recreational landings for all three fisheries have fluctuated over the past several years. The number of trips targeting a given species in any given year is quite variable (Tables 19-21). In the aggregate, total number of recreational trips (all modes combined) in the North Atlantic and Mid-Atlantic subregions combined has remained relatively stable with a slight upward trend for the 1990 to 2006 time period. On average, for the 1990-2006 period, approximately 24 million marine recreational fishing trips (all modes combined) were taken in the North Atlantic and Mid-Atlantic subregions combined. For that period, marine recreational trips ranged from 18 million trips in 1992 to 31 million trips in 2006 in the two regions combined.

The number of party/charter boat trips taken in the North Atlantic and Mid-Atlantic subregions combined has fluctuated throughout the 1990-2006 period showing a downward trend for the 1990 to 2005 period. On average, for the 1990-2006 period, 1.7 million party/charter marine fishing trips were taken in the North Atlantic and Mid-Atlantic sub-regions combined, ranging from 1.1 million trips in 1999 to 2.6 million trips in 1993. In 2005 and 2006, 1.6 and 1.8 million party/charter boat trips, respectively, were taken in the North Atlantic and Mid-Atlantic subregions combined.

The number of anglers participating in marine recreational trips in the North Atlantic and Mid-Atlantic subregions combined has shown an upward trend for the 1990 to 2006 period. On average, for the 1990 to 2006 period, 3.5 million anglers fished in the North Atlantic and Mid-Atlantic sub-regions combined, ranging from 2.5 million anglers in 1999 to 4.8 million anglers in 2005 (the highest value in time series). In 2006, 4.7 million anglers participated in marine recreational trips.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed by way of adjustments to the management measures. While it is likely that proposed summer flounder and scup

management measures may restrict the recreational fishery for 2008, and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season), there is no indication that any of these measures may lead to a decline in the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable. It is unlikely that these measures will result in any substantive decreases in the demand for party/charter boat trips. It is likely that party/charter anglers will target other species when faced with potential reductions in the amount of summer flounder and scup that they are allowed to catch. Anglers that choose to reduce their effort in 2008 as a consequence of these recreational harvest limits are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.) resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing.

#### 8.11.4.1.3 Other Impacts

Effects of Commercial Possession Limits, Minimum Mesh, Minimum Fish Size and Gear restrictions

The proposed summer flounder, scup, and black sea bass alternatives would only modify the 2008 commercial quotas and recreational harvest limits. Changes to other commercial management measures were not recommended for 2008 by the Council, Board, or the Summer Flounder, Scup, and Black Sea Bass Monitoring Committees. Therefore, other commercial management measures in place will remain unchanged (status quo) for the 2008 fishing year (see section 5.1 thought 5.3 for additional discussion).

Effects of the RSA

A detailed discussion regarding the socioeconomic impacts of the RSA for summer flounder, scup, and black sea bass is presented in section 7.4.4.

*Research set-aside Impacts on GRAs for Scup, Black Sea Bass, and Loligo*

Proposed research exempts vessels fishing with small mesh from the current and proposed GRA regulations, i.e., allows them to catch and retain several species of fish including scup, black sea bass, and *Loligo* squid from these areas during a closure.

NMFS implemented the current GRAs in 2001 based on a recommendation of the Council and Commission. These GRAs regulate the use of otter trawls with codend mesh less than 4.5" in areas and times that were identified as having high scup discards. Current specific areas and times include a northern GRA from November 1 to December 31 and a southern GRA from January 1 to March 15; Appendix A). Current regulations prohibit fishing for *Loligo* squid, black sea bass, and silver hake in the GRAs using mesh smaller than 4.5" during the effective times.

Analyses conducted to support these GRAs, indicate that these areas and times were associated with high levels of scup discards. As such, fishing with small mesh in these areas could mitigate the effects of the GRAs, thereby increasing the discards of scup relative to quotas without RSA. However, given the level of the RSA, the effects on scup discards and mortality should be minimal. In addition, because landings of the regulated species count against the overall quotas for each species, the overall mortality level does not change relative to the no action alternative.

The social and economic impacts of this research should be minimal. The set-aside could be worth as much as $141,635, $105,093, and $39,500 dockside for scup, black sea bass and *Loligo* squid based on 2006 prices, respectively. Assuming an equal reduction among all active vessels (i.e., 419, 536, and 358 commercial vessels that landed scup, black sea bass, and *Loligo* in 2006, respectively), this may mean a reduction of $338, $196, and $110 per individual vessel, for scup, black sea bass, and *Loligo*, respectively. However, if a vessel is participating in two or more of these fisheries, the revenue reduction could be greater. It is also possible that the vessels used by researchers to conduct the research are vessels that have not traditionally fished for these species. As such, some minimal distributive effects may result as permit holders that would have landed these species could be disadvantaged. If RSAs are not used and are put back into the overall TAL for each fishery, then the estimated economic impacts would be smaller than those estimated in threshold analyses presented in this section.

#### 8.11.4.1.4 Summary of Impacts

In sum, the proposed 2008 adjusted commercial quotas in preferred alternative 1 for summer flounder, scup, and black sea bass for the year 2008 are 5, 40, and 15 percent lower, respectively, relative to the adjusted quotas for year 2007. The adjusted recreational harvest limits for summer flounder, scup, and black sea bass for the year 2008 are 7, 34 and 15 percent lower relative to the adjusted recreational harvest limits for year 2007. The commercial quotas and recreational harvest limits chosen under this alternative were selected by the Council because they are consistent with the requirement to eliminate overfishing and to attain the rebuilding target fishing mortality rates specified in the FMP for summer flounder, scup and black sea bass, and because they maximize commercial and recreational landings to the extent practicable.

The analysis of the harvest levels under this alternative indicate that the economic impacts ranged from expected revenue losses on the order of < 5 percent for 115 vessels to revenue losses of $\geq$ 50 percent for 2 vessels. While the conducted analysis indicates that in relative terms a large number of vessels (733) are likely to be impacted with revenue reductions of 5 percent or more, 35 percent of these vessels (259 vessels) had gross sales of $1,000 or less and 58 percent of the impacted vessels (424 vessels) had gross sales of $10,000 or less, thus likely indicating that the dependence on fishing for some of these vessels is very small.

Assuming 2006 ex-vessel prices and the effect of potential changes in fishing opportunities in 2008 versus 2007, the 2008 adjusted quotas in alternative 1 would decrease summer flounder, scup, and black sea bass revenues by approximately $0.84, $3.2, and $0.88 million, respectively, relative to the quota implemented in 2007.

On a per vessel level, the average decrease in revenue associated with the decrease in summer flounder, scup, and black sea bass quotas is $1,143, $7,637, and $1,642. The overall reduction in ex-vessel gross revenue associated with these species combined in 2008 relative to quotas implemented in 2007 is approximately $4.92 million or approximately $5,449/vessel.

It is important to stress that these are potential changes, i.e., based on available data and assumptions made in order to conduct this analysis. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to possession limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2008 for quota overages that were not accounted for here.

Recreational landings for all three fisheries have fluctuated over the past several years. However, it appears that the market demand for this sector is relatively stable. While it is possible that lower recreational trip limits may affect angler satisfaction, it is unlikely that these measures will result in any substantive decreases in the demand for party/charter boat trips.

This alternative is projected to minimize the negative economic impacts upon small entities when compared to alternative 2 while meeting the rebuilding objectives of the FMP.

### 8.11.4.2 Quota Alternative 2 (Most Restrictive - Non-preferred)

This alternative examines the impacts on industry that would result from the most restrictive harvest levels for summer flounder, scup, and black sea bass. To analyze the economic effects of this alternative, the total harvest levels specified under section 5.0 were employed. Alternative 2 contains adjusted commercial quotas of 6.84, 3.54, and 1.80 million lb for summer flounder, scup, and black sea bass, respectively. This alternative also specifies adjusted recreational landings limits of 4.56, 1.33, and 1.87 million lb for flounder, scup, and black sea bass, respectively.

Under this alternative, the summer flounder specifications would result in an aggregate 40 percent decrease in allowable commercial landings and a 32 percent decrease in the recreational harvest limit relative to the 2007 allocations (Tables 16 and 19). The scup specifications would result in an aggregate 40 percent decrease in allowable commercial landings and a 52 percent decrease in the recreational harvest limit relative to the 2007 allocations (Tables 16 and 20). The black sea bass specifications would result in an aggregate 24 percent decrease in both allowable commercial landings and recreational harvest limit relative to the 2007 allocations (Tables 16 and 21). Again, this alternative makes the same assumptions about landings as are made in the previous analyses.

#### 8.11.4.2.1 Commercial Impacts

The results of the threshold analysis are reported in Table 28. The analysis of the harvest levels under this alternative indicate that all vessels will incur in revenue losses of $\geq 5$ percent. The economic impacts ranged from expected revenue losses in the order of 10-19 percent for 45

vessels; 20-29 percent for 292 vessels; 30-39 percent for 456 vessels; 40-49 percent for 69 vessels; and ≥ 50 percent for 41 vessels (Table 28).

Given that a large number of vessels are projected to incur large revenue reduction, Council staff further examined the level of ex-vessel revenues for the impacted vessel to assess further impacts. For example, according to dealer data, it was estimated that 38 percent of the vessels (17 out of 45 vessels) projected to incur revenue reductions of 10-19 percent had total gross sales (all possible species combined not just summer flounder, scup, and black sea bass in 2006) of $1,000 or less and 73 percent (33 vessels) had total gross sales of $10,000 or less. Furthermore, 39 percent of the vessels (115 vessels) projected to incur revenue losses of 20-29 percent had total gross sales of approximately $1,000 or less and 71 percent (208 vessels) had total gross sales of $10,000 or less; 34 percent of the vessels (157 vessels) projected to incur revenue losses of 30-39 percent had total gross sales of approximately $1,000 or less and 57 percent (258 out of 456 vessels) had total gross sales of $10,000 or less; 14 percent of the vessels (10 out of 69 vessels) projected to incur revenue losses of 40-49 percent had total gross sales of approximately $1,000 or less and 29 percent (20 vessels) had total gross sales of $10,000 or less; and 37 percent of the vessels (15 vessels) projected to incur revenue losses of ≥ 50 percent had total gross sales of $1,000 or less and 68 percent (28 vessels) had total gross sales of $10,000 or less.

While the analysis presented above indicates that in relative terms a large number of vessels (903) are likely to be impacted with revenue reductions of 5 percent or more, 35 percent of these vessels (314 vessels) had gross sales of $1,000 or less and 61 percent of the impacted vessels (547 vessels) had gross sales of $10,000 or less, thus likely indicating that the dependence on fishing for some of these vessels is very small. Since alterative 2 is the most restrictive alternative, impacts of other alternatives will be less than the impacts under this alternative.

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 29). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of vessels with revenue reduction of > 5 percent by home state ranged from 5 in both Connecticut and Pennsylvania to 139 in Massachusetts.

By virtue of holding a valid federal permit for summer flounder, scup, or black sea bass a vessel is subject to any regulations that are promulgated under the FMP. From this perspective, these vessels are subject to any quota specification whether or not they actually choose to engage in any one of the three (summer flounder, scup, or black sea bass) fisheries. The decision to engage in any given fishery during a given time period is subject to numerous considerations from temporary suspension of fishing due to illness or vessel construction or repair to merely a reasoned decision to pursue other fisheries. Given the limited access nature of the fisheries, a vessel may wish to continue to hold a permit to preserve the opportunity to engage in the fishery when circumstance allows.

Of the 906 vessels showing revenue reduction of ≥ 5 percent, 648 are identified as holders of federal summer flounder, scup, or black sea bass permits. The 648 vessels holding various combinations of summer flounder, scup, and black sea bass permits are described in Table 30. It is most common for vessels to have permits for all 3 species and summer flounder only.

Many of the vessels projected to have revenue reductions of ≥ 5 percent hold permits in other fisheries (Table 31). In particular, most vessels have bluefish, squid-mackerel-butterfish, dogfish, skate, tilefish incidental, and herring (non-VMS). As a result, they have access to some alternative fisheries, although some like multispecies, dogfish, and scallops, are already under heavy regulation and likely to have increasingly stringent catch limits for the near future.

The majority of the impacted vessels (with revenue reductions of 5 percent or more) with federal permits for summer flounder, scup and/or black sea bass have home ports in Massachusetts, New Jersey, New York, Rhode Island, and North Carolina. The principal ports of landing for these vessels are mainly located in New Jersey, Massachusetts, Rhode Island, New York, and North Carolina (Table 32).

Although the summer flounder quota is allocated to the individual states, vessels are not necessarily constrained to land in their home state. It is useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. Thus, of the various states home-porting vessels projected to have revenue reductions in the ≥ 5 percent range, vessels in those states are likely to land in their home port state (85-100 percent; Table 32). This information is important because impacts will occur both in the community of residence and in the community where the vessel's catch is landed and sold.

The largest vessels are found in Connecticut, North Carolina, Maine, New Jersey, Virginia, and Massachusetts (Table 32). Larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes to remain profitable.

Most commercial vessels showing revenue reductions in the ≥ 5 percent range are concentrated in Massachusetts, New Jersey, New York, Rhode Island, North Carolina, and Virginia (Table 33). Within these states, the most impacted counties (largest number of impacted vessels) are: Bristol, Barnstable, Suffolk, Plymouth and Dukes counties in Massachusetts; Ocean, Cape May, and Monmouth counties in New Jersey; Suffolk, New York City, and Nassau counties in New York; Washington and Newport counties in Rhode Island; Dare, Pamlico, Carteret and Hyde counties in North Carolina; and City of Norfolk, Accomack, and Virginia Beach City counties in Virginia. Some individual ports with large numbers of impacted vessels (10 or more) in these counties are: New Bedford (Bristol county) and Boston (Suffolk county) in Massachusetts; Cape May (Cape May county), Barnegat Light and Point Pleasant (Ocean county), and Belford (Monmouth county) in New Jersey; Montauk (Suffolk county) and New York (New York City county) in New York; Point Judith (Washington county) and Newport (Newport county) in Rhode Island; Wanchese (Dare county), Beaufort (Carteret county), and Oriental (Pamlico county) in North Carolina; and Norfolk (City of Norfolk county) in Virginia. If communities

having larger numbers of impacted vessels also have a larger total numbers of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole.

To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles were constructed based on the impacts of this alternative (see section 8.11.5). In addition to the threshold analysis described above, the Council also analyzed changes in total ex-vessel gross revenue that would occur as a result of the quota alternatives. The 2008 quotas associated with the preferred alternative would decrease summer flounder, scup, and black sea bass revenues by approximately $5.28, $4.77, and $1.45 million, respectively, relative to the quota implemented in 2007 (assuming the same ex-vessel prices presented above).

Assuming the decrease in summer flounder total ex-vessel gross revenues associated with this alternative is distributed equally among the 735 vessels that landed summer flounder in 2006, the average decrease in revenue associated with the decrease in summer flounder quota is approximately $7,184/vessel. Assuming the decrease in scup total ex-vessel gross revenues associated with this alternative is distributed equally among the 419 vessels that landed scup in 2006, the average decrease in revenue associated with the decrease in scup quota is approximately $11,384/vessel. Finally, assuming the decrease in black sea bass total ex-vessel gross revenues associated with this alternative is distributed equally among the 536 vessels that landed black sea bass in 2006, the average decrease in revenue associated with the decrease in black sea bass quota is approximately $2,706/vessel.

The overall reduction in ex-vessel gross revenue associated with summer flounder, scup, and black sea bass combined in 2008 relative to quotas implemented in 2007 is approximately $11.50 million under the most restrictive alternative. If this is distributed among the 903 vessels that landed summer flounder, scup, and black sea bass in 2006, the average decrease in revenue is approximately $12,735/vessel. The changes in ex-vessel gross revenues associated with the potential changes in quotas in 2008 versus 2007 assumed static prices for summer flounder, scup, and black sea bass. However, if prices for these species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated above.

#### 8.11.4.2.2 Recreational Impacts

The information regarding trends in recreational participation (trends in effort) presented under section 8.11.4.1.2 also apply here.

At the present time, there is neither behavioral nor demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. In the summer flounder, scup, and black sea bass fisheries, there is no mechanism to deduct overages directly from the recreational harvest limit. Any overages must be addressed by way of adjustments to the management measures. It is likely that proposed management measures may restrict the

recreational fishery for 2008, and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season).

There is no information regarding how the potential decrease in the recreational harvest limits for these species will affect the demand for party/charter boat trips. Currently, the market demand for this sector is relatively stable; however, it is likely that given the proposed recreational harvest limits associated with this alternative, the demand for party/charter boat trips may be negatively impacted. Some anglers may that choose to reduce their effort in 2008 as a consequence of these recreational harvest limits are likely to transfer this effort to alternative species (i.e., spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.) resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many of the alternative species in the Northeast are becoming more binding each year, resulting in fewer substitute landing opportunities, particularly for anglers fishing aboard headboats where passengers are primarily limited to bottom fishing.

**8.11.4.2.3 Other Impacts**

Effects of Commercial Possession Limits, Minimum Mesh, Minimum Fish Size and Gear restrictions

The impacts of these non-quota management measures described in alternative 1 above (section 8.11.4.1.3) also apply here.

Effects of the RSA

A detailed discussion regarding the socioeconomic impacts of the RSA for summer flounder, scup, and black sea bass is presented in section 7.4.4.

*Research set-aside Impacts on GRAs for Scup, Black Sea Bass, and Loligo*

The impacts of this non-quota management measure described in alternative 1 above (see section 8.11.4.1.3) also apply here. However, under this alternative, the commercial RSA component for scup could be worth as much as $97,519 or $233 per individual vessel (see section 7.4.4).

**8.11.4.2.4 Summary of Impacts**

Alternative 2 allows commercial fishermen to land significantly lower quantities of summer flounder, scup, and black sea bass in 2008 versus 2007. Recreational harvest limits would also be significantly reduced relative to the 2007 limits.

The total harvest levels for summer flounder, scup, and black sea bass analyzed under this alternative is more conservative than those presented in alternative 1 (preferred). More specifically, the commercial summer flounder, scup, and black sea bass harvest levels (after overages and RSA have been applied) under this alternative are approximately 2.48, 1.76, and 0.23 million lb lower than the limits specified under alternative 1, respectively. Recreational

harvest limits under this alternative are 1.65, 0.49, and 0.24 million lb lower than the limits specified under alternative 1, respectively.

The analysis of the harvest levels under this alternative indicate that all vessels will incur in revenue losses of ≥ 5 percent.

Assuming 2006 ex-vessel prices, and the effect of the potential changes in fishing opportunities in 2008 versus 2007, the 2008 quotas associated with alternative 2 (after overages and RSAs have been applied) would decrease summer flounder, scup, and black sea bass revenues by approximately $5.28, $4.77, and $1.45 million, respectively, relative to the quota implemented in 2007. On a per vessel level, the average decrease in revenue associated with the decrease in summer flounder, scup, and black sea bass quotas is $7,184, $11,384, and $2,706, respectively. The overall reduction in ex-vessel gross revenue associated with summer flounder, scup, and black sea bass combined in 2008 elative to quotas implemented in 2007 is approximately $11.50 million or approximately $12,735/vessel.

Recreational landings for all three fisheries under this alternative are substantially lower than those implemented in 2007 It is likely that the proposed limits under this alternative will restrict the fishery for 2008 and these measures may cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size or closed season) compared alternative 1.

The social and economic impacts of RSAs should be minimal. The RSAs are, conceptually, available for commercial vessels to participate in research, as well as for other vessels. Also, the RSAs are expected to yield important long-term benefits associated with improved data upon which to base management decisions. However, given the substantial decrease in the quotas in 2008 relative to 2007 for all three species, the cost of any premature closure of the fishery (pounds of summer flounder, scup, and black sea bass allocated for set-aside) would be shared among the non RSA participants in the fishery.

The economic changes presented in this section represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to possession limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2008 for quota overages in 2007 that were not accounted for here.

While the quota and recreational harvest limits under this alternative may present an improved probability of attaining the rebuilding objectives specified in the FMP, the negative economic impacts upon small entities are significantly higher than under alternative 1. Therefore, this alternative was not selected because of the potential adverse economic impacts associated with it.

### 8.11.4.3 Quota Alternative 3 (Status Quo/Least Restrictive - Non-preferred)

This alternative examines the impacts on industry that would result from the least restrictive harvest levels for summer flounder, scup and black sea bass. The harvest levels under this alternative are status quo harvest levels. To analyze the economic effects of this alternative, the

total harvest levels specified under section 5.0 were employed. Alternative 3 contains adjusted commercial quotas of 10.13, 8.94, 2.41 million lb for summer flounder, scup, and black sea bass, respectively. This alternative also specifies adjusted recreational landings limits of 6.75, 2.85, and 2.51 million lb for flounder, scup, and black sea bass, respectively.

Under this alternative, the summer flounder specifications would result in a 4 percent increase in allowable commercial landings relative to the 2007 quota and a 1 percent increase in recreational harvest relative to the 2007 limit (Tables 16 and 19). The scup specifications would result in an aggregate < 1 percent increase in allowable commercial landings relative to the 2007 quota and a 4 percent increase in recreational harvest relative to the 2007 limit (Tables 16 and 20). The black sea bass specifications would result in a 1 percent increase in allowable commercial landings relative to the 2007 quota and a 2 percent increase in recreational harvest relative to the 2007 limit (Tables 16 and 21). Again, this alternative makes the same assumptions about landings as are made in the previous analyses.

Even though the overall 2008 TAL for summer flounder, scup, and black sea bass under this alternative are the same as in 2007, the adjusted commercial quotas and recreational harvest limits are slightly different than the allocations implemented in 2007 mainly due to differences in the RSAs used to derive adjusted allocations during those two time periods and/or other adjustments due to overages/quota restorations, and the discard levels used to derive the scup TAL.

**8.11.4.3.1 Commercial Impacts**

The result of the analysis for this alternative indicates that across all vessel classes, a total of 901 vessels were projected to be impacted by revenue increase (relative to 2007). In addition, 2 vessels were projected to incur revenue losses of $\geq$ 50 percent relative to 2008 (Table 34). This is due to the fact that the 2008 adjusted quota allocation to Delaware is zero pounds in 2008 due to overages accrued in previous years. The total gross sales (all possible species combined not just summer flounder, scup, and black sea bass in 2006) for the two vessel projected to have revenue losses of $\geq$ 50 percent were almost nil.

In addition to the threshold analysis described above, the Council also analyzed changes in total ex-vessel gross revenue that would occur as a result of the quota alternatives. The 2008 quotas associated with the preferred alternative would increase summer flounder, scup, and black sea bass revenues by approximately $0.61, $0.04, and $0.08 million, respectively, relative to the quota implemented in 2007 (assuming the ex-vessel prices presented above).

Assuming the increase in summer flounder, scup, and black sea bass total ex-vessel gross revenues associated with alternative 3 is distributed equally between the vessels that landed summer flounder (735), scup (419), and black sea bass (536) in 2006, the average increase in revenue associated with the increase in quotas is $829, $95, and $149 per vessel for summer flounder, scup, and black sea bass, respectively.

The overall increase in ex-vessel gross revenue associated with the three species combined in 2008, relative to 2007, is approximately $0.73 million (assuming 2006 ex-vessel prices) under alternative 3. If this is distributed among the 903 vessels that landed summer flounder, scup, and black sea bass in 2006, the average increase in revenue is approximately $808/vessel. However, if prices for these species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated above.

The projected decrease in ex-vessel gross revenues associated with this alternative is lower than those associated with alternative 1 (preferred) and 2 (most restrictive). While this alternative is projected to minimize the negative economic impacts upon small entities when compared to alternatives 1 and 2, the commercial quotas are not as restrictive as necessary to achieve the 2008 target exploitation rates for these species.

#### 8.11.4.3.2 Recreational Impacts

As indicated above, the summer flounder, scup, and black sea bass recreational limits for 2008 are slightly higher than the limits implemented in 2007. It is not anticipated that these measures will result in decrease in the demand for party/charter boat trips or affect angler participation in a negative manner.

#### 8.11.4.3.3 Other Impacts

Effects of Commercial Possession Limits, Minimum Mesh, Minimum Fish Size and Gear restrictions

The impacts of these non-quota management measures described in alternative 1 above (section 8.11.4.1.3) also apply here.

Effects of the RSA

A detailed discussion regarding the socioeconomic impacts of the RSA for summer flounder, scup, and black sea bass is presented in section 7.4.4.

*Research set-aside Impacts on GRAs for Scup, Black Sea Bass, and Loligo*

The impacts of this non-quota management measure described in alternative 1 above (see section 8.11.4.1.3) also apply here.

#### 8.11.4.3.4 Summary of Impacts

Alternative 3 allows commercial fishermen to land more summer flounder, scup, and black sea bass than alternatives 1 (preferred) and 2 (most restrictive). Recreational limits for summer flounder, scup, and black sea bass are slightly higher to the limits implemented in 2007.

The threshold analysis indicates that a total of 901 vessels were projected to be impacted by revenue increase (relative to 2007), and that 2 vessels were projected to incur revenue losses of $\geq$ 50 percent relative to 2008. However, the total gross sales (all possible species combined not just summer flounder, scup, and black sea bass in 2006) for the two vessel projected to have revenue losses of $\geq$ 50 percent were almost nil.

Assuming 2006 ex-vessel prices, and the effect of the potential changes in fishing opportunities in 2008 versus 2007, the 2008 quotas associated with alternative 3 (after overages and RSAs have been applied) would increase summer flounder, scup, and black sea bass revenues by approximately $0.61, $0.04 million, and $0.08 million, respectively, relative to the quota implemented in 2007.

On a per vessel level, the average increase in revenue associated with the increase in summer flounder, scup, and black sea bass quotas is $829, $95, and $149, respectively. The overall increase in ex-vessel gross revenue associated with summer flounder, scup, and black sea bass combined in 2008 relative to quotas implemented in 2007 is approximately $0.73 million or approximately $808/vessel. However, if prices for these species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated above.

These measures under this alternative would allow for significant larger overall harvest levels for summer flounder, scup, and black sea bass when compared to alternatives 1 (preferred) and 2 (most restrictive). The harvest levels under this alternative have a lower probability of achieving the rebuilding goals of the FMP when compared to alternatives 1 and 2. Therefore, while this alternative may mitigate the impacts on small entities, it does not comport with the fishing mortality and exploitation rates specified in the FMP. While the economic benefits associated from this alternative are higher than those described under the preferred alternative, it was not chosen because it does not meet the overall recovery objectives of the FMP.

Recreational harvest limits for all three fisheries under this alternative are slightly higher than those implemented in 2007. It is not expected that the proposed limits under this alternative will restrict the fishery for 2008. As such, it is not expected that recreational satisfaction would be negatively affected.

The social and economic impacts of RSAs should be minimal. The RSAs are, conceptually, available for commercial vessels to participate in research, as well as for other vessels. Also, the RSAs are expected to yield important long-term benefits associated with improved data upon which to base management decisions.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels, revenues earned or lost due to possession limits and seasons set by a state to manage sub-allocations of quota, and unanticipated reductions in 2008 for quota overages in 2007 that were not accounted for here.

The proposed TALs under this alternative would result in the greatest short-term economic benefic relative to alternatives 1 and 2. However, the TALs under this alternative are not realistic. As such, it they result in an exploitation rate that most likely will exceed the targets for 2008. If these targets are exceeded, the rebuilding of these stocks would be slowed.

### 8.11.5 Other Impacts

**County Impacts**

For the reasons specified in section 8.11.2 of this document, the economic impacts on vessels of a specified home port were analyzed on a county wide basis. Counties included in the profile had to meet the following criteria: a) the number of vessels with revenue loss exceeding 5 percent per county was either greater than 4, or b) all vessels with revenue loss exceeding 5 percent in a given state were from the same home county.

The results of these analyses are summarized below. The most restrictive alternative (alternative 2) in 2008 was used to assess impacted counties. The most restrictive alternative was chosen to identify impacted counties because it provides the maximum number possible, thus the broadest possible range of counties was included in the analysis. A total of 30 counties were identified to be impacted in 2008: Based on these criteria, a total of 30 counties were identified to be impacted in 2008: New London, CT; Sussex, DE; Barnstable, Bristol, Dukes, Essex, Plymouth, and Suffolk, MA; Cumberland, ME; Atlantic, Cape May, Monmouth, and Ocean, NJ; Nassau, New York, and Suffolk, NY; Beaufort, Carteret, Craven, Dare, Hyde, and Pamlico, NC; Philadelphia, PA; Newport, and Washington, RI; Accomak, City of Hampton, City of Newport News, Virginia Beach City , and City of Norfolk, VA. Counties not included in this analysis (e.g., Fairfield, CT; Kent, DE; York and Lincoln, ME; Nantucket, MA; Rockingham, NH; Queens, NY; Kent, RI; City of Newport News and York, VA) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county. The target counties were identified based on the county associated with the vessels homeport as listed in the owner's 2006 permit application.

Table 35 details population sizes, employment, personal income, and the contribution of commercial fishing and sea food processing to total personal income for selected counties. Counties presented in Table 35 correspond to the counties identified as impacted (>= 4 vessels with revenue loss exceeding 5 percent per county) due to the management measures evaluated (i.e., as described in the above paragraph). Data presented in Table 35 were obtained from data bases supplied by the Minnesota IMPLAN Group for the calendar year 2001.

Of the counties identified in Table 35, the percentage of total personal income derived from commercial fishing sales and from seafood processing was less than 1 percent for all counties. These data indicate that each of the identified counties in Table 35 is not substantially dependent upon sales of commercial fishing products to sustain the county economies. Population in these counties ranged from 6 thousand in Hyde County to 1.5 million in New York County.

## 10.0 LITERATURE CITED

***(Literature cited in the appendices only can be found in their respective appendix).***

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## 11.0 LIST OF PREPARERS OF THE ENVIRONMENTAL ASSESSMENT

The summer flounder, scup, and black sea bass specifications were submitted to the NMFS by the MAFMC. This specifications document was prepared by the following members of the MAFMC staff: Jessica Coakley and Dr. José L. Montañez. Dr. Eric Thunberg (NEFSC) assisted in documenting the analysis of permit data. Scott Steinback (NEFSC) assisted in documenting demographic/economic information presented in Table 35.

## 12.0 LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this specifications document, the Council consulted with the NMFS, New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, and the states of Maine through North Carolina through their membership on the Mid-Atlantic and New England Fishery Management Councils. To ensure compliance with NMFS formatting requirements, the advice of NMFS NERO personnel was sought, including Michael Ruccio, Michael Pentony, and Sarah Thompson.

## TABLES

**Table 1. Statistical areas that accounted for at least 5 percent of the summer flounder, scup, or black sea bass catch in 2006, NMFS VTR data (A map showing the location of these statistical areas is presented in Figure 5).**

| Statistical Area | Summer Flounder (percent) | Scup (percent) | Black Sea Bass (percent) |
|---|---|---|---|
| **616** | 20.78 | 36.68 | 9.72 |
| **537** | 11.08 | 10.63 | 3.63 |
| **622** | 10.88 | 1.13 | 13.21 |
| **612** | 9.42 | 0.31 | 2.20 |
| **626** | 8.44 | 0.01 | 5.05 |
| **613** | 7.46 | 19.18 | 5.16 |
| **621** | 7.02 | 0.40 | 30.80 |
| **611** | 5.31 | 11.72 | 3.76 |
| **539** | 4.06 | 15.66 | 2.57 |
| **538** | 2.74 | 2.26 | 8.39 |

**Table 2. Statistical areas that accounted for at least 5 percent of the summer flounder, scup, or black sea bass trips in 2006, NMFS VTR data (A map showing the location of these statistical areas is presented in Figure 5).**

| Statistical Area | Summer Flounder (percent) | Scup (percent) | Black Sea Bass (percent) |
|---|---|---|---|
| **611** | 21.38 | 45.35 | 19.25 |
| **539** | 16.73 | 17.60 | 15.12 |
| **612** | 12.13 | 4.24 | 11.18 |
| **613** | 10.96 | 12.60 | 12.89 |
| **538** | 7.31 | 9.07 | 9.95 |
| **537** | 6.76 | 4.72 | 7.22 |
| **615** | 5.56 | 0.47 | 1.50 |
| **621** | 5.19 | 0.25 | 7.48 |
| **616** | 4.29 | 4.67 | 6.12 |

**Table 3. Top ports of landing (in lb) for summer flounder (FLK), scup (SCP), and black sea bass (BSB), based on NMFS 2006 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year.** Note: C = Confidential

| Port | Landings of FLK (lb) | # FLK Vessels | Landings of SCP (lb) | # SCP Vessels | Landings of BSB (lb) | # BSB Vessels |
|---|---|---|---|---|---|---|
| **PT. JUDITH, RI** | 1,694,651 | 108 | 2,685,564 | 114 | 161,522 | 124 |
| **WANCHESE, NC** | 1,533,205 | 35 | 16,573 | 5 | 184,590 | 23 |
| **HAMPTON, VA** | 1,019,781 | 37 | 53,507 | 13 | 73,190 | 18 |
| **BEAUFORT, NC** | 981,124 | 16 | 17,872 | 10 | 45,300 | 11 |
| **PT. PLEASANT, NJ** | 898,632 | 41 | 741,534 | 25 | 64,170 | 33 |
| **CHINCOTEAGUE, VA** | 834,594 | 52 | 23,020 | 8 | 66,467 | 21 |
| **NEWPORT NEWS, VA** | 768,043 | 25 | 3,904 | 5 | 32,127 | 16 |
| **BELFORD, NJ** | 755,838 | 22 | 364,041 | 21 | 11,298 | 23 |
| **ENGELHARD, NC** | 751,942 | 13 | 0 | 0 | 100,592 | 10 |
| **MONTAUK, NY** | 697,317 | 55 | 1,228,986 | 48 | 149,819 | 55 |
| **CAPE MAY, NJ** | 621,107 | 87 | 274,449 | 16 | 243,152 | 31 |
| **ORIENTAL, NC** | 589,896 | 12 | 0 | 0 | 9,244 | 6 |
| **NEW BEDFORD, MA** | 460,723 | 107 | 735,979 | 36 | 215,396 | 36 |
| **HAMPTON BAY, NY** | 200,057 | 40 | 498,262 | 45 | 72,877 | 42 |
| **OCEAN CITY, MD** | 195,172 | 25 | 0 | 0 | 307,281 | 18 |
| **NEWPORT, RI** | 184,492 | 39 | 423,498 | 25 | 17,460 | 29 |
| **NANTUCKET, MA** | 158,706 | 15 | 7,212 | 12 | 2,708 | 6 |
| **LITTLE COMPTON, RI** | 66,363 | 22 | 389,853 | 17 | 85,120 | 16 |
| **GREENPORT, NY** | 51,810 | 7 | 110,175 | 7 | 0 | 0 |
| **PT. LOOKOUT, NY** | 21,446 | 9 | 236,076 | 7 | 22,339 | 11 |
| **VIRGINIA BEACH, VA** | 3,269 | 5 | C | C | 135,992 | 11 |
| **AMMAGANSETT, NY** | C | C | C | C | C | C |
| **STONINGTON, CT** | C | C | C | C | C | C |

**Table 4. MRFSS preliminary estimates of 2006 recreational harvest (numbers of fish kept) and total catch (numbers of fish) for summer flounder (FLK), scup (SCP) and black sea bass (BSB).**

| State | FLK Harvest (# of fish kept) | FLK Catch (# of fish caught) | SCP Harvest (# of fish kept) | SCP Catch (# of fish caught) | BSB Harvest (# of fish kept) | BSB Catch (# of fish caught) |
|---|---|---|---|---|---|---|
| **NH** | 1,507 | 2,109 | 0 | 0 | 0 | 0 |
| **MA** | 219,589 | 775,625 | 302,776 | 1,210,898 | 84,980 | 231,603 |
| **CT** | 107,479 | 1,009,028 | 519,355 | 1,252,625 | 3,660 | 104,169 |
| **RI** | 263,704 | 1,307,635 | 426,993 | 1,310,589 | 52,693 | 311,338 |
| **NY** | 797,810 | 6,050,700 | 1,279,387 | 3,776,851 | 277,775 | 1,917,875 |
| **NJ** | 1,548,457 | 8,318,286 | 253,589 | 804,809 | 685,439 | 2,763,810 |
| **DE** | 110,112 | 643,761 | 639 | 10,138 | 127,695 | 587,317 |
| **MD** | 58,413 | 569,383 | 446 | 59,548 | 104,023 | 903,649 |
| **VA** | 865,024 | 3,142,993 | 0 | 31,158 | 115,849 | 1,102,428 |
| **NC** | 152,663 | 220,961 | 12,557 | 20,552 | 158,819 | 1,375,209 |

**Table 5. Summary of number of vessels holding federal commercial and/or recreational permit combinations for summer flounder (FLK), scup (SCP) and black sea bass (BSB), 2006.**

| Comm. Permit Combinations | Recreational Permit Combinations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | No Rec. Permit | FLK Only | SCP Only | BSB Only | FLK/ SCP | FLK/ BSB | SCP/ BSB | FLK/ SCP/ BSB | Row Total |
| No Comm. Permit | 0 | 37 | 11 | 13 | 20 | 80 | 16 | 632 | 809 |
| FLK Only | 321 | 3 | 1 | 0 | 0 | 1 | 3 | 3 | 332 |
| SCP Only | 56 | 0 | 0 | 1 | 0 | 1 | 0 | 9 | 67 |
| BSB Only | 146 | 4 | 0 | 2 | 3 | 7 | 0 | 12 | 174 |
| FLK/ SCP | 114 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 117 |
| FLK/ BSB | 50 | 0 | 0 | 0 | 0 | 3 | 0 | 1 | 54 |
| SCP/ BSB | 150 | 4 | 0 | 0 | 0 | 1 | 0 | 27 | 182 |
| FLK/ SCP/ BSB | 492 | 3 | 0 | 0 | 1 | 0 | 0 | 17 | 518 |
| Column Total | 1,334 | 51 | 12 | 16 | 24 | 93 | 19 | 704 | 2,253 |

**Table 6. Federal northeast region permits held by summer flounder, scup, and black sea bass commercial and recreational vessels, 2006.**

| | Commercial Only (n= 1,334) | | Party/Charter Only (n= 809) | | Commercial and Party/Charter (n= 110) | |
|---|---|---|---|---|---|---|
| **Northeast Permits** | **Vessels (No.)** | **Percent of Total** | **Vessels (No.)** | **Percent of Total** | **Vessels (No.)** | **Percent of Total** |
| **Surfclam** | 850 | 63.7 | 153 | 18.9 | 27 | 24.5 |
| **Ocean Quahog** | 809 | 60.6 | 140 | 17.3 | 23 | 20.9 |
| **Scallop** | 332 | 24.9 | 0 | 0.0 | 0 | 0.0 |
| **Non-trap Lobster** | 755 | 56.6 | 24 | 3.0 | 18 | 16.4 |
| **Lobster Trap** | 396 | 29.7 | 60 | 7.4 | 25 | 22.7 |
| **Party/ Charter Lobster** | 1 | 0.1 | 21 | 2.6 | 6 | 5.5 |
| **Party/ Charter Multi-Species** | 439 | 32.9 | 615 | 76.0 | 47 | 42.7 |
| **Comm. Multi-species** | 692 | 51.9 | 68 | 8.4 | 37 | 33.6 |
| **Party/ Charter Squid/ Mackerel/ Butterfish** | 3 | 0.2 | 661 | 81.7 | 76 | 69.1 |
| **Comm. Squid/ Mackerel/ Butterfish** | 1194 | 89.5 | 329 | 40.7 | 81 | 73.6 |
| **Comm. Bluefish** | 1240 | 93.0 | 389 | 48.1 | 103 | 93.6 |
| **Party/ Charter Bluefish** | 11 | 0.8 | 745 | 92.1 | 96 | 87.3 |
| **Tier 1 Tilefish** | 2 | 0.1 | 0 | 0.0 | 0 | 0.0 |
| **Tier 2 Tilefish** | 2 | 0.1 | 0 | 0.0 | 0 | 0.0 |

**Table 6 (Continued). Federal northeast region permits held by summer flounder, scup, and black sea bass commercial and recreational vessels, 2006.**

| | Commercial Only (n= 1,334) | | Party/Charter Only (n= 809) | | Commercial and Party/Charter (n= 110) | |
|---|---|---|---|---|---|---|
| **Northeast Permits** | **Vessels (No.)** | **Percent of Total** | **Vessels (No.)** | **Percent of Total** | **Vessels (No.)** | **Percent of Total** |
| **Part-time Tilefish** | 13 | 1.0 | 0 | 0.0 | 0 | 0.0 |
| **Incidental Tilefish** | 974 | 73.0 | 413 | 51.1 | 72 | 65.5 |
| **Herring VMS** | 85 | 6.4 | 2 | 0.2 | 0 | 0.0 |
| **Herring Non-VMS** | 885 | 66.3 | 392 | 48.5 | 74 | 67.3 |
| **Spiny Dogfish** | 1192 | 89.4 | 483 | 59.7 | 89 | 80.9 |
| **Monkfish** | 553 | 41.5 | 7 | 0.9 | 8 | 7.3 |
| **Incidental Monkfish** | 666 | 49.9 | 416 | 51.4 | 72 | 65.5 |
| **Skate** | 1093 | 81.9 | 342 | 42.3 | 72 | 65.5 |
| **Red Crab Incidental** | 763 | 57.2 | 140 | 17.3 | 38 | 34.5 |
| **Red Crab 75,000 lb trip limit** | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |
| **Red Crab 125,000 lb trip limit** | 0 | 0.0 | 0 | 0.0 | 0 | 0.0 |

**Table 7. Descriptive data from northeast region permit files for commercial vessels, 2006**.

| | CT | DE | FL | MA | MD | ME | NC | NH | NJ | NY | PA | RI | VA | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **No. of Permits by Mailing Address State** | 25 | 9 | 3 | 422 | 23 | 74 | 133 | 19 | 221 | 144 | 1 | 155 | 103 | 2 |
| **No. of Permits by Home Port State** | 27 | 11 | 6 | 445 | 19 | 59 | 131 | 19 | 214 | 158 | 8 | 139 | 97 | 1 |
| **No. of Permits by Principal Port State** | 30 | 7 | 2 | 429 | 20 | 62 | 125 | 21 | 222 | 149 | 1 | 155 | 110 | 1 |
| **Average Length by Principal Port** | 62 | 40 | 40 | 57 | 47 | 36 | 62 | 43 | 58 | 43 | 64 | 55 | 63 | NA |
| **Average Tonnage by Principal Port** | 90 | 19 | 29 | 81 | 26 | 32 | 83 | 32 | 74 | 37 | 109 | 65 | 92 | NA |
| **Average Horse Power by Principal Port** | 567 | 383 | 443 | 486 | 387 | 250 | 476 | 289 | 514 | 335 | 850 | 430 | 533 | NA |
| **Percent Home Port Equal Principal Port** | 90 | 64 | 33 | 95 | 90 | 90 | 87 | 86 | 91 | 92 | 0 | 86 | 78 | NA |

**Table 8. Descriptive data from northeast region permit files for party/charter vessels, 2006.**

| | CT | DE | FL | MA | MD | ME | NC | NH | NJ | NY | PA | RI | VA | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **No. of Permits by Mailing Address State** | 29 | 53 | 7 | 203 | 34 | 39 | 20 | 32 | 173 | 97 | 20 | 62 | 32 | 8 |
| **No. of Permits by Home Port State** | 23 | 58 | 6 | 207 | 38 | 39 | 24 | 31 | 165 | 104 | 15 | 62 | 33 | 4 |
| **No. of Permits by Principal Port State** | 26 | 57 | 2 | 207 | 40 | 42 | 20 | 28 | 179 | 97 | 4 | 69 | 35 | 3 |
| **Average Length by Principal Port** | 46 | 37 | 41 | 36 | 42 | 33 | 41 | 38 | 43 | 44 | 50 | 34 | 47 | NA |
| **Average Tonnage by Principal Port** | 27 | 18 | 31 | 19 | 28 | 16 | 22 | 20 | 28 | 29 | 34 | 16 | 22 | NA |
| **Average Horse Power by Principal Port** | 676 | 569 | 750 | 451 | 672 | 402 | 790 | 441 | 646 | 616 | 820 | 425 | 773 | NA |
| **Percent Home Port Equals Principal Port** | 77 | 95 | 33 | 96 | 88 | 93 | 83 | 90 | 91 | 88 | <1 | 88 | 91 | NA |

**Table 9. Descriptive data from northeast region permit files for combination commercial/recreational vessels, 2006.**

| | CT | DE | FL | MA | NC | NH | NJ | NY | PA | RI | VA |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **No. of Permits By Mailing Address State** | 3 | 5 | 2 | 14 | 8 | 1 | 12 | 40 | 1 | 12 | 12 |
| **No. of Permits By Home Port State** | 0 | 5 | 2 | 19 | 9 | 1 | 10 | 42 | 2 | 9 | 11 |
| **No. of Permits by Principal Port State** | 1 | 5 | 1 | 14 | 9 | 1 | 13 | 41 | 0 | 14 | 11 |
| **Average Length by Principal Port** | 42 | 49 | 34 | 33 | 40 | 42 | 48 | 40 | NA | 39 | 42 |
| **Average Tonnage by Principal Port** | 13 | 34 | 7 | 14 | 20 | 5 | 30 | 27 | NA | 26 | 24 |
| **Average Horse Power by Principal Port** | 700 | 677 | 500 | 507 | 444 | 350 | 523 | 447 | NA | 496 | 529 |
| **Percent Home Port Equal Principal Port** | 0 | 100 | 50 | 74 | 100 | 100 | 77 | 95 | NA | 64 | 100 |

**Table 10. Dealers reporting buying summer flounder, scup, and/or black sea bass, by state (from NMFS commercial landings database) in 2006.**

| | MA | NJ | NY | NC | RI | VA | MD | DE | ME | Other |
|---|---|---|---|---|---|---|---|---|---|---|
| Number of Dealers | 64 | 39 | 63 | 24 | 40 | 29 | 7 | 5 | 3 | 1 |

**Table 11. Comparison of habitat impacts and considerations for selecting summer flounder alternatives.**

| Alternative | TAL in mil lb | Potential Change in CPUE and Habitat Impacts | Considerations for Selecting Alternative |
|---|---|---|---|
| **Alternative 1 (Council-Preferred)** | **15.77** | Based upon species abundance, impacts associated with effort may remain the same as existing or may decrease slightly. An increase in abundance and increased CPUE will tend to lead toward stable or decreased impacts to habitat. There are no adverse impact habitats expected under this alternative. | Does not maximize landings; this alternative has a higher risk of overfishing (compared to alternative 2). Reduced short-term yields, no to slightly decreased habitat impacts, potential for negative short-term financial impacts, but long-term financial benefits to industry. |
| **Alternative 2 (Non-Preferred: Monitoring Ctte. Recommended / Most Restrictive)** | **11.64** | Impacts may range from maintaining existing levels of effort to a decrease. The potential for slightly decreased impacts is greatest with this alternative. | Does not maximize landings; this alternative has the lowest risk of overfishing (compared to alternatives 1 and 3). Reduced short-term yields, no to decreased habitat impacts, negative short-term financial impacts to industry, but long-term financial benefits to industry. |
| **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | **17.11** | Based upon species abundance, impacts associated with effort may remain the same as existing. If abundance increases, increased CPUE will tend to lead toward stable impacts to habitat. There are no adverse impact habitats expected under this alternative. | Maximizes landings to greatest extent, may not achieve the target exploitation rate, similar habitat impacts compared to 2007, short-term benefit to industry but potential negative long-term financial impacts on industry. |

**Table 12. Comparison of habitat impacts and considerations for selecting scup alternatives.**

| Alternative | TAL in mil lb | Potential Change in CPUE and Habitat Impacts | Considerations for Selecting Alternative |
|---|---|---|---|
| **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | **7.34** | Based upon species abundance, impacts may remain the same or decrease. An increase in abundance with possession limits and increased CPUE will tend to lead toward stable or decreased impacts to habitat. There are no adverse habitat impacts expected under this alternative. | Does not maximize landings; this alternative is expected to meet the target exploitation rate under the current rebuilding plan. Reduced short-term yields, no to decreased habitat impacts, negative short-term financial impacts to industry, but long-term financial benefits to industry. |
| **Alternative 2 (Non-Preferred: Most restrictive)** | **5.02** | Impacts may range from maintaining existing levels of effort to a decrease. The potential for slightly decreased impacts is greatest with this alternative. | Does not maximize landings; this alternative is expected to meet the target exploitation rate under the current rebuilding plan, but may more restrictive than necessary. Reduced short-term yields, no to decreased habitat impacts, negative short-term financial impacts to industry, but long-term financial benefits to industry. |
| **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | **12.00** | Based upon species abundance, impacts associated with effort may remain the same as existing. If abundance increases, increased CPUE will tend to lead toward stable impacts to habitat. There are no adverse impact habitats expected under this alternative. | Maximizes landings to greatest extent, may not achieve the target exploitation rate, similar habitat impacts, short-term benefit to industry but potential negative long-term financial impacts on industry. |

**Table 13. Comparison of habitat impacts and considerations for selecting black sea bass alternatives.**

| Alternative | Quota in mil lb | Potential Change in CPUE and Habitat Impacts | Considerations for Selecting Alternative |
|---|---|---|---|
| **Alternative 1 (Council-Preferred: Monitoring Ctte. Recommended)** | **4.22** | Based upon species abundance, impacts may remain the same or slightly decrease. An increase in abundance with possession limits and increased CPUE will tend to lead toward stable or decreased impacts to habitat. There are no adverse habitat impacts expected under this alternative. | Does not maximize landings; this alternative is expected to meet the target exploitation rate under the current rebuilding plan. Reduced short-term yields, no to decreased habitat impacts, negative short-term financial impacts to industry, but long-term financial benefits to industry. |
| **Alternative 2 (Non-Preferred: Most restrictive)** | **3.75** | Impacts may range from maintaining existing levels of effort to a slight decrease. The potential for slightly decreased impacts is greatest with this alternative. | Does not maximize landings; this alternative is expected to meet the target exploitation rate under the current rebuilding plan, but may more restrictive than necessary. Reduced short-term yields, no to decreased habitat impacts, negative short-term financial impacts to industry, but long-term financial benefits to industry. |
| **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | **5.00** | Based upon species abundance, impacts associated with effort may remain the same as existing. If abundance increases, increased CPUE will tend to lead toward stable impacts to habitat. There are no adverse impact habitats expected under this alternative. | Maximizes landings to greatest extent, may not achieve the target exploitation rate, similar habitat impacts, short-term benefit to industry but potential negative long-term financial impacts on industry. |

**Table 14. Research set-aside requested amounts for 2008, 3 precent of the TAL under each alternative, and the value analyzed under each alternative.**

| Table values (million lb) | | Initial TAL | Research Set-Aside Requested | Research Set-Aside 3% of TAL | Value Analyzed |
|---|---|---|---|---|---|
| **Summer Flounder** | **Alternative 1 (Council-Preferred)** | 15.77 | 0.233 | 0.473 | 0.233 |
| | **Alternative 2 (Non-Preferred: Monitoring Comm. Recommended / Most Restrictive)** | 11.64 | 0.233 | 0.349 | 0.233 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 17.11 | 0.233 | 0.513 | 0.233 |
| **Scup** | **Alternative 1 (Council-Preferred: Monitoring Comm. Recommended)** | 7.34 | 0.214 | 0.217 | 0.214 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 5.02 | 0.214 | 0.151 | 0.151 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 12.00 | 0.214 | 0.360 | 0.214 |
| **Black Sea Bass** | **Alternative 1 (Council-Preferred: Monitoring Comm. Recommended)** | 4.22 | 0.086 | 0.127 | 0.086 |
| | **Alternative 2 (Non-Preferred: Most Restrictive)** | 3.75 | 0.086 | 0.113 | 0.086 |
| | **Alternative 3 (Non-Preferred: Least Restrictive / Status Quo)** | 5.00 | 0.086 | 0.150 | 0.086 |

**Table 15. Status of stock for potential non-target species for all proposed 2008 Mid-Atlantic research set-aside projects as of June 30, 2007 (Table provided by Sarah Thompson of NMFS/NERO).**

| Species | Status of Stock |
|---|---|
| **American Lobster** | SNE-Overfishing |
| **Atlantic Cod** | GOM-Overfishing, Overfished<br>GB-Overfishing, Overfished |
| **Atlantic Herring** | - |
| **Atlantic Mackerel** | - |
| **Barndoor Skate** | - |
| **Butterfish** | Overfished |
| **Clearnose Skate** | - |
| **Haddock** | GOM-Overfished<br>GB-Overfished |
| ***Illex*** | Unknown |
| **Little Skate** | - |
| **Monkfish** | Northern-Overfishing, Overfished<br>Southern-Overfishing, Overfished |
| **Offshore Hake** | Undefined |
| **Rosette Skate** | - |
| **Silver Hake** | - |
| **Smooth Skate** | - |
| **Spiny Dogfish** | - |
| **Thorny Skate** | Overfished |
| **Weakfish** | Unknown |
| **Winter Flounder** | GB-Overfishing<br>SNE/MA-Overfishing, Overfished |
| **Yellowtail Flounder** | GB-Overfishing, Overfished<br>SNE/MA-Overfishing, Overfished<br>CC/GOM-Overfishing, Overfished |

CC – Cape Cod; GB – Georges Bank; GOM – Gulf of Maine; MA – Mid-Atlantic; SNE – Southern New England

**Table 16. Percentage changes associated with allowable commercial landings for various alternatives in 2008 (adjusted for overages and RSA) relative to the adjusted quotas for 2007[a].**

| | Total Change Including Overages and RSA | | |
|---|---|---|---|
| **Geographic Area or Time Period** | **Quota Alternative 1 (Preferred)** | **Quota Alternative 2 (Most Restrictive)** | **Quota Alternative 3[*] (Least Restrictive)** |
| | | ***Summer Flounder*** | |
| **Delaware[b]** | -100% | -100% | -100% |
| **New York** | +15% | -15% | +25% |
| **Massachusetts** | -3% | -29% | +6% |
| **New Hampshire** | -7% | -32% | +1% |
| **Connecticut** | < +1% | -26% | +9% |
| **States other than DE, NY, MA, NH** | -7% | -32% | < +1% |
| **Aggregate Change** | -5% | -30% | +4% |
| | | ***Scup*** | |
| **Aggregate Change[c]** | -40% | -60% | < +1% |
| | | ***Black Sea Bass*** | |
| **Aggregate Change** | -15% | -24% | +1 % |

[*]Denotes status quo management measures.
[a]2007 quotas adjusted for research set-aside and other adjustments due to transfers, overages, and/or quota restorations.
[b]Delaware has no quota allocation in 2008.
[c]Quota changes by period (i.e., Winter I, Summer, and Winter II) are near identical as those under the aggregate change.

**Table 17. Qualitative comparative summary of economic effects of 2008 regulatory alternatives relative to the base line "adjusted quotas for 2007".**

| Feature | Alternative 1 Preferred | Alternative 2 Most Restrictive | Alternative 3 Least Restrictive |
|---|---|---|---|
| **Landings** | FLK -1 | FLK -1 | FLK +1 |
| | SCP -1 | SCP -1 | SCP 0/+1 |
| | BSB -1 | BSB -1 | BSB 0/+1 |
| **Prices** | FLK +1 | FLK +1 | FLK -1 |
| | SCP +1 | SCP +1 | SCP 0 |
| | BSB +1 | BSB +1 | BSB 0 |
| **Consumer Surplus** | FLK -1 | FLK -1 | FLK +1 |
| | SCP -1 | SCP -1 | SCP 0 |
| | BSB -1 | BSB -1 | BSB 0 |
| **Harvest Costs** | 0 | 0 | 0 |
| **Producer Surplus** | FLK +1 (?) | FLK +1 (?) | FLK 0/+1 (?) |
| | SCP +1 (?) | SCP +1 (?) | SCP 0 |
| | BSB +1 (?) | BSB +1 (?) | BSB 0 |
| **Enforcement Costs** | 0 | 0 | 0 |
| **Distributive Impacts** | 0 | 0 | 0 |

"-1" denotes a reduction relative to the base line; "0" denotes no change relative to the base line; and "+1" denotes an increase relative to the base line. "(?)" denotes uncertainty. FLK denotes Summer Flounder; SCP denotes Scup; and BSB denotes Black Sea Bass.

**Table 18. Numbers of vessels landing scup, black sea bass and/or summer flounder in 2006.**

| Landings Class | Landings Combinations | Commercial Vessels (#) |
|---|---|---|
| 1 | Scup Only | 14 |
| 2 | Black Sea Bass Only | 85 |
| 3 | Summer Flounder Only | 323 |
| 4 | Scup/Black Sea Bass | 69 |
| 5 | Scup/Summer Flounder | 30 |
| 6 | Black Sea Bass/Summer Flounder | 76 |
| 7 | Scup/Black Sea Bass/Summer Flounder | 306 |
| | Total | 903 |

Data from Northeast Region dealer data.

**Table 19. Number of summer flounder recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2008.**

| Year | Number of Fishing Trips[a] | Recreational Harvest Limit (million lb) | Recreational Landings of Summer Flounder (million lb)[b] |
|---|---|---|---|
| **1991** | 4,536,651 | None | 7.96 |
| **1992** | 3,820,071 | None | 7.15 |
| **1993** | 4,671,638 | 8.38 | 8.83 |
| **1994** | 5,769,037 | 10.67 | 9.33 |
| **1995** | 4,683,754 | 7.76 | 5.42 |
| **1996** | 4,885,179 | 7.41 | 9.82 |
| **1997** | 5,595,636 | 7.41 | 11.87 |
| **1998** | 5,268,926 | 7.41 | 12.48 |
| **1999** | 4,219,909 | 7.41 | 8.37 |
| **2000** | 5,802,215 | 7.41 | 16.47 |
| **2001** | 6,130,383 | 7.16 | 11.64 |
| **2002** | 4,564,011 | 9.72 | 8.01 |
| **2003** | 5,624,387 | 9.28[c] | 11.64 |
| **2004** | 5,129,166 | 11.21[c] | 10.87 |
| **2005** | 5,560,041 | 11.98[c] | 10.58 |
| **2006** | 5,447,976 | 9.29[c] | 11.51 |
| **2007** | NA | 6.68[c] | NA |
| **2008** | NA | 6.21[cd] | |

[a]Estimated number of recreational fishing trips (expanded) where the primary target species was summer flounder, Maine through North Carolina. Source: Scott Steinback, NMFS/NER/NEFSC.
[b]From Maine through North Carolina.
[c]Adjusted for research set-aside.
[d]Recreational harvest limit under Council-preferred alternative 1.
NA = Data not available.

**Table 20. Number of scup recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2008.**

| Year | Number of Fishing Trips[a] | Recreational Harvest Limit (million lb) | Recreational Landings of Scup (million lb)[b] |
|---|---|---|---|
| **1991** | 793,593 | None | 8.09 |
| **1992** | 499,780 | None | 4.41 |
| **1993** | 499,703 | None | 3.20 |
| **1994** | 435,625 | None | 2.63 |
| **1995** | 242,956 | None | 1.34 |
| **1996** | 241,322 | None | 2.16 |
| **1997** | 198,754 | 1.95 | 1.20 |
| **1998** | 213,842 | 1.55 | 0.88 |
| **1999** | 231,596 | 1.24 | 1.89 |
| **2000** | 485,039 | 1.24 | 5.44 |
| **2001** | 484,604 | 1.77 | 4.26 |
| **2002** | 481,716 | 2.71[c] | 3.62 |
| **2003** | 971,770 | 4.01[c] | 8.49 |
| **2004** | 567,518 | 4.01[c] | 4.24 |
| **2005** | 478,810 | 3.96[c] | 2.54 |
| **2006** | 466,977 | 4.15[c] | 2.95 |
| **2007** | NA | 2.74[c] | NA |
| **2008** | NA | 1.82[cd] | NA |

[a]Estimated number of recreational fishing trips (expanded) where the primary target species was scup, Maine through North Carolina. Source: Scott Steinback, NMFS/NEFSC.
[b]From Maine through North Carolina.
[c]Adjusted for research set-aside.
[d]Recreational harvest limit under Council-preferred alternative 1.
NA = Data not available.

**Table 21. Number of black sea bass recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2008.**

| Year | Number of Fishing Trips[a] | Recreational Harvest Limit (million lb) | Recreational Landings of BSB (million lb)[b] |
|---|---|---|---|
| **1991** | 288,691 | None | 4.32 |
| **1992** | 263,957 | None | 2.91 |
| **1993** | 299,404 | None | 4.99 |
| **1994** | 253,888 | None | 3.05 |
| **1995** | 313,537 | None | 6.34 |
| **1996** | 231,090 | None | 4.13 |
| **1997** | 310,898 | None | 4.40 |
| **1998** | 137,734 | 3.15 | 1.29 |
| **1999** | 136,452 | 3.15 | 1.70 |
| **2000** | 255,789 | 3.15 | 4.12 |
| **2001** | 293,191 | 3.15 | 3.57 |
| **2002** | 283,537 | 3.43[c] | 4.42 |
| **2003** | 285,861 | 3.43[c] | 3.45 |
| **2004** | 186,038 | 4.01[c] | 1.95 |
| **2005** | 163,418 | 4.13[c] | 2.10 |
| **2006** | 251,945 | 3.99[c] | 2.10 |
| **2007** | NA | 2.47[c] | NA |
| **2008** | NA | 2.11[cd] | NA |

[a]Estimated number of recreational fishing trips (expanded) where the primary target species was black sea bass, Maine through North Carolina. Source: Scott Steinback, NMFS/NEFSC.
[b]From Maine through Cape Hatteras, North Carolina.
[c]Adjusted for research set-aside.
[d]Recreational harvest limit under Council-preferred alternative 1.
NA = Data not available.

**Table 22. Threshold analysis of revenue impacts for participating vessels associated with the 2008 combined summer flounder, scup, and black sea bass quota under alternative 1 (preferred). "FLK" is summer flounder, "BSB" is black sea bass, and "SCP" is scup.**

| Quota Alternative 1 (Preferred) | | | | Increased Revenue (number) | No Change in Revenue (number) | Number of Impacted Vessels by Reduction Percentile (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class | Landings Combination | Total Vessels | Number of Vessels Impacted by ≥ 5 Reduction | | | <5 | 5-9 | 10-19 | 20-29 | 30-39 | 40-49 | ≥50 |
| 1 | SCP Only | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 | 0 |
| 2 | BSB Only | 85 | 85 | 0 | 0 | 0 | 0 | 85 | 0 | 0 | 0 | 0 |
| 3 | FLK Only | 323 | 218 | 23 | 0 | 82 | 216 | 0 | 0 | 0 | 0 | 2 |
| 4 | SCP/BSB | 69 | 69 | 0 | 0 | 0 | 0 | 44 | 9 | 12 | 4 | 0 |
| 5 | SCP/FLK | 30 | 20 | 4 | 0 | 6 | 10 | 4 | 3 | 2 | 1 | 0 |
| 6 | BSB/FLK | 76 | 64 | 8 | 0 | 4 | 45 | 19 | 0 | 0 | 0 | 0 |
| 7 | SCP/BSB/FLK | 306 | 263 | 20 | 0 | 23 | 103 | 97 | 48 | 15 | 0 | 0 |
| | Totals | 903 | 733 | 55 | 0 | 115 | 374 | 249 | 60 | 29 | 19 | 2 |

**Table 23. Review of revenue impacts under quota alternative 1 (preferred; associated with the 2008 combined summer flounder, scup, and black sea bass quotas), by home port state.**

| State | Participating Vessels | Number of Vessels Impacted ≥5 percent | Increased Revenue (number) | No Change in Revenue (number) | Number of Impacted Vessels by Reduction Percentile (percent) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | <5 | 5-9 | 10-19 | 20-29 | 30-39 | 40-49 | ≥50 |
| **CT** | 5 | 4 | 0 | 0 | 1 | 3 | 0 | 0 | 1 | 0 | 0 |
| **DE** | 8 | 8 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 1 |
| **MA** | 139 | 62 | 0 | 0 | 77 | 20 | 26 | 8 | 6 | 2 | 0 |
| **MD** | 11 | 11 | 0 | 0 | 0 | 4 | 7 | 0 | 0 | 0 | 0 |
| **ME** | 7 | 6 | 0 | 0 | 1 | 4 | 2 | 0 | 0 | 0 | 0 |
| **NC** | 83 | 83 | 0 | 0 | 0 | 72 | 10 | 1 | 0 | 0 | 0 |
| **NJ** | 136 | 135 | 0 | 0 | 1 | 87 | 33 | 11 | 3 | 1 | 0 |
| **NY** | 105 | 65 | 32 | 0 | 8 | 15 | 32 | 8 | 7 | 3 | 0 |
| **RI** | 105 | 105 | 0 | 0 | 0 | 30 | 50 | 22 | 3 | 0 | 0 |
| **VA** | 42 | 42 | 0 | 0 | 0 | 24 | 18 | 0 | 0 | 0 | 0 |
| **OTHER**[a] | 2 | 2 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 |
| **NOT KNOWN**[b] | 260 | 210 | 23 | 0 | 27 | 111 | 66 | 10 | 9 | 13 | 1 |
| **Total** | 903 | 733 | 55 | 0 | 115 | 374 | 249 | 60 | 29 | 19 | 2 |

[a]States with fewer than 3 vessels were aggregated.
[b]Vessels have shown landings of either of those three species in 2006, but did not hold any of the requisite federal permits in 2006. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other federal permits or they do not hold a federal permit to participate in these fisheries any longer.

**Table 24. Combinations of 2006 summer flounder (FLK), scup (SCP), and black sea bass (BSB) permits held by commercial vessels projected to have revenue reductions in the 5 percent or more range under alternative 1 (preferred).**

| | All 3 | FLK only | BSB only | SCP only | SCP/ BSB | SCP/ FLK | BSB/ FLK | None* |
|---|---|---|---|---|---|---|---|---|
| **Commercial** | 273 | 47 | 73 | 8 | 69 | 32 | 26 | 205 |

* "None" indicates no summer flounder, scup, or black sea bass permit held, and not necessarily no commercial permits held.

**Table 25. Other 2006 permits held by the 523 vessels holding summer flounder, scup and/or black sea bass permits projected to have revenue reductions in the 5 percent or more range under alternative 1 (preferred) in 2008.**

| | Northeast Region Permit Status | Number of Vessels | Percent of Permitted Vessels |
|---|---|---|---|
| **Commercial** | Multispecies | 264 | 50 |
| | Surfclam | 281 | 54 |
| | Scallop | 107 | 20 |
| | Lobster, trap gear | 169 | 32 |
| | Lobster, non-trap gear | 285 | 54 |
| | Squid/Mackerel/Butterfish | 476 | 91 |
| | Quahog | 267 | 51 |
| | Bluefish | 507 | 97 |
| | Dogfish | 478 | 91 |
| | Tilefish (full-time) | 2 | <1 |
| | Tilefish (part-time) | 9 | 2 |
| | Tilefish Incidental | 381 | 73 |
| | Herring VMS | 36 | 7 |
| | Herring non-VMS | 347 | 66 |
| | Atl. Deep-Sea Red Crab (Incidental) | 269 | 51 |
| | Skate | 447 | 85 |
| | Monkfish (Limited Access) | 207 | 40 |
| **Recreational** | Multispecies | 168 | 32 |
| | Squid/Mackerel/Butterfish | 23 | 4 |
| | Bluefish | 28 | 5 |
| | Lobster | 1 | <1 |

**Table 26. Descriptive information for the commercial vessels showing revenue reductions in the 5 percent or more range (in 2008) based on 2006 descriptive data from NMFS permit files under alternative 1 (preferred). No vessel characteristics data are reported for states with fewer than 3 permits.**

| | CT | DE | MA | MD | ME | NC | NJ | NY | RI | PA | VA | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **# Permits by Home Port State** | 4 | 8 | 62 | 11 | 6 | 83 | 135 | 65 | 105 | 5 | 42 | 2 |
| **# Permits by Principal Port State** | 4 | 6 | 49 | 12 | 7 | 76 | 143 | 61 | 119 | 2 | 48 | 3 |
| **# Permits by Mailing Address State** | 5 | 6 | 47 | 13 | 7 | 82 | 138 | 60 | 121 | 1 | 43 | 5 |
| **Avg. Length in Feet by Principal Port** | 71 | 40 | 55 | 50 | 65 | 69 | 58 | 47 | 56 | 64 | 63 | NA |
| **Avg. GRT by Principal Port** | 108 | 18 | 68 | 31 | 102 | 99 | 69 | 51 | 68 | 109 | 89 | NA |
| **Avg. Vessel Horsepower** | 575 | 453 | 395 | 401 | 486 | 546 | 491 | 387 | 431 | 850 | 554 | NA |
| **% of Vessels where Home Port State = Principal Port State** | 100 | 100 | 94 | 85 | 72 | 89 | 96 | 100 | 85 | 100 | 86 | NA |

**Table 27. Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 1 (preferred; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| Connecticut | New London | Mystic | 3 |
| | | Other | 1 |
| Delaware | Sussex | Other | 6 |
| Maine | Cumberland | Portland | 3 |
| | | Other | 1 |
| Massachusetts | Barnstable | Other | 7 |
| | Bristol | New Bedford | 18 |
| | | Other | 3 |
| | Dukes | Other | 8 |
| | Plymouth | Other | 3 |
| | Suffolk | Boston | 19 |
| New Jersey | Atlantic | Atlantic City | 4 |
| | | Other | 1 |
| | Cape May | Cape May | 40 |
| | | Sea Isle City | 5 |
| | | Other | 4 |
| | Monmouth | Belford | 17 |
| | | Other | 4 |
| | Ocean | Barnegat Light | 35 |
| | | Pt. Pleasant | 18 |
| | | Other | 7 |

**Table 27 (Continued). Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 1 (preferred; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| New York | Nassau | Other | 8 |
| | New York City | New York | 20 |
| | Suffolk | Greenport | 3 |
| | | Montauk | 23 |
| | | Shinnecock | 6 |
| | | Other | 3 |
| North Carolina | Beaufort | Belhaven | 5 |
| | | Other | 2 |
| | Carteret | Atlantic | 4 |
| | | Beaufort | 10 |
| | | Other | 1 |
| | Craven | New Bern | 6 |
| | Dare | Wanchese | 19 |
| | | Other | 4 |
| | Hyde | Englehard | 5 |
| | | Swan Quarter | 4 |
| | | Other | 2 |
| | Pamlico | Oriental | 10 |
| | | Other | 4 |

**Table 27 (Continued). Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 1 (preferred; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| Rhode Island | Newport | Newport | 17 |
| | | Sakonnet Point | 6 |
| | | Other | 2 |
| | Washington | Little Compton | 3 |
| | | Narragansett | 5 |
| | | Point Judith | 58 |
| | | Wakefield | 4 |
| | | Other | 6 |
| Virginia | Accomac | Other | 5 |
| | City of Hampton | Hampton | 4 |
| | City of Norfolk | Norfolk | 10 |
| | Virginia Beach City | Virginia Beach | 6 |
| | | Other | 2 |
| | York | Seaford | 3 |

**Table 28. Threshold analysis of revenue impacts for participating vessels associated with the 2008 combined summer flounder, scup, and black sea bass quota under alternative 2 (most restrictive). "FLK" is summer flounder, "BSB" is black sea bass, and "SCP" is scup.**

| Quota Alternative 2 (Most Restrictive) | | | | Increased Revenue (number) | No Change in Revenue (number) | Number of Impacted Vessels by Reduction Percentile (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class | Landings Combination | Total Vessels | Number of Vessels Impacted by ≥ 5 Reduction | | | <5 | 5-9 | 10-19 | 20-29 | 30-39 | 40-49 | ≥50 |
| 1 | SCP Only | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 14 |
| 2 | BSB Only | 85 | 85 | 0 | 0 | 0 | 0 | 0 | 85 | 0 | 0 | 0 |
| 3 | FLK Only | 323 | 323 | 0 | 0 | 0 | 0 | 23 | 82 | 216 | 0 | 2 |
| 4 | SCP/BSB | 69 | 69 | 0 | 0 | 0 | 0 | 0 | 40 | 9 | 10 | 10 |
| 5 | SCP/FLK | 30 | 30 | 0 | 0 | 0 | 0 | 3 | 7 | 13 | 4 | 3 |
| 6 | BSB/FLK | 76 | 76 | 0 | 0 | 0 | 0 | 8 | 28 | 40 | 0 | 0 |
| 7 | SCP/BSB/FLK | 306 | 306 | 0 | 0 | 0 | 0 | 11 | 50 | 178 | 55 | 12 |
| | Totals | 903 | 903 | 0 | 0 | 0 | 0 | 45 | 292 | 456 | 69 | 41 |

**Table 29. Review of revenue impacts under quota alternative 2 (most restrictive; associated with the 2008 combined summer flounder, scup, and black sea bass quotas), by home port state.**

| State | Participating Vessels | Number of Vessels Impacted ≥5 percent | Increased Revenue (number) | No Change in Revenue (number) | Number of Impacted Vessels by Reduction Percentile (percent) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | <5 | 5-9 | 10-19 | 20-29 | 30-39 | 40-49 | ≥50 |
| **CT** | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 |
| **DE** | 8 | 8 | 0 | 0 | 0 | 0 | 0 | 5 | 2 | 0 | 1 |
| **MA** | 139 | 139 | 0 | 0 | 0 | 0 | 0 | 91 | 31 | 12 | 5 |
| **MD** | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 7 | 4 | 0 | 0 |
| **ME** | 7 | 7 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 0 |
| **NC** | 83 | 83 | 0 | 0 | 0 | 0 | 0 | 8 | 75 | 0 | 0 |
| **NJ** | 136 | 136 | 0 | 0 | 0 | 0 | 0 | 21 | 99 | 12 | 4 |
| **NY** | 105 | 105 | 0 | 0 | 0 | 0 | 25 | 38 | 24 | 10 | 8 |
| **PA** | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 1 |
| **RI** | 105 | 105 | 0 | 0 | 0 | 0 | 0 | 11 | 67 | 24 | 3 |
| **VA** | 42 | 42 | 0 | 0 | 0 | 0 | 0 | 19 | 23 | 0 | 0 |
| **OTHER**[a] | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 |
| **NOT KNOWN**[b] | 255 | 255 | 0 | 0 | 0 | 0 | 20 | 86 | 121 | 10 | 18 |
| **Total** | 903 | 903 | 0 | 0 | 0 | 0 | 45 | 292 | 456 | 69 | 41 |

[a]States with fewer than 3 vessels were aggregated.

[b]Vessels have shown landings of either of those three species in 2006, but did not hold any of the requisite federal permits in 2006. These vessels may be fishing exclusively in state waters fisheries for those species, and landings are indicated because of reporting requirements for their other federal permits or they do not hold a federal permit to participate in these fisheries any longer.

**Table 30. Combinations of 2006 summer flounder (FLK), scup (SCP), and black sea bass (BSB) permits held by commercial vessels projected to have revenue reductions in the 5 percent or more range under alternative 2 (most restrictive).**

| | All 3 | FLK only | BSB only | SCP only | SCP/ BSB | SCP/ FLK | BSB/ FLK | None* |
|---|---|---|---|---|---|---|---|---|
| **Commercial** | 331 | 83 | 73 | 13 | 75 | 45 | 28 | 255 |

* "None" indicates no summer flounder, scup, or black sea bass permit held, and not necessarily no commercial permits held.

**Table 31. Other 2006 permits held by the 648 vessels holding summer flounder, scup and/or black sea bass permits projected to have revenue reductions in the 5 percent or more range under alternative 2 (most restrictive) in 2008.**

| | Northeast Region Permit Status | Number of Vessels | Percent of Permitted Vessels |
|---|---|---|---|
| Commercial | Multispecies | 370 | 57 |
| | Surfclam | 368 | 57 |
| | Scallop | 109 | 17 |
| | Lobster, trap gear | 192 | 30 |
| | Lobster, non-trap gear | 379 | 58 |
| | Squid/Mackerel/Butterfish | 590 | 91 |
| | Quahog | 350 | 54 |
| | Bluefish | 623 | 96 |
| | Dogfish | 590 | 91 |
| | Tilefish (full-time) | 2 | <1 |
| | Tilefish (part-time) | 9 | 1 |
| | Tilefish Incidental | 476 | 73 |
| | Herring VMS | 44 | 7 |
| | Herring non-VMS | 444 | 69 |
| | Atl. Deep-Sea Red Crab (Incidental) | 350 | 54 |
| | Skate | 558 | 86 |
| | Monkfish (Limited Access) | 273 | 42 |
| Recreational | Multispecies | 175 | 27 |
| | Squid/Mackerel/Butterfish | 25 | 4 |
| | Bluefish | 32 | 5 |
| | Lobster | 2 | <1 |

**Table 32. Descriptive information for the commercial vessels showing revenue reductions in the 5 percent or more range (in 2008) based on 2006 descriptive data from NMFS permit files under alternative 2 (most restrictive). No vessel characteristics data are reported for states with fewer than 3 permits.**

| | CT | DE | MA | MD | ME | NC | NJ | NY | PA | RI | VA | Other |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **# Permits by Home Port State** | 5 | 8 | 139 | 11 | 7 | 83 | 136 | 105 | 5 | 105 | 42 | 2 |
| **# Permits by Principal Port State** | 5 | 6 | 127 | 12 | 8 | 76 | 143 | 100 | 1 | 119 | 48 | 1 |
| **# Permits by Mailing Address State** | 6 | 6 | 124 | 13 | 9 | 82 | 139 | 99 | 1 | 121 | 43 | 5 |
| **Avg. Length in Feet by Principal Port** | 70 | 40 | 61 | 50 | 62 | 69 | 58 | 46 | 64 | 56 | 63 | NA |
| **Avg. GRT by Principal Port** | 106 | 18 | 87 | 31 | 95 | 99 | 69 | 44 | 109 | 68 | 87 | NA |
| **Avg. Vessel Horsepower** | 530 | 453 | 453 | 401 | 475 | 546 | 491 | 370 | 850 | 431 | 554 | NA |
| **% of Vessels where Home Port State = Principal Port State** | 100 | 100 | 98 | 92 | 78 | 88 | 91 | 100 | 100 | 85 | 86 | NA |

**Table 33. Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 2 (most restrictive; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| **Connecticut** | **New London** | **Other** | 5 |
| **Delaware** | **Sussex** | **Other** | 5 |
| **Maine** | **Cumberland** | **Portland** | 3 |
| | | **Other** | 1 |
| **Massachusetts** | **Barnstable** | **Provincetown** | 5 |
| | | **Woods Hole** | 3 |
| | | **Other** | 8 |
| | **Bristol** | **Fairhaven** | 5 |
| | | **New Bedford** | 62 |
| | | **Other** | 1 |
| | **Dukes** | **Vineyard Haven** | 3 |
| | | **Other** | 6 |
| | **Essex** | **Gloucester** | 5 |
| | **Plymouth** | **Plymouth** | 4 |
| | | **Other** | 6 |
| | **Suffolk** | **Boston** | 16 |
| **New Jersey** | **Atlantic** | **Atlantic City** | 4 |
| | | **Other** | 1 |
| | **Cape May** | **Cape May** | 40 |
| | | **Sea Isle City** | 5 |
| | | **Other** | 4 |

**Table 33 (Continued). Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 2 (most restrictive; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| New Jersey | Monmouth | Belford | 17 |
| | | Other | 4 |
| | Ocean | Barnegat Light | 35 |
| | | Point Pleasant | 18 |
| | | Other | 7 |
| New York | Nassau | Freeport | 3 |
| | | Other | 8 |
| | New York | New York | 30 |
| | Suffolk | Greenport | 3 |
| | | Hampton Bays | 5 |
| | | Montauk | 38 |
| | | Shinnecock | 9 |
| | | Other | 8 |
| North Carolina | Beaufort | Belhaven | 5 |
| | | Other | 2 |
| | Carteret | Atlantic | 4 |
| | | Beaufort | 10 |
| | | Other | 1 |
| | Craven | New Bern | 6 |
| | Dare | Wanchese | 19 |
| | | Other | 4 |

**Table 33 (Continued). Distribution of commercial vessels showing revenue reductions in the 5 percent or more range under alternative 2 (most restrictive; in 2008; holding permits for summer flounder, scup, and black sea bass) by state, county and home port, from 2006 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.**

| State | County | Home port | Number of Vessels |
|---|---|---|---|
| North Carolina | Hyde | Englehard | 5 |
| | | Swan Quarter | 4 |
| | | Other | 2 |
| | Pamlico | Lowland | 6 |
| | | Oriental | 10 |
| | | Other | 3 |
| Pennsylvania | Philadelphia | Philadelphia | 5 |
| Rhode Island | Newport | Little Compton | 3 |
| | | Newport | 17 |
| | | Sakonnet Point | 6 |
| | | Other | 2 |
| | Washington | Narragansett | 5 |
| | | Point Judith | 60 |
| | | Wakefield | 4 |
| | | Other | 6 |
| Virginia | Accomak | Wanchese | 8 |
| | | Other | 3 |
| | City of Hampton | Hampton | 4 |
| | City of Newport News | Newport News | 3 |
| | City of Norfolk | Norfolk | 4 |
| | Virginia Beach City | Virginia Beach | 6 |
| | | Other | 2 |
| | York | Seaford | 3 |

**Table 34. Threshold analysis of revenue impacts for participating vessels associated with the 2008 combined summer flounder, scup, and black sea bass quota under alternative 3 (least restrictive/status quo). "FLK" is summer flounder, "BSB" is black sea bass, and "SCP" is scup.**

| Quota Alternative 3 (Least Restrictive/Status Quo) | | | | Increased Revenue (number) | No Change in Revenue (number) | Number of Impacted Vessels by Reduction Percentile (%) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Class | Landings Combination | Total Vessels | Number of Vessels Impacted by ≥ 5 Reduction | | | <5 | 5-9 | 10-19 | 20-29 | 30-39 | 40-49 | ≥50 |
| 1 | SCP Only | 14 | 0 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | BSB Only | 85 | 0 | 85 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 3 | FLK Only | 323 | 2 | 321 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| 4 | SCP/BSB | 69 | 0 | 69 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | SCP/FLK | 30 | 0 | 30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 6 | BSB/FLK | 76 | 0 | 76 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 7 | SCP/BSB/FLK | 306 | 0 | 306 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Totals | 903 | 0 | 901 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |

**Table 35. Counties identified as having >= 4 commercial vessels showing revenue reductions of 5 percent or more as a consequence of the most restrictive 2008 alternative (alternative 2) evaluated in this document (sections 9.11.2 and 9.11.5 of the RIR/FRFA).**

| State | County[a] | Population[b] | Employment[c] | Total Personal Income[d] (million of $'s) | Commercial Fishing Employment | Percent of Personal Income Derived From Comm. Fishing | Fresh and Frozen Seafood Processing Employment | Percent of Personal Income derived From Seafood Processing |
|---|---|---|---|---|---|---|---|---|
| **CT** | New London | 259,065 | 163,257 | 8,634.74 | 122 | .01% | 0 | 0% |
| **DE** | Sussex | 161,270 | 85,726 | 3,733.21 | * | * | 248 | .20% |
| **MA** | Barnstable | 226,809 | 132,491 | 8,159.31 | 793 | .08% | 0 | .0008% |
| **MA** | Bristol | 540,360 | 269,977 | 15,730.40 | 3,232 | .64% | 917 | .19% |
| **MA** | Dukes | 15,402 | 12,349 | 560.503 | 15 | .05% | 0 | 0% |
| **MA** | Essex | 730,296 | 391,367 | 27,580.29 | 1,325 | .06% | 858 | .18% |
| **MA** | Plymouth | 481,059 | 231,023 | 8,362.61 | 287 | .06% | 18 | .01% |
| **MA** | Suffolk | 682,062 | 703,540 | 29,633.35 | 447 | .07% | 494 | .09% |
| **ME** | Cumberland | 266,988 | 223,061 | 7,834.43 | 1,189 | .12% | 125 | .05% |
| **NJ** | Atlantic | 255,479 | 166,252 | 8,063.50 | 79 | .02% | 0 | 0% |
| **NJ** | Cape May | 102,352 | 55,562 | 3,209.74 | 796 | .34% | 294 | .30% |
| **NJ** | Monmouth | 622,977 | 326,491 | 26,192.23 | 52 | .01% | 23 | .002% |
| **NJ** | Ocean | 527,207 | 187,627 | 15,742.25 | 166 | .04% | 0 | 0% |
| **NY** | Nassau | 1,334,648 | 761,530 | 63,524.34 | 198 | .0039% | 84 | .0029% |
| **NY** | New York | 1,541,150 | 2,768,774 | 144,033.30 | 0 | 0% | 23 | .0013% |
| **NY** | Suffolk | 1,438,973 | 752,834 | 52,116.44 | 1,111 | .01% | 0 | 0% |
| **NC** | Beaufort | 45,224 | 23,503 | 1,022.68 | 15 | .08% | 245 | .34% |
| **NC** | Carteret | 59,901 | 32,131 | 1,603.17 | 431 | .08% | 64 | .14% |
| **NC** | Craven | 91,316 | 59,316 | 2,382.08 | 0 | 0% | * | * |
| **NC** | Dare | 31,168 | 25,453 | 830.10 | 77 | .08% | 17 | .01% |
| **NC** | Hyde | 5,703 | 3,135 | 117.10 | 126 | .56% | 129 | 1.8% |
| **NC** | Pamlico | 12,929 | 4,396 | 295.07 | 173 | .50% | 150 | .83% |
| **RI** | New Port | 85,218 | 52,334 | 3,009.40 | 239 | .14% | 0 | 0% |
| **RI** | Washington | 125,991 | 62,870 | 4,212.16 | 793 | .46% | 96 | .11% |
| **VA** | Accomak | 34,414 | 18,444 | 708.07 | 93 | .18% | 281 | .93% |
| **VA** | City of Hampton | 145,665 | 88,495 | 3,273.93 | 0 | 0% | 98 | .25% |
| **VA** | City of Newport News | 180,305 | 114,024 | 4,248.24 | 0 | 0% | 548 | .41% |
| **VA** | Virginia Beach City | 426,931 | 245,384 | 13,767.66 | 157 | .03% | * | * |
| **VA** | City of Norfolk | 233,147 | 236,953 | 5,479.15 | 0 | 0% | 52 | .04% |

* = < 10 observations.

a = Data obtained from the Minnesota IMPLAN Group, Inc., IMPLAN System (data and software), 1725 Tower Drive West, Suite 140, Stillwater, MN 55082, www.implan.com, 2001.

b = Year-round population.

c = Includes both full-time and part-time workers.

d = Includes employee compensation (wage and salary payments and benefits paid by employers) and proprietary income (payments received by self-employed individuals as income).

Source: Scott Steinback (NEFSC).

Note: The PA module was not available to conduct the county profile for that state. However, it is expected that overall commercial fishing employment; percent of personal income derived from commercial fishing; fresh and frozen seafood processing employment percent of personal; and income derived from seafood processing are expected to be low and not higher than the highest values presented in this table due to the small amount of marine commercial fishing activity in that state.

## FIGURES

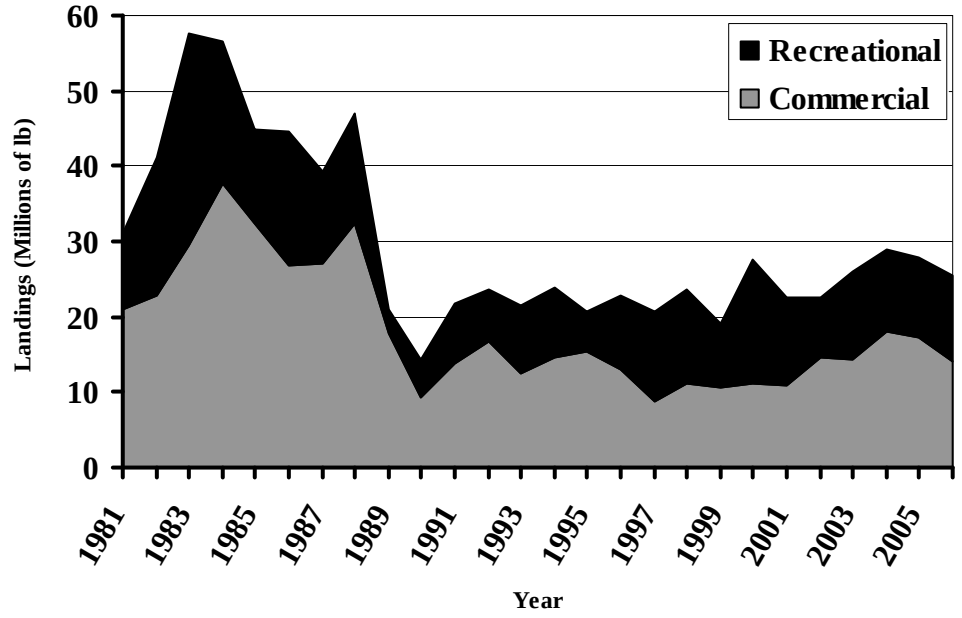


**Figure 1. Summer flounder commercial and recreational landings, 1981-2006.**

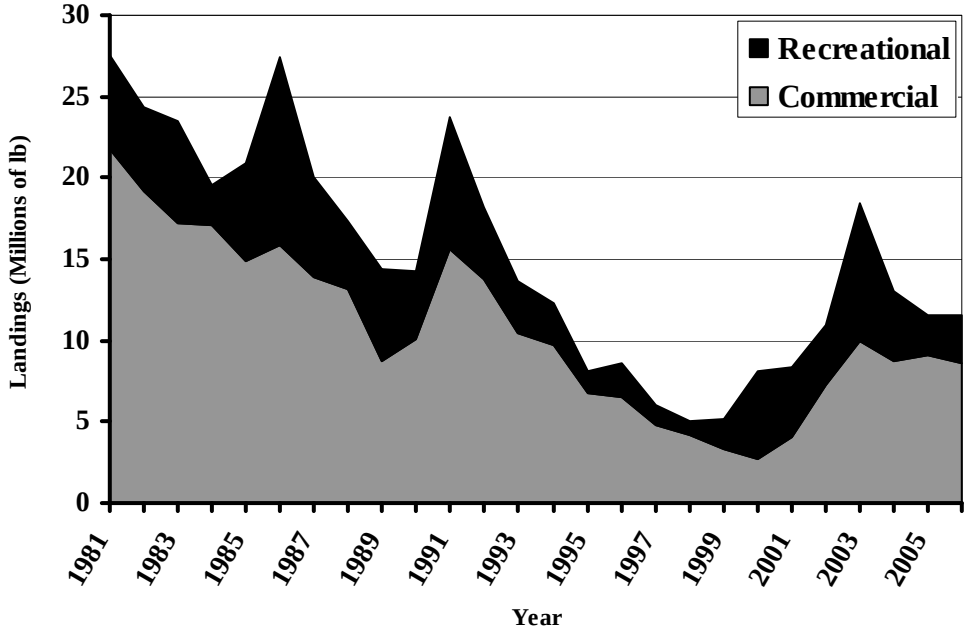


**Figure 2. Scup commercial and recreational landings, 1981-2006.**

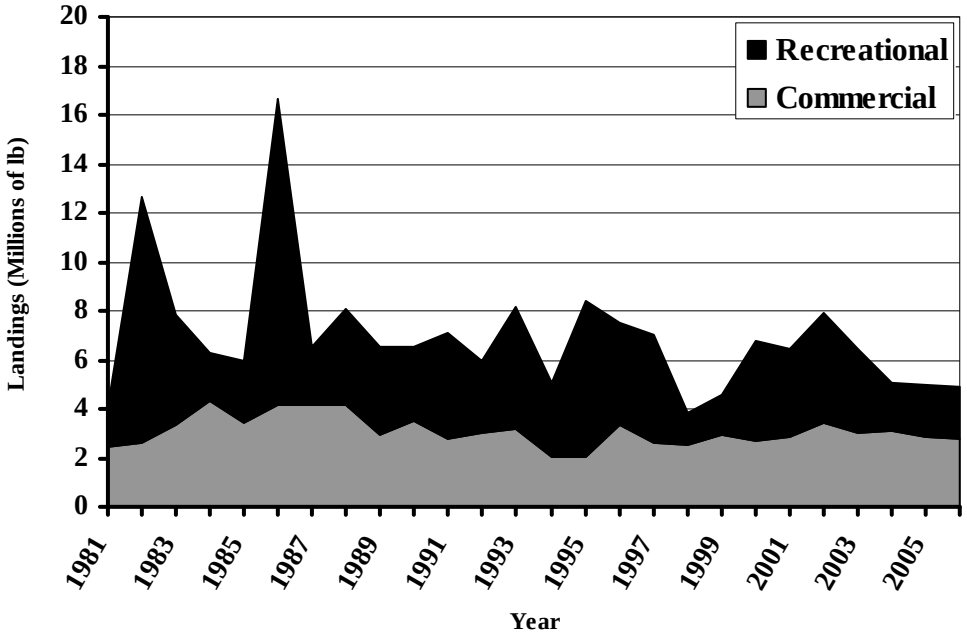


**Figure 3. Black sea bass commercial and recreational landings, 1981-2006.**

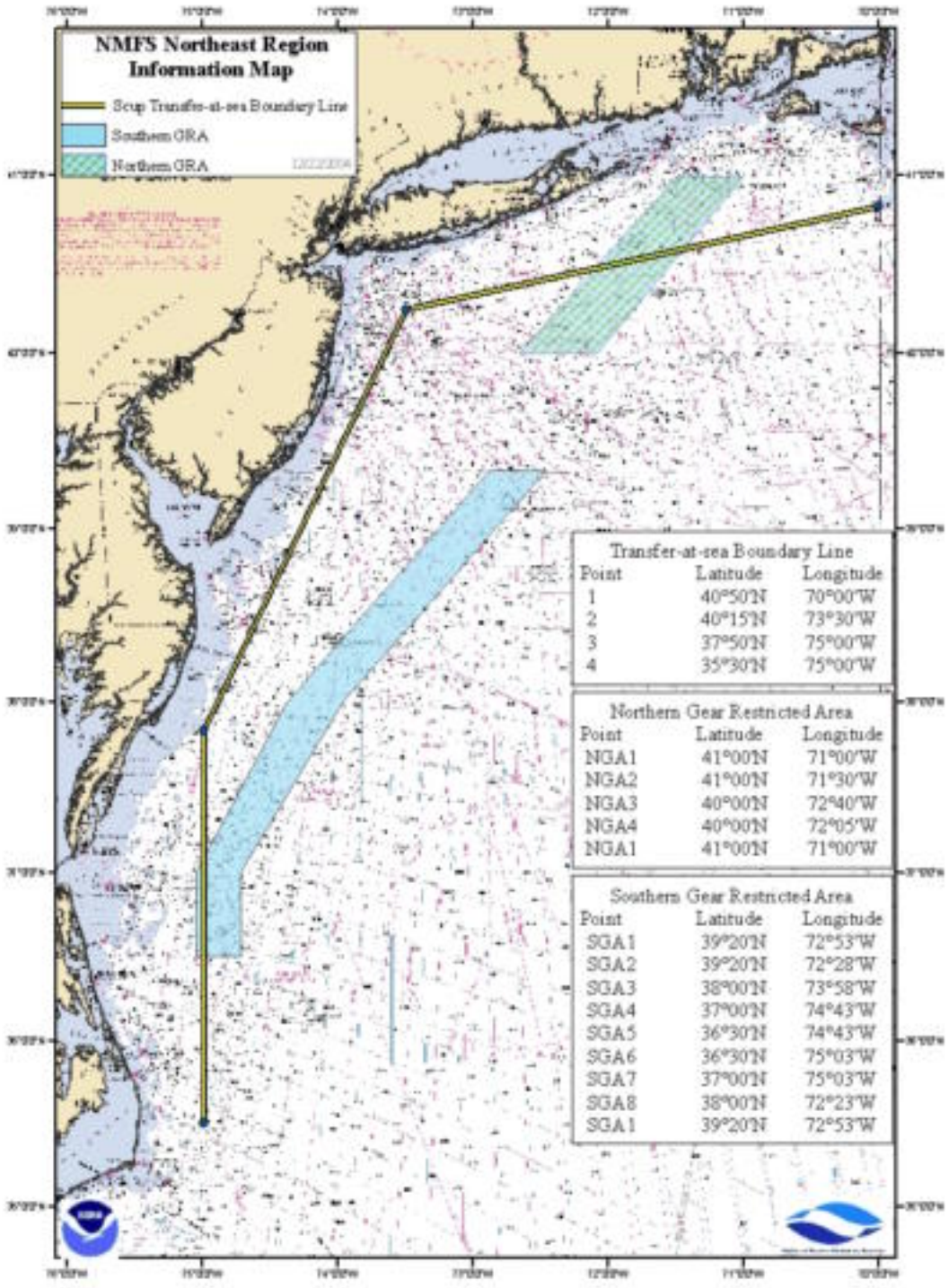


**Figure 4. Northern and Southern Scup GRAs.**

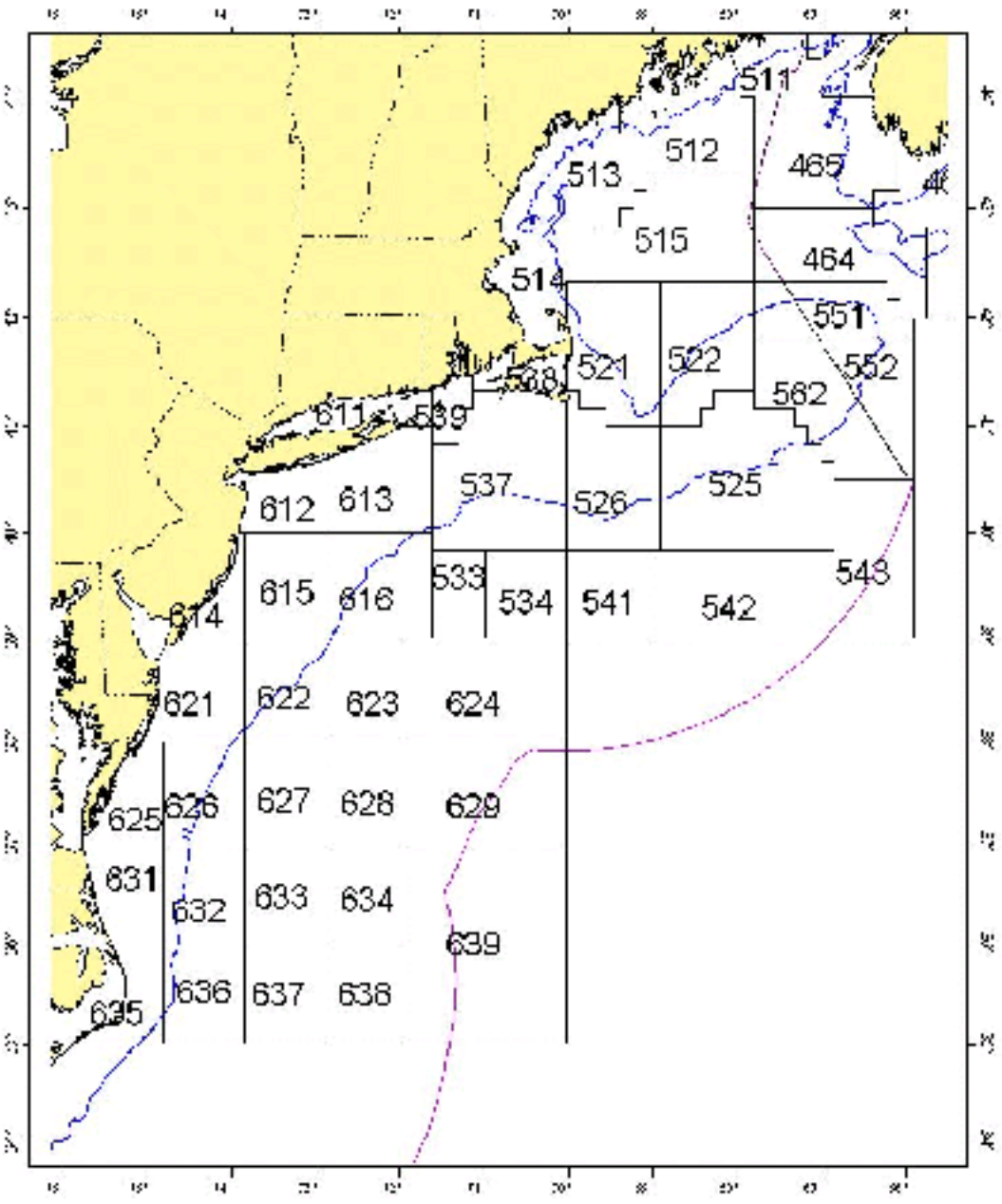


**Figure 5. NMFS Northeast statistical areas.**

**APPENDIX A. Scope of Work for 2008 Mid-Atlantic Research Set-Aside (RSA) Projects**

***[This information was provided by Paul Perra, NMFS/NERO on 9-26-2007]***

**<u>08-RSA-001</u>** - ***National Fisheries Institute,*** **"Discard Mortality in the Summer Flounder Fishery: A New Approach to Evaluation"**

**<u>Principal Investigators</u>:** Kenneth Able, Thomas Grothues, and Eleanor Bochenek

| | | | |
|---|---|---|---|
| **<u>RSA Amount</u>:** | Summer flounder: | 81,192 lbs | (36,828.1 kg) |
| (revised) | Black sea bass: | 11,790 lbs | (5,347.8 kg) |

In general, the rate of discard mortality from the trawl fishery will be determined with a combination of mortality estimates 1) on the deck of a fishing vessel after haul-back and the catch has been retrieved from the trawl, 2) as a result of tagging and tracking and 3) the result of diver observations. These studies will be conducted as part of the inshore fishery in August or September in order to capture fish as they are beginning to move out of estuaries and across the continental shelf during the fall offshore migration. These combined sources will provide the best estimate available based on at sea observations. This set of observations planned for 2008 is designed to complement the extensive land - based observations conducted during 2007 (Emerson Hasbrouck, pers. comm.).

**Trawling**

Two days of trawling off southern New Jersey with standard fishing methods and gear is anticipated. The vessel will be compensated to make tows specifically to catch summer flounder, primarily for tagging and tracking. However, the study will sample the catch to determine incidence of immediate mortality, size, age, and reproductive status (visual examination of developing ovaries and testes or if they are running ripe and gonadosomatic indicies as per Morse (1 98 1)) from randomly selected live and dead individuals to help estimate total mortality associated with discarding and to complement ongoing studies by a previous MAFMC-RSA study by Emerson Hasbrouck and others. The study will sample individuals from the trawl immediately (0 minute) and 30 minute later to reflect culling time. The live individuals will be placed in small tanks of ambient sea water, measured, sex determined, health index recorded, and tagged with transmitters (see below). A health index will be calculated for each fish as follows: a) fish lively, no visible signs of loss of scales or mucus; b) fish less lively, some scratches and some scales missing, mucus layer affected up to 20%, small spots on blind side; c) fish lethargic, several scratches and some areas without scales, mucus layer affected up to 50%, several spots on blind side; d) fish lethargic, many scratches and areas without scales, mucus layer affected for more than 50%, many spots and hemorrhages on blind side; and e) fish dead. This index is the same as the one to be used for tank studies of summer flounder discard mortality by Emerson Hasbrouck and others in 2007, thus we will be able to compare discard mortality rates between studies. Location, depth, water temperature (surface and bottom with a YSI data logger) and air temperature will be recorded at the end of each tow.

**Tagging**

Juvenile and adult summer flounder (greater than 10 inches in length), both live and dead, will be fitted with ultrasonic transmitters emitting unique codes to identify individuals and thus individuals of different status (live vs dead), length, and age. Transmitters will be padded in a neoprene saddle and will be fastened externally to the upper (left) side of the fish along the dorsal edge by stitching an anchor loop through the dorsal pterygiophores (supporting bones for the fins) following Szedlmayer and Able (1 993) and Sackett et al. in review a, b) (Figure 1). The tagged fish will be released at a central location in the center of the trawling area to make it logistically easier to subsequently track them. These ultrasonic transmitters or tags (MAP-1 1, 1 1 x 46 mm, 3.8 g) are commercially available (MAP system, Lotek Wireless, Inc.) and they broadcast individually coded acoustic (76 KHz) pulses of 150 dB at approximately 3 second intervals with an expected life span of 90 days. The study investigators already have considerable experience with using ultrasonic telemetry techniques (Szedlmayer and Able 1993, Tupper and Able 2000, Grothues et al. 2005), including those for summer flounder (Sackett et al. in review).

**Tracking**

The movement of released live summer flounder **n = 53** will be tracked and compared to the movement, or lack thereof, of dead flounder **n = 12** also fitted with transmitters. There will be two approaches to tracking summer flounder (both live and dead): 1) From a stationary receiver and 2) mobile tracking from a surface vessel. Together, these two approaches will provide comprehensive coverage of the study area. For the first, a stationary MAP-3050 hydrophone, with approximately 500 m range (1,539,380 square meters circular area), will be deployed in the middle of the release area for tagged fish. This will provide continuous reception of the tagged fish that stay in the immediate vicinity during the two weeks of intense observation. Thus, it will provide a record of those fish that do not move from the release area (dead) and a time-series of fish movement out of the area. The second approach, mobile tracking, will allow observation of the rate and direction of movement of tagged fish and over a much wider area but will be limited to those times when other tracking is occurring from a surface vessel. Location will be recorded with a Global Positioning System (GPS) unit in Universal Transverse Mercator (UTM) coordinates.

To spatially and temporally standardize tracking, 144 fixed locations encompassing an area of 36 square krn will be selected using a Geographic Information System software package: ArcView Version 3.2 (ESRI, Redlands, California) and visited with a stereo directional mobile hydrophone with Biomap, which reports direction and reception power (Lotek MAP-600 RT). At each of these locations, the hydrophone will be lowered 2.0 m into the water for 30 seconds. When a fish is detected, its position will be triangulated by moving 200 m and taking a second directional reading. Water temperature, salinity, dissolved oxygen (YSI Model 83, Yellow Springs Instruments Inc., Yellow Springs, Ohio), along with the date, time tag number, tidal stage, and depth will also be recorded. Tracking will not be conducted on days when the listening range is low, which will likely correspond to wind velocities > 30 km/hr**,** or on days when there is heavy rainfall, lightning or thunderstorms. Tracking will occur every day for three days after the initial release of tagged fish and at 2-3 day intervals for 14 days thereafter to assure interpretation of patterns (e.g. moving, stationary).

Both live and dead individuals will be tagged to help discriminate between the behaviors of the two types. We anticipate that dead individuals will remain at the release location. However, we will be sensitive to the possibility that dead individuals may move along the bottom with currents there. Another possibility is that dead individuals may be eaten by a predator, perhaps not an uncommon occurrence (see Ryer et al. 2004), and continue to be detected as a result of the ingested tag and move with the predator. We anticipate that large predators (e.g. sharks) will have faster swimming speeds than those of summer flounder. We already have estimates of summer flounder swimming speeds as they leave estuaries (Sackett et al. in review a) and will compare these values with those obtained as part of this study. The tracking of live fish could be relatively simple if live tagged summer flounder move quickly away from the release area while dead tagged fish remain. It is also possible that live summer flounder might remain while buried in the bottom, as has been reported in the laboratory (Olla et al. 1972) and in the natural environment (Middaugh and McKenney 2003). We will differentiate among these possibilities for individuals with frequent location of individuals over a two week period and appropriate statistical tools. During this time we would expect summer flounder to move away from the release site because the study period will be during their offshore migration. Because these tags will be external, we will ask commercial trawlers to return tagged summer flounder, with the location captured information, through the fall and winter to determine longer term survival and movements.

**Scuba Diver Assessment**

At the end of the two week set of trawling, tagging and tracking operations an experienced dive team from Rutgers University will deploy to verify the occurrence of dead and potentially live, but stationary, tagged summer flounder. Individual fish will be detected with a hand-held receiver specifically designed to detect the tags, as we have done previously for other species. The receiver is capable of detecting buried tags as well, in case the fish has buried deeply in the substrate. Once detected, each individual will be evaluated as to whether live or dead, if the carcasses are being scavenged (a useful measure for interpreting loss of tags and fate of discarded fish) and potentially identify predators in the area. These observations will also allow the divers to determine if the carcasses are moving in response to bottom currents.

**RSA Harvesting Activities (from proposal):** Fish for the project will be harvested in two ways:

1) The research vessel(s) will in all likelihood be fishing during periods when quota for the species are still open. The research vessel(s) will request an Experimental Fishing Permit (EFP) that will permit the vessel(s) to land all of its catches and sell its catches. The EFP requested would include an exemption from trip limits. To the extent quotas are still open, the landings and sales of the research vessel(s) will not be counted against the quota set-aside, but will be actual landings of the vessel fishing under the EFP.

2) A second group of up to 35 commercial fishing vessels will be permitted to harvest the quota set-aside. These vessels will request exemption Permits to fish in closed seasons and to exceed trip limits. Vessels participating in the quota set-aside harvest will be assigned a specific portion of the set-aside quota. The NFI-SMC will require each vessel that receives a portion of the set-aside quota to inform NMFS Enforcement prior to fishing and prior to offloading a quota set-aside trip. Details of permitting, bidding, reporting, and enforcement have been well-defined

between NFI-SMC, NMFS, and the states of Rhode Island, New York, New Jersey, and Virginia. No significant problems are expected to arise beyond the predictable uncertainty of the per-pound value of the fish that cannot be completely determined until the formal bidding is complete.

Specific timing of sampling activity

Trawling for the purpose of counting bycatch mortality and tagging summer flounder bycatch with transmitters will occur in September and October 2008. RSA harvesting will occur January 1 to December 31, 2008.

Specific location of sampling activity

Fish tagged and released for telemetry will be trawled and released by a commercial fishing vessel as near as practical on the shelf off the Little Egg Inlet (Lat 39.2 to 39.8 N, Long 74.6 to 73.8 W) to minimize the distance of travel for subsequent telemetry surveys (Fig 1.). Trawling to harvest the RSA quota may occur wherever trawling is legal.

Specification of sampling gear

The purpose of the project is to ascertain mortality of summer flounder bycatch caught by commercial fisherman using legal bottom trawl gear. Therefore, no other gear than legal bottom trawl gear will be used.

Fishing Vessels involved in sampling and RSA harvesting

For harvesting the RSA quota, approximately 35 fishing vessels will operate under standard commercial fishing operations to take the set-aside quota assigned to the project. No additional mortality of other fish species will occur because the study will be conducted during standard commercial fishing trips. These vessels will need exemptions to closed seasons and trip limits for the RSA species listed under the project**.** The most likely ports for landings will be in Rhode Island, New York, New Jersey, and Virginia with more commercial fishermen landing in New York than any other state.

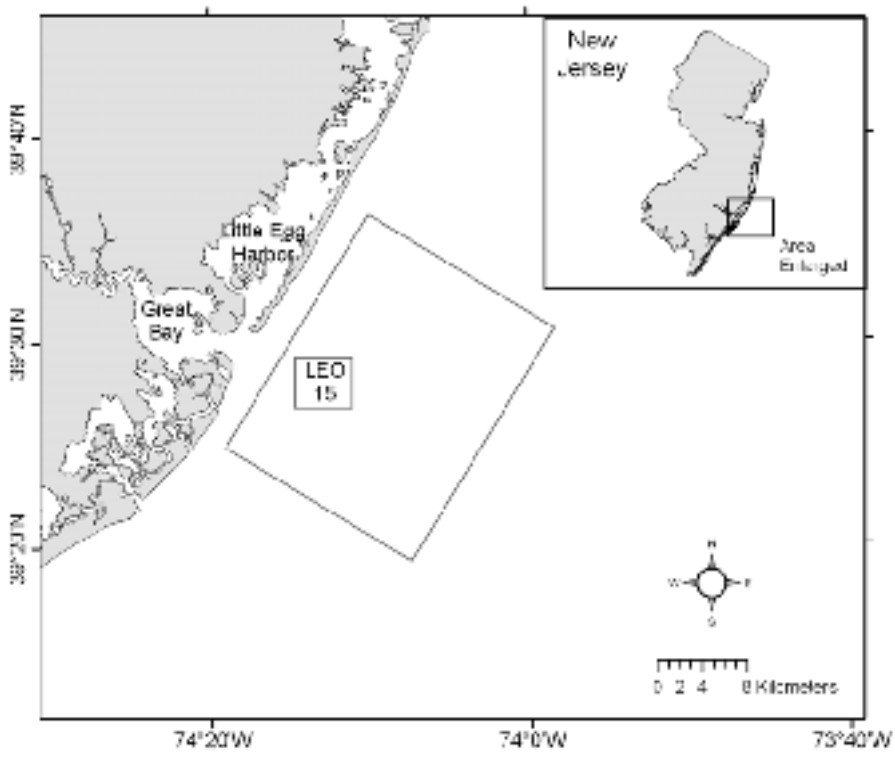


Figure 1. Study area (rectangle) of inner and middle continental shelf off Little Egg Inlet in southern New Jersey.

**<u>08-RSA-002</u> – *Virginia Institute of Marine Science,* "Data collection and analysis in support of single and multispecies stock assessments in the Mid-Atlantic: Northeast Area Monitoring and Assessment Program Near Shore Trawl Program"**

**<u>Principal Investigators</u>:** Christopher Bonzek

**08-RSA-002** – *Virginia Institute of Marine Science*, "Data collection and analysis in support of single and multispecies stock assessments in the Mid-Atlantic: Northeast Area Monitoring and Assessment Program Near Shore Trawl Program"

**Principal Investigators:** Christopher Bonzek

| | | | |
|---|---|---|---|
| **RSA Amount:** | Summer flounder: | 150,000 lbs | (68,038.8 kg) |
| *(Revised)* | *Loligo:* | 50,000 lbs | (22,679.6 kg) |
| | Scup: | 150,000 lbs | (68,038.8 kg) |
| | Bluefish: | 50,000 lbs | (22,679.6 kg) |
| | Black Sea Bass | 50,000 lbs | (22,679.6 kg) |

**Project Abstract:** The Atlantic States Marine Fisheries Commission (ASMFC) has outlined a new Mid-Atlantic near-shore ocean trawling program with a successful pilot survey conducted in the autumn of 2006. The proposed survey design will follow NEAMAP descriptions for a twice-yearly (spring and fall) monitoring (trawl) survey in shallow (<15fm.) waters between Montauk, NY and Cape Hatteras, NC. This project plans to provide significant stock assessment data improvements for RSA species including summer flounder, scup, black seabass, *Loligo* squid, butterfish, and Atlantic bluefish, and assessment-quality data for weakfish, Atlantic croaker, spot, several skate and ray species, smooth dogfish, horseshoe crab, and several unmanaged but important forage species.

**Description:**

**Survey Design & Timing**: The sampling area includes ocean waters extending from ***(revised)*** Gay Head, MA (including Block Island Sound (BIS) and Rhode Island Sound (RIS)) to Cape Hatteras, North Carolina (Figure 2), at depths from 3 to 10 ***(revised from 15)*** fathoms (18-60 feet), except in BIS and RIS, where depths are greater._ Approximately 200 stations (~1 per 30sq.mi.) are to be conducted during each survey which will be selected based on a random stratified design defined by region and depth. Major regions are closely aligned to historical NMFS designations which generally correspond both to state boundaries and to estuarine outflows. Within each region, depth strata are defined so as to assure sampling throughout the depth profile. The number of stations within each major region is proportional to the surface area within the region. An equal number of stations within each region's depth strata (20-40ft., 40-60ft.) are then selected at random.

Dependant upon final selection of sampling stations, a subset of research tows may occur in the Dr. Carl N. Shuster, Jr. Horseshoe Crab Reserve (Figure 3), encompassing almost 1,500 square miles and located in federal waters adjacent to Delaware Bay (ASMFC 2004). Within this reserve, the retention of horseshoe crabs is prohibited. However, it is unlikely that a preponderance of stations will occur within the confines of the reserve.

The number of surveys to be conducted during this proposal period will primarily be a function of funding availability. Total survey costs are expected to be approximately $900,000 annually. If total available funds are inadequate to fund two full surveys, an autumn survey conducted from late September through October would be performed.

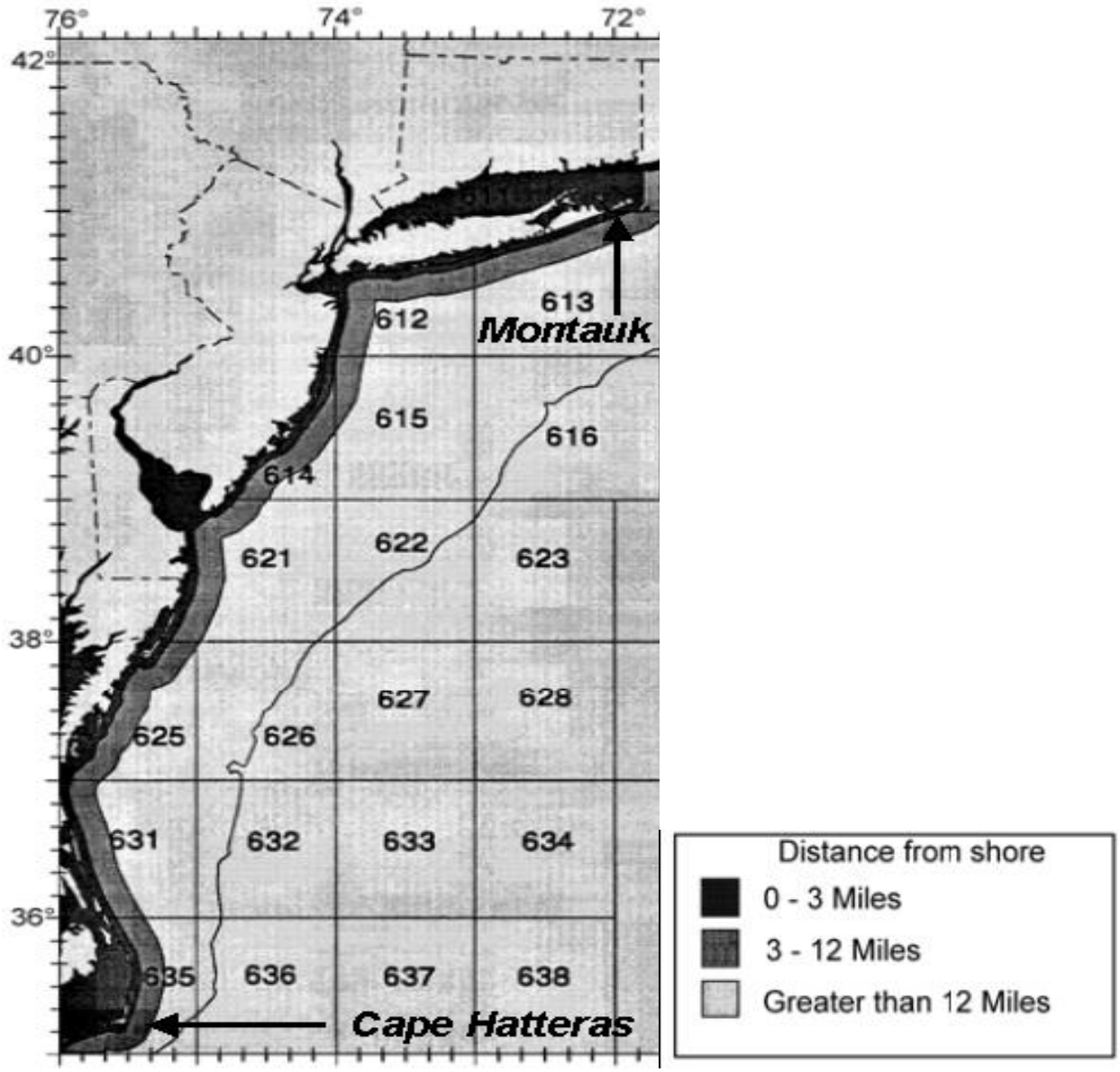


**Figure 2.** Spatial Extent of Survey Area of Proposed Study. Numbers within grid correspond to NMFS Statistical Areas. The 50-fathom isobath appears as a solid, single, freeform, black line.

**Revision: Northern sampling range extended to Gay Head, MA (including Block Island Sound (BIS) and Rhode Island Sound (RIS)**

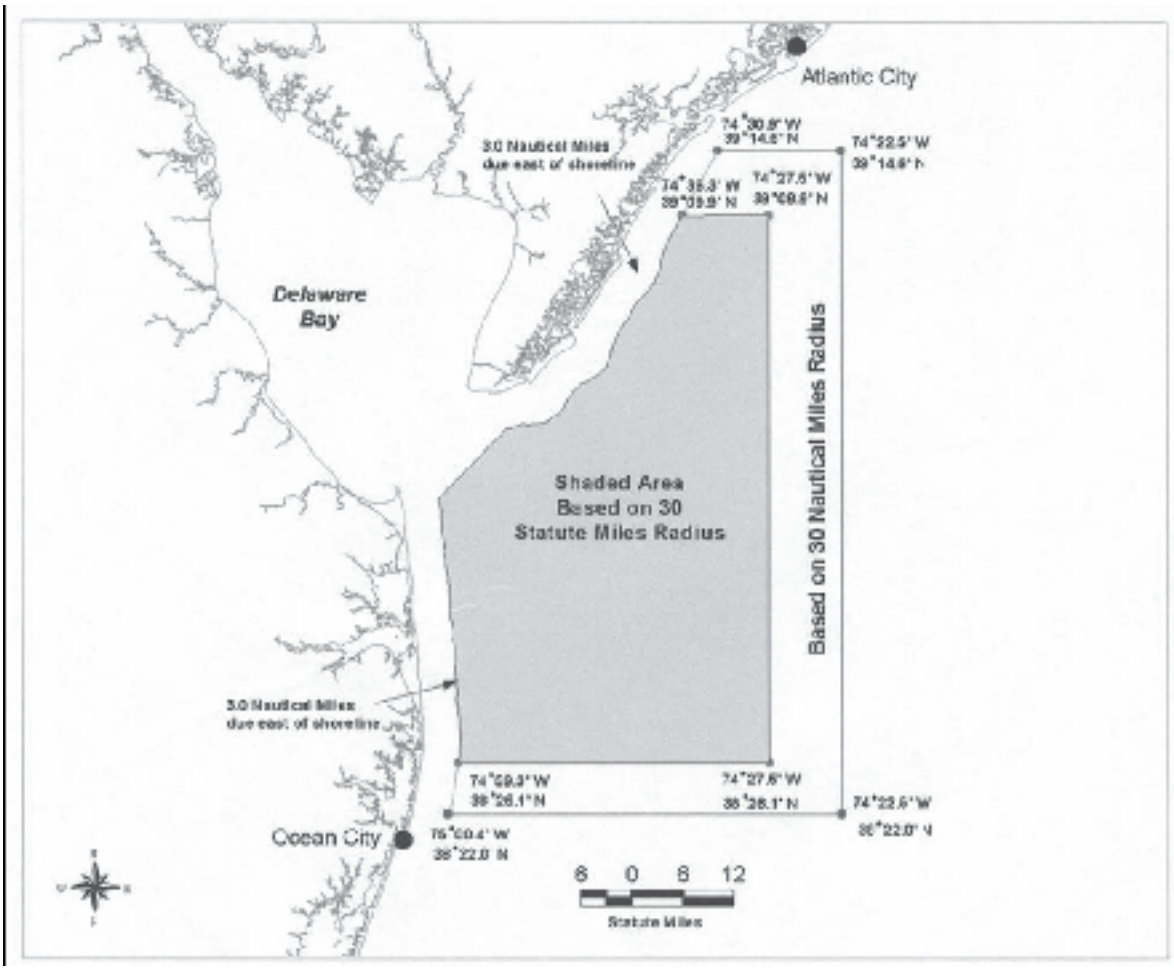


**Figure 3.** Geographical extent of the Dr. Carl N. Shuster, Jr. Horseshoe Crab Reserve.

**Fishing and Sampling Operations*:*** At each station, a number of standard parameters will be recorded. These include (but are not limited to):

- All necessary station identification parameters (date, station number, stratum, depth, tidal stage, current direction, current speed).
- All necessary vessel operation parameters (beginning and ending GPS position, beginning and ending tow times, compass course, engine RPM
- All necessary gear identification and operational parameters (net type code and net number, door type code and door numbers, amount of cable deployed).
- Atmospheric and weather data (air temperature, wind speed, wind direction, general weather state, sea state, barometric pressure).
- Hydrographic data (water temperature, salinity, dissolved oxygen, turbidity, secchi depth reading). At a minimum these readings should be taken both at the surface and at the bottom. Depth profile readings should be taken if appropriate equipment is available.

All fishing operations will be conducted during daylight hours. Each tow will be 20 minutes in duration with a target tow speed of between 3.0 and 3.5 knots. For cases in which a tow must be cut short (due to known hangs in the tow path, surface traffic ahead, and so on), we propose that a tow should be considered acceptable if it lasts at least 15 minutes.

Trawl monitoring equipment, currently owned by VIMS (the *Netmind* system manufactured by *Northstar Technical, Inc.*), was used during the pilot NEAMAP survey. Trawl monitor readings can be saved to computer files which allow data analysis to be performed on an area-swept basis. Such analyses provide standard adjustments for tow-to-tow differences in tow speed, tow duration, current speed, and so on. Further, the *Netmind* software records GPS position every two seconds, which allows later calculation of actual tow distances when tow paths are not perfectly straight.

At each sampling site, the catch will be sorted by species and modal size group. Biomass (kg) will be measured for each species-size group combination, and a subsample from each group will be selected for complete processing. Experience shows that a species-size subsample of 3-5 individuals per species-size class group (3 for very common species, 5 for all others) per tow will be sufficient. The data collected from each subsampled specimen will include length (to the nearest millimeter), weight (measured in grams, accuracy depends upon the balance on which individuals will be measured), and macroscopic sex and maturity stage (mature, immature, unknown) determination. Eviscerated weight (g), for determination of condition indices, will be taken for selected species. Stomachs will be removed and those containing prey items will preserved onboard for subsequent examination. Otoliths or other appropriate ageing structures will also be removed from each subsampled specimen for age determination. All specimens not selected for the complete processing will be enumerated, and either all or a large proportion will be measured for length.

The while research vessel will be conducting scientific research, it will be under the control of a scientific institution (VIMS) with scientific personnel on board for all research trips, and, therefore, has been issued a Letter of Acknowledgement that its research activities under the project are exempt from Magnuson-Stevenson fishing regulations.

**Fishing System:** NEAMAP will employ the net and trawl door design that was developed by the Mid-Atlantic Council's Trawl Advisory Panel. A full net design description, along with technical design plans, is available at: http://www.nefsc.noaa.gov/TrawlNet/Survey_Net_Design-web.pdf. This fishing system was successfully used during the pilot survey.

Fishing Vessels involved in sampling and RSA harvesting

For harvesting the RSA quota, approximately 35 fishing vessels will operate under standard commercial fishing operations to take the set-aside quota assigned to the project. No additional mortality of other fish species will occur because the study will be conducted during standard commercial fishing trips. These vessels will need exemptions to closed seasons and trip limits for the RSA species listed under the project**.** The most likely ports for landings will be in Rhode Island, New York, New Jersey, and Virginia with more commercial fishermen landing in New York than any other state.

**08-RSA-009 – *Charles Borden*, "2008 Fishery Independent Scup Survey of Hard Bottom Areas in Southern New England Waters"**

**Principal Investigators:** Charles Borden, Eric Rodegast, and Laura Skrobe

**RSA Amount**: Summer flounder: 2,000 lbs (907 kg)
Black sea bass: 24,000 lbs (10,886 kg)
Scup: 64,000 lbs (29 030 kg)

**Abstract:** This project is designed to collect scup from ten separate hard bottom sites in Southern New England, which are un-sampled by current state and federal finfish trawl surveys. Two additional sites located on the scup spawning grounds in Vineyard Sound will be sampled for a one-month period. Unvented fish pots will be fished on each site from June through October. The length frequency distribution of the catch will be compared statistically to each of the other collection sites, to finfish trawl data collected by the National Marine Fisheries Service (NMFS), and to data collected during a similar project to be conducted during 2007 by the same researchers.

Fieldwork for this project will be conducted by two commercial vessels, and the University of Rhode Island will lead the data analysis and report preparation.

**Description:** The proposed project is identical in design to a fishery-independent survey of ten rocky bottom areas in Southern New England conducted during 2007. The scope of work is separated into a western and eastern sampling design. At the beginning of the project, the research vessel(s) will fish at each collection site in order to focus the sampling activity on areas with a high abundance of scup.

Western sampling sites:

- 1st site: south of Sakonnet Point, RI (most likely inner Mayo Ledge or Elisha Ledge) – loran numbers 14330/43957;
- 2nd site: will be at the western end of Buzzards Bay (most likely south of Old Cock rock or in the proximity of Buzzards Bay Tower) – loran numbers 14285/43953;
- 3rd site: Browns ledge ( approximately ten miles southwest of Westport Harbor, Mass. in federal waters) – loran numbers 14315/43920;
- 4th site: west or south of Nomans Island – loran numbers14250/43850;
- 5th site: south of Newport, RI, Elbow Ledge – loran numbers 14368/43975.

Eastern sampling sites (all east of Oak Bluffs on the Vineyard

- 1st site: Horse Shoals – loran numbers 14025/34915;
- 2nd site: Cape Pogue – loran numbers 14075/43895;
- 3rd site: Hart Haven/East Chop – loran numbers 14105/43915;
- 4th site : Mink Meadows/West Chop – loran numbers 14115/43930;
- 5th site: Cedar Tree Neck/Norton Rock – loran number 14167/43917.

Spawning sampling sites in the Eastern zone:

- 1st site: Collier's Ledge – loran number 13995/43948;
- 2nd site: Bishops and Clercks – loran number 13970/43935.

Scup will be collected from each site utilizing standard fish traps (2 x 2 x 2 foot) made with 1½ x 1½ inch coated wire mesh, and identical in all respects to the traps used in the 2007 study. Traps will be un-vented, in order to retain all size classes of scup. The sampling protocol will require that the commercial vessels take 30 traps to each sampling site once during each four-week sampling cycle. Traps will be baited with clams and set on the sampling sites. Traps will then be allowed to fish for one to two days at each site. The 2007 project modified the sampling format to require a minimum of 24 hour set over period, which should substantially increase the number of fish captured. The 24 hour set over period will also require additional charter days to complete the survey, as each site must be visited twice instead of once. The date, area, depth, set over days, and catch will be recorded and fish measured utilizing the standard NMFS Sea Sampling protocols. At the conclusion of each sampling cycle, traps will be placed on the vessel for transport back to port. As the gear will be removed from the water at the end of the sampling cycle, the possibility of entanglements with other species will be minimized. This same sampling format will be followed every four weeks from June 15 through October 15 for five complete cycles. In addition, the spawning areas will also be sampled each week from May 15 to June 15 following the identical sampling protocol. Data collected as part of the project will be formatted in a manner consistent with the NMFS and ACCSP formats.

**RSA Harvesting Activities (from proposal):**

Research vessels will also be harvesting set-aside. In order to complete the project, the federally licensed vessels will require an Exempted Fishing permit from NMFS for federal waters, including a waiver from any trip limits, gear requirements, and seasons imposed at that time. In addition, the vessel will require a permit and waiver from the state regulations in Massachusetts and Rhode Island. The state waiver should include an exemption from closed seasons and trip limits, and the right to possess both species.

**APPENDIX B. Description of Species Listed as Endangered and Threatened which inhabit the management unit of the FMP**

**Species which have documented interactions with the summer flounder, scup, and black sea bass fisheries:** Descriptions are provided in section 6.3 of this EA.

**Other Endangered and Threatened Species within the Management Unit**

*North Atlantic Right Whale*

Right whales have occurred historically in all the world's oceans from temperate to subarctic latitudes. NMFS recognizes three major subdivisions of right whales: North Pacific, North Atlantic, and Southern Hemisphere. NMFS further recognizes two extant subunits in the North Atlantic: eastern and western. A third subunit may have existed in the central Atlantic (migrating from east of Greenland to the Azores or Bermuda), but this stock appears to be extinct (Waring et al. 2002).

The north Atlantic right whale has the highest risk of extinction among all of the large whales in the worlds oceans. The scarcity of right whales is the result of an 800-year history of whaling that continued into the 1960s (Klumov 1962). Historical records indicate that right whales were subject to commercial whaling in the North Atlantic as early as 1059. Between the 11th and 17th centuries, an estimated 25,000-40,000 right whales may have been harvested. The size of the western north Atlantic right whale population at the termination of whaling is unknown, but the stock was recognized as seriously depleted as early as 1750. However, right whales continued to be taken in shore-based operations or opportunistically by whalers in search of other species as late as the 1920's. By the time the species was internationally protected in 1935, there may have been fewer than 100 western north Atlantic right whales in the western Atlantic (Hain 1975; Reeves et al. 1992; Waring et al. 2002).

Right whales appear to prefer shallow coastal waters, but their distribution is also strongly correlated to the distribution of their prey (zooplankton). In both the northern and southern hemispheres, right whales are observed in the lower latitudes and more coastal waters during winter where calving takes place, and then tend to migrate to higher latitudes during the summer. The distribution of right whales in summer and fall in both hemispheres appears linked to the distribution of their principal zooplankton prey (Winn et al. 1986). They generally occur in Northwest Atlantic waters west of the Gulf Stream and are most commonly associated with cooler waters (21º C). They are not found in the Caribbean and have been recorded only rarely in the Gulf of Mexico.

Right whales feed on zooplankton through the water column, and in shallow waters may feed near the bottom. In the Gulf of Maine they have been observed feeding on zooplankton, primarily copepods, by skimming at or below the water's surface with open mouths (NMFS 1991b; Kenney et al. 1986; Murison and Gaskin 1989; and Mayo and Marx 1990). Research suggests that right whales must locate and exploit extremely dense patches of zooplankton to feed efficiently (Waring et al. 2000). New England waters include important foraging habitat for right whales and at least some portion of the North Atlantic right whale population is present in

these waters throughout most months of the year. They are most abundant in Cape Cod Bay between February and April (Hamilton and Mayo 1990; Schevill et al. 1986; Watkins and Schevill 1982) and in the Great South Channel in May and June (Payne et al. 1990) where they have been observed feeding predominantly on copepods, largely of the genera Calanus and Pseudocalanus (Waring et al. 2002). Right whales also frequent Stellwagen Bank and Jeffrey's Ledge, as well as Canadian waters including the Bay of Fundy and Browns and Baccaro Banks, in the spring and summer months. Mid-Atlantic waters are used as a migratory pathway from the spring and summer feeding/nursery areas to the winter calving grounds off the coast of Georgia and Florida.

NMFS designated right whale critical habitat on June 3, 1994 (59 FR 28793) to help protect important right whale foraging and calving areas within the U.S. These include the waters of Cape Cod Bay and the Great South Channel off the coast of Massachusetts, and waters off the coasts of southern Georgia and northern Florida. In 1993, Canada's Department of Fisheries declared two conservation areas for right whales; one in the Grand Manan Basin in the lower Bay of Fundy, and a second in Roseway Basin between Browns and Baccaro Banks (Canadian Recovery Plan for the North Atlantic Right Whale 2000).

The northern right whale was listed as endangered throughout its range on June 2, 1970 under the ESA. The current population is considered to be at a low level and the species remains designated as endangered (Waring et al. 2002). A Recovery plan has been published and currently is in effect (NMFS 1991). This is a strategic stock because the average annual fishery-related mortality and serious injury from all fisheries exceeds the PBR.

The western North Atlantic population of right whales was estimated to be 291 individuals in 1998 (Waring et al. 2002). The current population growth rate of 2.5% as reported by Knowlton et al. (1994) suggests the stock may be showing signs of slow recovery. The best available information makes it reasonable to conclude that the current death rate exceeds the birth rate in the western North Atlantic right whale population. The nearly complete reproductive failure in this population from 1993 to 1995 and again in 1998 and 1999 suggests that this pattern has continued for almost a decade, though the 2000/2001 season appears the most promising in the past 5 years, in terms of calves born. Because no population can sustain a high death rate and low birth rate indefinitely, this combination places the North Atlantic right whale population at high risk of extinction. Coupled with an increasing calving interval, the relatively large number of young right whales (0-4 years) and adults that are killed, by human-related factors, the likelihood of extinction is high. The recent increase in births gives rise to optimism, however these young animals must be provided with protection so that they can mature and contribute to future generations in order to be a factor in stabilizing of the population.

Right whales may be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries. However, the major known sources of anthropogenic mortality and injury of right whales clearly are ship strikes and entanglement in commercial fishing gear. Waring et al. (2002) give a detailed description of the annual human related mortalities of right whales.

*Humpback Whale*

The humpback whale was listed as endangered throughout its range on June 2, 1970. This species is the fourth most numerically depleted large cetacean worldwide. Humpback whales calve and mate in the West Indies and migrate to feeding areas in the northwestern Atlantic during the summer months. Six separate feeding areas are utilized in northern waters after their return (Waring et al. 2002). Only one of these feeding areas, the GOM, lies within U.S. waters and is within the action area of this consultation. Most of the humpbacks that forage in the GOM visit Stellwagen Bank and the waters of Massachusetts and Cape Cod Bays. Sightings are most frequent from mid-March through November between 41º N and 43º N, from the Great South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffreys Ledge (CeTAP 1982), and peak in May and August. Small numbers of individuals may be present in this area year-round. They feed on a number of species of small schooling fishes, particularly sand lance and Atlantic herring, by targeting fish schools and filtering large amounts of water for their associated prey. Humpback whales have also been observed feeding on krill (Wynne and Schwartz 1999).

Various papers (Barlow & Clapham 1997; Clapham et al. 1999) summarized information gathered from a catalogue of photographs of 643 individuals from the western North Atlantic population of humpback whales. These photographs identified reproductively mature western North Atlantic humpbacks wintering in tropical breeding grounds in the Antilles, primarily on Silver and Navidad Banks, north of the Dominican Republic. The primary winter range also includes the Virgin Islands and Puerto Rico (Waring et al. 2002). In general, it is believed that calving and copulation take place on the winter range. Calves are born from December through March and are about 4 meters at birth. Sexually mature females give birth approximately every 2 to 3 years. Sexual maturity is reached between 4 and 6 years of age for females and between 7 and 15 years for males. Size at maturity is about 12 meters.

Humpback whales use the mid-Atlantic as a migratory pathway, but it may also be an important 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 speculate 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. Swingle et al. (1993) identified a shift in distribution of juvenile humpback whales in the nearshore waters of Virginia, primarily in winter months. Those whales using this mid-Atlantic area that have been identified were found to be residents of the GOM and Atlantic Canada (Gulf of St. Lawrence and Newfoundland) feeding groups, suggesting a mixing of different feeding stocks in the mid-Atlantic region. A shift in distribution may be related to winter prey availability. Studies conducted by the Virginia Marine Science Museum indicate that these whales are feeding on, among other things, bay anchovies and menhaden. In concert with the increase in mid-Atlantic whale sightings, strandings of humpback whales have increased between New Jersey and Florida since 1985. Strandings were most frequent during September through April in North Carolina and Virginia waters, and were comprised primarily of juvenile humpback whales of no more than 11 meters in length (Wiley et al. 1995). Six of 18 humpbacks for which the cause of mortality was determined were killed by vessel strikes. An additional humpback had scars and bone fractures indicative of a previous vessel strike that may have

contributed to the whale's mortality. Sixty percent of those mortalities that were closely investigated showed signs of entanglement or vessel collision.

New information has recently become available on the status and trends of the humpback whale population in the North Atlantic. Although current and maximum net productivity rates are unknown at this time, the population is apparently increasing. It has not yet been determined whether this increase is uniform across all six feeding stocks (Waring et al. 2002). For example, the overall rate of increase has been estimated at 9.0% (CV=0.25) by Katona and Beard (1990), while a 6.5% rate was reported for the Gulf of Maine by Barlow and Clapham (1997) using data through 1991. The rate reported by Barlow and Clapham (1997) may roughly approximate the rate of increase for the portion of the population within the action area.

Estimating abundance for the Gulf of Maine stock has proved problematic. Three approaches have been investigated: mark-recapture estimates, minimum population size, and line-transect estimates. Most of the mark recapture estimates were affected by heterogeneity of sampling, which was heavily focused on the southwestern Gulf of Maine. However, an estimate of 652 (CV=0.29) derived from the more extensive and representative YONAH sampling in 1992 and 1993 was probably less subject to this bias. The second approach uses photo-identification data to establish the minimum number of humpback whales known to be alive in a particular year, 1997. By determining the number of identified individuals seen either in that year, or in both a previous and subsequent year, it is possible to determine that at least 497 humpbacks were alive in 1997. This figure is also likely to be negatively biased, again because of heterogeneity of sampling. A similar calculation for 1992 (which would correspond to the YONAH estimate for the Gulf of Maine) yields a figure of 501 whales (Waring et al. 2002).

In the third approach, data were used from a 28 July to 31 August 1999 line-transect sighting survey conducted by a ship and airplane covering waters from Georges Bank to the mouth of the Gulf of St. Lawrence. Total track line length was 8,212 km. However, in light of the information on stock identity of Scotian Shelf humpback whales noted above, only the portions of the survey covering the Gulf of Maine were used; surveys blocks along the eastern coast of Nova Scotia were excluded. Shipboard data were analyzed using the modified direct duplicate method (Palka 1995) that accounts for school size bias and g(0), the probability of detecting a group on the track line. Aerial data were not corrected for g(0) (Palka 2000). These surveys yielded an estimate of 816 humpbacks (CV = 0.45). However, given that the rate of exchange between the Gulf of Maine and both the Scotian Shelf and mid-Atlantic region is not zero, this estimate is likely to be somewhat conservative. Accordingly, inclusion of data from 25% of the Scotian Shelf survey area (to reflect the match rate of 25% between the Scotian Shelf and the Gulf of Maine) gives an estimate of 902 whales (CV=0.41). Since the mark-recapture figures for abundance and minimum population size given above falls above the lower bound of the CV of the line transect estimate, and given the known exchange between the Gulf of Maine and the Scotian Shelf, we have chosen to use the latter as the best estimate of abundance for Gulf of Maine humpback whales (Waring et al. 2002).

The minimum population estimate is the lower limit of the two-tailed 60% confidence interval of the lognormally distributed best abundance estimate. This is equivalent to the 20th percentile of the log-normal distribution as specified by Wade and Angliss (1997). The best estimate of

abundance for Gulf of Maine humpback whales is 902 (CV=0.41). The minimum population estimate for this stock is 647 (Waring et al. 2002).

As detailed below, current data suggest that the Gulf of Maine humpback whale stock is steadily increasing in size. This is consistent with an estimated average trend of 3.2% (SE=0.005) in the North Atlantic population overall for the period 1979–1993 (Stevick et al. 2001), although there are no other feeding-area-specific estimates. Barlow and Clapham (1997) applied an interbirth interval model to photographic mark-recapture data and estimated the population growth rate of the Gulf of Maine humpback whale stock at 6.5% (CV=0.012). Maximum net productivity is unknown for this population, although a theoretical maximum for any humpback population can be calculated using known values for biological parameters (Brandão et al. 2000, Clapham et al. 2001b). For the Gulf of Maine, data supplied by Barlow and Clapham (1997) and Clapham et al. (1995) gives values of 0.96 for survival rate, 6y as mean age at first parturition, 0.5 as the proportion of females, and 0.42 for annual pregnancy rate. From this, a maximum population growth rate of 0.072 is obtained according to the method described by Brandão et al. (2000). This suggests that the observed rate of 6.5% (Barlow and Clapham 1997) was close to the maximum for this stock. Clapham et al. (2001a) updated the Barlow and Clapham (1997) analysis using data from the period 1992 to 2000. The estimate was either 0% (for a calf survival rate of 0.51) or 4.0% (for a calf survival rate of 0.875). Although confidence limits are not available (because maturation parameters could not be estimated), both estimates of population growth rate are outside the 95% confidence intervals of the previous estimate of 6.5% for the period 1979 to 1991 (Barlow and Clapham 1997). It is unclear whether this apparent decline is an artifact resulting from a shift in distribution; indeed, such a shift occurred during exactly the period (1992-95) in which survival rates declined. It is possible that this shift resulted in calves born in those years imprinting on (and thus subsequently returning to) areas other than those in which intensive sampling occurs. If the decline is a real phenomenon it may be related to known high mortality among young-of-the-year whales in the waters of the U.S. Mid-Atlantic states. However, calf survival appears to have increased since 1996, presumably accompanied by an increase in population growth. In light of the uncertainty accompanying the more recent estimate of population growth rate for the Gulf of Maine, for purposes of this assessment the maximum net productivity rate was assumed to be the default value for cetaceans of 0.04 (Barlow et al. 1995). Current and maximum net productivity rates are unknown for the North Atlantic population overall (Waring et al. 2002). As noted above, Stevick et al. (2001) calculated an average population growth rate of 3.2% (SE=0.005) for the period 1979–1993.

PBR is the product of minimum population size, one-half the maximum productivity rate, and a "recovery" factor (MMPA Sec. 3. 16 U.S.C. 1362; Wade and Angliss 1997). The minimum population size is 647. The maximum productivity rate is the default value of 0.04. The "recovery" factor, which accounts for endangered, depleted, threatened stocks, or stocks of unknown status relative to optimum sustainable population (OSP) is assumed to be 0.10 because this stock is listed as an endangered species under the ESA. PBR for the Gulf of Maine humpback whale stock is 1.3 whales (Waring et al. 2002).

The major known sources of anthropogenic mortality and injury of humpback whales include entanglement in commercial fishing gear and ship strikes. Based on photographs of the caudal peduncle of humpback whales, Robbins and Mattila (1999) estimated that at least 48% --- and

possibly as many as 78% --- of animals in the Gulf of Maine exhibit scarring caused by entanglement. Several whales have apparently been entangled on more than one occasion. These estimates are based on sightings of free-swimming animals that initially survive the encounter. Because some whales may drown immediately, the actual number of interactions may be higher. In addition, the actual number of species-gear interactions is contingent on the intensity of observations from aerial and ship surveys.

For the period 1996 through 2000, the total estimated human-caused mortality and serious injury to the Gulf of Maine humpback whale stock is estimated as 3.0 per year (USA waters, 2.4; Canadian waters, 0.6). This average is derived from two components: 1) incidental fishery interaction records, 2.8 (USA waters, 2.2; Canadian waters, 0.6); and 2) records of vessel collisions, 0.2 (USA waters, 0.2; Canadian waters, 0). There were additional humpback mortalities and serious injuries that occurred in the southeastern and Mid-Atlantic states that could not be confirmed as involving members of the Gulf of Maine stock (Waring et al. 2002). These records represent an additional minimum annual average of 1.6 human-caused mortalities and serious injuries to humpbacks over the time period, of which 1.0 per year are attributable to incidental fishery interactions and 0.6 per year are attributable to vessel collisions (Waring et al. 2002).

As with right whales, human impacts (vessel collisions and entanglements) are factors which may be slowing recovery of the humpback whale population. There is an average of four to six entanglements of humpback whales a year in waters of the southern Gulf of Maine and additional reports of vessel-collision scars (unpublished data, Center for Coastal Studies). Of 20 dead humpback whales (principally in the mid-Atlantic, where decomposition did not preclude examination for human impacts), Wiley et al. (1995) reported that 6 (30%) had major injuries possibly attributable to ship strikes, and 5 (25%) had injuries consistent with possible entanglement in fishing gear. One whale displayed scars that may have been caused by both ship strike and entanglement. Thus, 60% of the whale carcasses which were suitable for examination showed signs that anthropogenic factors may have contributed to, or been responsible for, their death. Wiley et al. (1995) further reported that all stranded animals were sexually immature, suggesting a winter or migratory segregation and/or that juvenile animals are more susceptible to human impacts.

An updated analysis of humpback whale mortalities from the Mid-Atlantic states region has recently been produced by Barco et al. (2001). Between 1990 and 2000, there were 52 known humpback whale mortalities in the waters of the U.S. Mid-Atlantic states (summarized by Barco et al. 2001). Length data from 48 of these whales (18 females, 22 males and 8 of unknown sex) suggested that 39 (81.2%) were first-year animals, 7 (14.6%) were immature and 2 (4.2%) were adults. However, sighting histories of 5 of the dead whales indicate that some were small for their age, and histories of live whales further indicate that the population contains a greater percentage of mature animals than is suggested by the stranded sample. In their study of entanglement rates estimated from caudal peduncle scars, Robbins and Mattila (2001) found that males were more likely to be entangled than females. The scarring data also suggested that yearlings were more likely than other age classes to be involved in entanglements. Finally, female humpbacks showing evidence of prior entanglements produced significantly fewer calves, suggesting that entanglement may significantly impact reproductive success. Humpback

whale entanglements also occur in relatively high numbers in Canadian waters. Reports of collisions with fixed fishing gear set for groundfish around Newfoundland averaged 365 annually from 1979 to 1987 (range 174-813). An average of 50 humpback whale entanglements (range 26-66) were reported annually between 1979 and 1988, and 12 of 66 humpback whales that were entangled in 1988 died (Lien et al. 1988). Volgenau et al. (1995) also summarized existing data and concluded that in Newfoundland and Labrador, cod traps caused the most entanglements and entanglement mortalities (21%) of humpbacks between 1979 and 1992. They also reported that gillnets are the gear that has been the primary cause of entanglements and entanglement mortalities (20%) of humpbacks in the Gulf of Maine between 1975 and 1990.

Humpback whales may also be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries.

*Fin Whale*

Fin whales inhabit a wide range of latitudes between 20-75° N and 20-75° S (Perry et al. 1999). Fin whales spend the summer feeding in the relatively high latitudes of both hemispheres, particularly along the cold eastern boundary currents in the North Atlantic and North Pacific Oceans and in Antarctic waters (IWC 1992). Most migrate seasonally from relatively high-latitude Arctic and Antarctic feeding areas in the summer to relatively low-latitude breeding and calving areas in the winter (Perry et al. 1999).

As in the case of right and humpback whales, fin whale populations were heavily affected by commercial whaling. However, commercial exploitation of fin whales occurred much later than for right and humpback whales. Although some fin whales were taken as early as the 17th century by the Japanese using a fairly primitive open-water netting technique (Perry et al. 1999) and were hunted occasionally by sailing vessel whalers in the 19th century (Mitchell and Reeves 1983), wide-scale commercial exploitation of fin whales did not occur until the 20th century when the use of steam power and harpoon- gun technology made exploitation of this faster, more offshore species feasible. In the southern hemisphere, over 700,000 fin whales were landed in the 20th century. More than 48,000 fin whales were taken in the North Atlantic between 1860 and 1970 (Perry et al. 1999). Fisheries existed off of Newfoundland, Nova Scotia, Norway, Iceland, the Faroe Islands, Svalbard (Spitsbergen), the islands of the British coasts, Spain and Portugal. Fin whales were rarely taken in U.S. waters, except when they ventured near the shores of Provincetown, MA, during the late 1800's (Perry et al. 1999).

Various estimates have been provided to describe the current status of fin whales in western North Atlantic waters. Based on the catch history and trends in Catch Per Unit Effort, an estimate of 3,590 to 6,300 fin whales was obtained for the entire western North Atlantic (Perry et al. 1999). Hain et al. (1992) estimated that about 5,000 fin whales inhabit the Northeastern United States continental shelf waters. The latest (Waring et al. 2002) SAR gives a best estimate of abundance for fin whales of 2,814 (CV = 0.21). The minimum population estimate for the western North Atlantic fin whale is 2,362. This is currently an underestimate, as too little is known about population structure, and the estimate is derived from surveys over a limited

portion of the western North Atlantic. There is also not enough information to estimate population trends.

In the North Atlantic today, fin whales are widespread and occur from the Gulf of Mexico and Mediterranean Sea northward to the edges of the arctic pack ice (Waring et al. 2002). A number of researchers have suggested the existence of fin whale subpopulations in the North Atlantic. Mizroch et al. (1984) suggested that local depletions resulting from commercial overharvesting supported the existence of North Atlantic fin whale subpopulations. Others have used genetics information to provide support for the belief that there are several subpopulations of fin whales in the North Atlantic and Mediterranean (Bérubé et al. 1998). In 1976, the IWC's Scientific Committee proposed seven stocks for North Atlantic fin whales. These are: (1) North Norway; (2) West Norway-Faroe Islands; (3) British Isles-Spain and Portugal; (4) East Greenland-Iceland; (5) West Greenland; (6) Newfoundland-Labrador; and (7) Nova Scotia (Perry et al. 1999). However, it is uncertain whether these stock boundaries define biologically isolated units (Waring et al. 2002). The NMFS has designated one stock of fin whale for U.S. waters of the North Atlantic where the species is commonly found from Cape Hatteras northward.

During 1978-1982 aerial surveys, fin whales accounted for 24% of all cetaceans and 46% of all large cetaceans sighted over the continental shelf between Cape Hatteras and Nova Scotia (Waring et al. 1998). Underwater listening systems have also demonstrated that the fin whale is the most acoustically common whale species heard in the North Atlantic (Clark 1995). The single most important area for this species appeared to be from the Great South Channel, along the 50 meter isobath past Cape Cod, over Stellwagen Bank, and past Cape Ann to Jeffrey's Ledge (Hain et al. 1992).

Despite our broad knowledge of fin whales, less is known about their life history as compared to right and humpback whales. Age at sexual maturity for both sexes ranges from 5-15 years. Physical maturity is reached at 20-30 years. Conception occurs during a 5 month winter period in either hemisphere. After a 12 month gestation, a single calf is born. The calf is weaned between 6 and 11 months after birth. The mean calving interval is 2.7 years, with a range of between 2 and 3 years (Agler et al. 1993). Like right and humpback whales, fin whales are believed to use northwestern North Atlantic waters primarily for feeding and migrate to more southern waters for calving. However, the overall pattern of fin whale movement consists of a less obvious north-south pattern of migration than that of right and humpback whales. Based on acoustic recordings from hydrophone arrays, Clark (1995) reported a general pattern of fin whale movements in the fall from the Labrador/Newfoundland region, south past Bermuda, and into the West Indies. However, evidence regarding where the majority of fin whales winter, calve, and mate is still scarce. Some populations seem to move with the seasons (e.g., one moving south in winter to occupy the summer range of another), but there is much structuring in fin whale populations that what animals of different sex and age class do is not at all clear. Neonate strandings along the U.S. mid-Atlantic coast from October through January suggest the possibility of an offshore calving area.

The overall distribution of fin whales may be based on prey availability. This species preys opportunistically on both invertebrates and fish. The predominant prey of fin whales varies greatly in different geographical areas depending on what is locally available. In the western

North Atlantic fin whales feed on a variety of small schooling fish (i.e., herring, capelin, sand lance) as well as squid and planktonic crustaceans. As with humpback whales, fin whales feed by filtering large volumes of water for their prey through their baleen plates. Photo identification studies in western North Atlantic feeding areas, particularly in Massachusetts Bay, have shown a high rate of annual return by fin whales, both within years and between years (Seipt et al. 1990).

As discussed above, fin whales were the focus of commercial whaling, primarily in the 20th century. The IWC did not begin to manage commercial whaling of fin whales in the North Atlantic until 1976. In 1987, fin whales were given total protection in the North Atlantic with the exception of a subsistence whaling hunt for Greenland. The IWC set a catch limit of 19 whales for the years 1995-1997 in West Greenland. All other fin whale stocks had a zero catch limit for these same years. However, Iceland reported a catch of 136 whales in the 1988/89 and 1989/90 seasons, and has since ceased reporting fin whale kills to the IWC (Perry et al. 1999). In total, there have been 239 reported kills of fin whales from the North Atlantic from 1988 to 1995.

The major known sources of anthropogenic mortality and injury of fin whales include ship strikes and entanglement in commercial fishing gear. However, many of the reports of mortality cannot be attributed to a particular source. Of 18 fin whale mortality records collected between 1991 and 1995, four were associated with vessel interactions, although the proximal cause of mortality was not known. The following injury/mortality events are those reported from 1996 to the present for which source was determined. These numbers should be viewed as absolute minimum numbers; the total number of mortalities and injuries cannot be estimated but is believed to be higher since it is unlikely that all carcasses will be observed. In general, known mortalities of fin whales are less than those recorded for right and humpback whales. This may be due in part to the more offshore distribution of fin whales where they are either less likely to encounter entangling gear, or are less likely to be noticed when gear entanglements or vessel strikes do occur. Fin whales may also be adversely affected by habitat degradation, habitat exclusion, acoustic trauma, harassment, or reduction in prey resources due to trophic effects resulting from a variety of activities including the operation of commercial fisheries. The fin whale was listed as endangered throughout its range on June 2, 1970 under the ESA. Hain et al. (1992) estimated that about 5,000 fin whales inhabit the northeastern United States continental shelf waters. Waring et al. 2002 present a more recent estimate of 2,814 (CV=0.21) fin whales based on aerial and shipboard surveys of the area from Georges Bank to the mouth of the Gulf of S. Lawrence in 1999.

*Sei Whale*

Sei whales are a widespread species in the world's temperate, subpolar and subtropical and even tropical marine waters. However, they appear to be more restricted to temperate waters than other balaenopterids (Perry et al. 1999). The IWC recognized three stocks in the North Atlantic based on past whaling operations as opposed to biological information: (1) Nova Scotia; (2) Iceland Denmark Strait; (3) Northeast Atlantic (Donovan 1991 in Perry et al. 1999). Mitchell and Chapman (1977) suggested that the sei whale population in the western North Atlantic consists of two stocks, a Nova Scotian Shelf stock and a Labrador Sea stock. The Nova Scotian Shelf stock includes the continental shelf waters of the northeastern United States, and extends

northeastward to south of Newfoundland. The IWC boundaries for this stock are from the U.S. east coast to Cape Breton, Nova Scotia and east to longitude 42° (Waring et al. 2002). This is the only sei whale stock within the action area.

Sei whales became the target of modern commercial whalers primarily in the late 19th and early 20th century after stocks of other whales, including right, humpback, fin and blues, had already been depleted. Sei whales were taken in large numbers by Norway and Scotland from the beginning of modern whaling. More than 700 sei whales were killed off of Norway in 1885, alone. Small numbers were also taken off of Spain, Portugal and in the Strait of Gibraltar beginning in the 1920's, and by Norwegian and Danish whalers off of West Greenland from the 1920's to 1950's (Perry et al. 1999). In the western North Atlantic, sei whales were originally hunted off of Norway and Iceland; from 1967-1972, sei whales were also taken off of Nova Scotia (Perry et al. 1999). A total of 825 sei whales were taken on the Scotian Shelf between 1966 and 1972, and an additional 16 were taken from the same area during the same time by a shore based Newfoundland whaling station (Perry et al. 1999). The species continued to be exploited in Iceland until 1986 even though measures to stop whaling of sei whales in other areas had been put into place in the 1970's (Perry et al. 1999). There is no estimate for the abundance of sei whales prior to commercial whaling. Based on whaling records, approximately14,295 sei whales were taken in the entire North Atlantic from 1885 to 1984 (Perry et al. 1999).
Sei whales winter in warm temperate or subtropical waters and summer in more northern latitudes. In the northern Atlantic, most births occur in November and December when the whales are on the wintering grounds. Conception is believed to occur in December and January. Gestation lasts for 12 months and the calf is weaned at 6-9 months when the whales are on the summer feeding grounds. Sei whales reach sexual maturity at 5-15 years of age. The calving interval is believed to be 2-3 years (Perry et al. 1999).

Sei whales occur in deep water throughout their range, typically over the continental slope or in basins situated between banks. In the northwest Atlantic, the whales travel along the eastern Canadian coast in autumn, June and July on their way to and from the Gulf of Maine and Georges Bank where they occur in winter and spring. Within the action area, the sei whale is most common on Georges Bank and into the Gulf of Maine/Bay of Fundy region during spring and summer, primarily in deeper waters. Individuals may range as far south as North Carolina. It is important to note that sei whales are known for inhabiting an area for weeks at a time then disappearing for year or even decades; this has been observed all over the world, including in the southwestern GOM in 1986. The basis for this phenomenon is not clear.

Although sei whales may prey upon small schooling fish and squid in the action area, available information suggests that calanoid copepods and euphausiids are the primary prey of this species. There are occasional influxes of sei whales further into Gulf of Maine waters, presumably in conjunction with years of high copepod abundance inshore. Sei whales are occasionally seen feeding in association with right whales in the southern Gulf of Maine and in the Bay of Fundy. However, there is no evidence to demonstrate interspecific competition between these species for food resources. There is very little information on natural mortality factors for sei whales. Possible causes of natural mortality, particularly for young, old or otherwise compromised individuals are shark attacks, killer whale attacks, and endoparasitic helminths. Baleen loss has

been observed in California sei whales, presumably as a result of an unknown disease (Perry et al. 1999).

There are insufficient data to determine trends of the sei whale population. Because there are no abundance estimates within the last 10 years, a minimum population estimate cannot be determined for NMFS management purposes (Waring et al. 2002). Abundance surveys are problematic not only because this species is difficult to distinguish from the fin whale but more significant is that too little is known of the sei whale's distribution, population structure and patterns of movement; thus survey design and data interpretation are very difficult.

Few instances of injury or mortality of sei whales due to entanglement or vessel strikes have been recorded in U.S. waters. Entanglement is not known to impact this species in the U.S. Atlantic, possibly because sei whales typically inhabit waters further offshore than most commercial fishing operations, or perhaps entanglements do occur but are less likely to be observed. A small number of ship strikes of this species have been recorded. The most recent documented incident occurred in 1994 when a carcass was brought in on the bow of a container ship in Charlestown, Massachusetts. Other impacts noted above for other baleen whales may also occur. Due to the deep-water distribution of this species, interactions that do occur are less likely to be observed or reported than those involving right, humpback, and fin whales that often frequent areas within the continental shelf (Waring et al. 2002).

*Blue Whale*

Like the fin whale, blue whales occur worldwide and are believed to follow a similar migration pattern from northern summering grounds to more southern wintering areas (Perry et al. 1999). Three subspecies have been identified: *Balaenoptera musculus musculus, B.m. intermedia*, and *B.m. brevicauda* (Waring et al. 2002). Only *B. musculus* occurs in the northern hemisphere. Blue whales range in the North Atlantic extends from the subtropics to Baffin Bay and the Greenland Sea. The IWC currently recognizes these whales as one stock (Perry et al. 1999).

Blue whales were intensively hunted in all of the world's oceans from the turn of the century to the mid-1960s. Blue whales were occasionally hunted by sailing vessel whalers in the 19th century. However, development of steam-powered vessels and deck-mounted harpoon guns in the late 19th century made it possible to exploit them on an industrial scale. Blue whale populations declined worldwide as the new technology spread and began to receive widespread use (Perry et al. 1999). Subsequently, the whaling industry shifted effort away from declining blue whale stocks and targeted other large species, such as fin whales, and then resumed hunting for blue whales when the species appeared to be more abundant (Perry et al. 1999). The result was a cyclical rise and fall, leading to severe depletion of blue whale stocks worldwide (Perry et al. 1999). In the North Atlantic, Norway shifted operations to fin whales as early as 1882 due to the scarcity of blue whales (Perry et al. 1999). In all, at least 11,000 blue whales were taken in the North Atlantic from the late 19th century through the mid-20th century. Blue whales were given complete protection in the North Atlantic in 1955 under the International Convention for the Regulation of Whaling. However, Iceland continued to hunt blue whales until 1960. There are no good estimates of the pre-exploitation size of the western North Atlantic blue whale stock but it is widely believed that this stock was severely depleted by the time legal protection was

introduced in 1955 (Perry et al. 1999). Mitchell (1974) suggested that the stock numbered in the very low hundreds during the late 1960's through early 1970's (Perry et al. 1999). Photo-identification studies of blue whales in the Gulf of St. Lawrence from 1979 to 1995 identified 320 individual whales. The NMFS recognizes a minimum population estimate of 308 blue whales for the western North Atlantic (Waring et al. 2002).

Blue whales are only occasional visitors to east coast U.S. waters. They are more commonly found in Canadian waters, particularly the Gulf of St. Lawrence where they are present for most of the year, and other areas of the North Atlantic. It is assumed that blue whale distribution is governed largely by food requirements. In the Gulf of St. Lawrence, blue whales appear to predominantly feed on *Thysanoessa raschii* and *Meganytiphanes norvegica*. In the eastern North Atlantic, *T. inermis* and *M. norvegica* appear to be the predominant prey.

Compared to the other species of large whales, relatively little is known about this species. Sexual maturity is believed to occur in both sexes at 5-15 years of age. Gestation lasts 10-12 months and calves nurse for 6-7 months. The average calving interval is estimated to be 2-3 years. Birth and mating both occur during the winter season, but the location of wintering areas is speculative (Perry et al. 1999). In 1992 the U.S. Navy and contractors conducted an extensive blue whale acoustic survey of the North Atlantic and found concentrations of blue whales on the Grand Banks and west of the British Isles. One whale was tracked for 43 days during which time it traveled 1,400 nautical miles around the general area of Bermuda (Perry et al. 1999).

There is limited information on the factors affecting natural mortality of blue whales in the North Atlantic. Ice entrapment is known to kill and seriously injure some blue whales, particularly along the southwest coast of Newfoundland, during late winter and early spring. Habitat degradation has been suggested as possibly affecting blue whales such as in the St. Lawrence River and the Gulf of St. Lawrence where habitat has been degraded by acoustic and chemical pollution. However, there is no data to confirm that blue whales have been affected by such habitat changes (Perry et al. 1999).

Entanglement in fishing gear, and ship strikes are believed to be the major sources of anthropogenic mortality and injury of blue whales. However, confirmed deaths or serious injuries from either are few. In 1987, concurrent with an unusual influx of blue whales into the Gulf of Maine, one report was received from a whale watch boat that spotted a blue whale in the southern Gulf of Maine entangled in gear described as probable lobster pot gear. A second animal found in the Gulf of St. Lawrence apparently died from the effects of an entanglement. In March 1998, a juvenile male blue whale was carried into Rhode Island waters on the bow of a tanker. The cause of death was determined to be due to a ship strike, although not necessarily caused by the tanker on which it was observed, and the strike may have occurred outside the U.S. EEZ (Waring et al. 2002). No recent entanglements of blue whales have been reported from the U.S. Atlantic. Other impacts noted above for other baleen whales may occur.

*Sperm Whale*

Sperm whales inhabit all ocean basins, from equatorial waters to polar regions (Perry et al. 1999). In the western North Atlantic they range from Greenland to the Gulf of Mexico and the

Caribbean. The sperm whales that occur in the western North Atlantic are believed to represent only a portion of the total stock (Blaylock et al. 1995). Total numbers of sperm whales off the USA or Canadian Atlantic coast are unknown, although eight estimates from selected regions of the habitat do exist for select time periods. The best estimate of abundance for the North Atlantic stock of sperm whales is 4,702 (CV=0.36) (Waring et al. 2002). The minimum population estimate for the western North Atlantic sperm whale is 3,505 (CV=0.36). Sperm whales present in the Gulf of Mexico are considered by some researchers to be endemic, and represent a separate stock from whales in other portions of the North Atlantic. However, NMFS currently uses the IWC stock structure guidance which recognizes one stock for the entire North Atlantic (Waring et al. 2002).

The International Whaling Commission estimates that nearly a quarter-million sperm whales were killed worldwide in whaling activities between 1800 and 1900 (IWC 1971). However, estimates of the number of sperm whales taken during this time are difficult to quantify since sperm whale catches from the early 19th century through the early 20th century were calculated on barrels of oil produced per whale rather than the actual number of whales caught (Perry et al. 1999). With the advent of modern whaling the larger rorqual whales were targeted. However as their numbers decreased, greater attention was paid to smaller rorquals and sperm whales. From 1910 to 1982 there were nearly 700,000 sperm whales killed worldwide from whaling activities (Clarke 1954). Whale catches for the southern hemisphere is 394,000 (including revised Soviet figures). Sperm whales were hunted in America from the 17th century through the early 20th century. In the North Atlantic, hunting occurred off of Iceland, Norway, the Faroe Islands, coastal Britain, West Greenland, Nova Scotia, Newfoundland/Labrador, New England, the Azores, Madeira, Spain, and Spanish Morocco (Waring et al. 1998). Some whales were also taken off the U.S. Mid-Atlantic coast (Reeves and Mitchell 1988; Perry et al. 1999), and in the northern Gulf of Mexico (Perry et al. 1999). There are no catch estimates available for the number of sperm whales caught during U.S. operations (Perry et al. 1999). Recorded North Atlantic sperm whale catch numbers for Canada and Norway totaled 1,995 from 1904 to 1972. All killing of sperm whales was banned by the IWC in 1988. However, at the 2000 meetings of the IWC, Japan indicated it would include the take of sperm whales in its scientific research whaling operations. Although this action was disapproved of by the IWC, Japan has reported the take of 5 sperm whales from the North Pacific as a result of this research.

Sperm whales generally occur in waters greater than 180 meters in depth. While they may be encountered almost anywhere on the high seas, their distribution shows a preference for continental margins, sea mounts, and areas of upwelling, where food is abundant (Leatherwood and Reeves 1983). Sperm whales in both hemispheres migrate to higher latitudes in the summer for feeding and return to lower latitude waters in the winter where mating and calving occur. Mature males typically range to much higher latitudes than mature females and immature animals but return to the lower latitudes in the winter to breed (Perry et al. 1999). Waring et al. (2002) suggest sperm whale distribution is closely correlated with the Gulf Stream edge. Like swordfish, which feed on similar prey, sperm whales migrate to higher latitudes during summer months, when they are concentrated east and northeast of Cape Hatteras. In the U.S. EEZ, sperm whales occur on the continental shelf edge, over the continental slope, and into the mid-ocean regions, and are distributed in a distinct seasonal cycle; concentrated east-northeast of Cape Hatteras in winter and shifting northward in spring when whales are found throughout the mid-Atlantic Bight. Distribution extends further northward to areas north of Georges Bank and the

Northeast Channel region in summer and then south of New England in fall, back to the mid-Atlantic Bight (Waring et al. 2002).

Sperm whale distribution may be linked to their social structure as well as distribution of their prey (Waring et al. 2002). Sperm whale populations are organized into two types of groupings: breeding schools and bachelor schools. Older males are often solitary (Best 1979). Breeding schools consist of females of all ages, calves and juvenile males. In the Northern Hemisphere, mature females ovulate April through August. During this season one or more large mature bulls temporarily join each breeding school. A single calf is born after a 15-month gestation. A mature female will produce a calf every 4-6 years. Females attain sexual maturity at a mean age of nine years, while males have a prolonged puberty and attain sexual maturity at about age 20 (Waring et al. 2002). Bachelor schools consist of maturing males who leave the breeding school and aggregate in loose groups of about 40 animals. As the males grow older they separate from the bachelor schools and remain solitary most of the year (Best 1979). Male sperm whales may not reach physical maturity until they are 45 years old (Waring et al. 2002). The sperm whales prey consists of larger mesopelagic squid (e.g., *Architeuthis* and *Moroteuthis*) and fish species (Perry et al. 1999). Sperm whales, especially mature males in higher latitude waters, have been observed to take significant quantities of large demersal and mesopelagic sharks, skates, and bony fishes (Clarke 1962, 1980).

Few instances of injury or mortality of sperm whales due to human impacts have been recorded in U.S. waters. Because of their generally more offshore distribution and their benthic feeding habits, sperm whales are less subject to entanglement than right or humpback whales.

Documented takes primarily involve offshore fisheries such as the offshore lobster pot fishery and pelagic driftnet and pelagic longline fisheries. The NMFS Sea Sampling program recorded three entanglements (in 1989, 1990, and 1995) of sperm whales in the swordfish drift gillnet fishery prior to permanent closure of the fishery in January 1999. All three animals were injured, found alive, and released. However, at least one was still carrying gear. Opportunistic reports of sperm whale entanglements for the years 1993-1997 include three records involving offshore lobster pot gear, heavy monofilament line, and fine mesh gillnet from an unknown source. Sperm whales may also interact opportunistically with fishing gear. Observers aboard Alaska sablefish and Pacific halibut longline vessels have documented sperm whales feeding on longline caught fish in the Gulf of Alaska (Perry et al. 1999). Behavior similar to that observed in the Alaskan longline fishery has also been documented during longline operations off South America where sperm whales have become entangled in longline gear, have been observed feeding on fish caught in the gear, and have been reported following longline vessels for days (Perry et al. 1999).

Sperm whales are also struck by ships. In May 1994 a ship struck sperm whale was observed south of Nova Scotia (Waring et al. 2002). A sperm whale was also seriously injured as a result of a ship strike in May 2000 in the western Atlantic. Due to the offshore distribution of this species, interactions that do occur are less likely to be reported than those involving right, humpback, and fin whales that more often occur in nearshore areas. Other impacts noted above for baleen whales may also occur.

Due to their offshore distribution, sperm whales tend to strand less often than, for example, right whales and humpbacks. Preliminary data for 2000 indicate that of ten sperm whales reported to the stranding network (nine dead and one injured) there was one possible fishery interaction, one ship strike (wounded with bleeding gash on side) and eight animals for which no signs of entanglement or injury were sighted or reported. No sperm whales have stranded or been reported to the stranding network as of February 2001.

*Atlantic Bottlenose dolphin*

Most of the information which follows concerning Atlantic bottlenose dolphin was excerpted from the most recent stock assessment for this species (Waring et al. 2002). The coastal morphotype of the Atlantic bottlenose dolphin is continuously distributed along the Atlantic coast south of Long Island, around peninsula Florida and along the Gulf of Mexico coast. Within the western North Atlantic, the stock structure of coastal bottlenose dolphins is complex. Scott et al. (1988) hypothesized a single coastal migratory stock ranging seasonally from as far north as Long Island, NY, to as far south as central Florida, citing stranding patterns during a high mortality event in 1987-88 and observed density patterns along the US Atlantic coast. The continuous distribution of dolphins along the coast seemed to support this hypothesis. It was recognized that bottlenose dolphins were resident in some estuaries; these were considered to be separate from the coastal migratory animals. However, recent studies suggest that the single coastal migratory stock hypothesis is incorrect and that there is likely a complex mosaic of stocks. For example, year-round resident populations have been reported at a variety of sites in the southern part of the range, from Charleston, South Carolina (Zolman 1996) to central Florida (Odell and Asper 1990); seasonal residents and migratory or transient animals also occur in these areas (summarized in Hohn 1997). In the northern part of the range the patterns reported include seasonal residency, year-round residency with large home ranges, and migratory or transient movements (Barco and Swingle 1996, Sayigh et al. 1997). Communities of dolphins have been recognized in embayments and coastal areas of the Gulf of Mexico (Wells et al. 1996; Scott et al. 1990; Weller 1998) so it is not surprising to find similar situations along the Atlantic coast (Waring et al. 2002).

Recent genetic analyses of samples from Jacksonville, FL, southern South Carolina (primarily the estuaries around Charleston), southern North Carolina, and coastal Virginia, using both mitochondrial DNA and nuclear microsatellite markers, indicate that a significant amount of the overall genetic variation can be explained by differences between the groups (NMFS 2001). These results indicate a minimum of four populations of coastal bottlenose dolphins in the Northwest Atlantic and reject the null hypothesis of one homogeneous population of bottlenose dolphins. Integration of the preliminary results from genetics, photo-identification, satellite telemetry, and stable isotope studies confirms a complex mosaic of stocks of coastal bottlenose dolphins in the western North Atlantic (Waring et al. 2002). As an interim measure, pending additional results, seven management units within the range of the "coastal migratory stock" have been defined. The true population structure is likely more than the seven units identified in Waring et al. (2002); research efforts continue in an attempt to identify that structure.

Earlier aerial (CETAP 1982) and shipboard (NMFS unpublished data) surveys north of Cape Hatteras identified two concentrations of bottlenose dolphins, one inshore of the 25 m isobath

and the other offshore of the 25 m isobath. The lowest density of bottlenose dolphins was observed over the continental shelf, with higher densities along the coast and near the continental shelf edge. It was suggested that the coastal morphotype is restricted to waters < 25 m in depth north of Cape Hatteras (Kenney 1990). There was no apparent longitudinal discontinuity in bottlenose dolphin herd sightings during aerial surveys south of Cape Hatteras in the winter (Blaylock and Hoggard 1994). NMFS surveys conducted from 1992-1998 show a clustering of bottlenose dolphins nearshore and then additional bottlenose dolphins in the offshore areas. Unfortunately, the morphotype of bottlenose dolphins (WNA offshore or WNA coastal) cannot be determined from the air so attributing each sighting to a specific morphotype is not possible. There is also a potential for confusing immature spotted dolphins, with few or no spots dorsally, with bottlenose dolphins where the two species co-occur. In 1995, NMFS conducted two aerial surveys along the Atlantic coast (Blaylock 1995; Garrison and Yeung 2001). One survey was conducted during summer 1995 between Cape Hatteras, NC, and Sandy Hook, NJ, and included three replicate surveys. The second survey was conducted during winter 1995 between Cape Hatteras, NC, and Ft. Pierce, FL. A distributional analysis identified a significant spatial pattern in bottlenose dolphin sightings as a function of distance from shore (Garrison 2001a). During the northern (summer) surveys, the significant spatial boundary occurred at 12 km from shore. During the southern (winter) survey, the significant spatial boundary occurred at 27 km from shore. The gap in sightings best defines, for the time being, the eastern extent of the coastal morphotype for purposes of habitat definition and abundance estimates. NMFS continues to collect biopsy samples from Tursiops throughout the possible range of the coastal morphotype so that stock boundaries can be confirmed or modified on the basis of a more comprehensive data set (Waring et al. 2002).

The 1995 aerial surveys were conducted to estimate population size of the hypothesized single coastal migratory stock (Blaylock 1995; Garrison and Yeung 2001). The summer aerial survey was conducted between July 1 and August 14, 1995, covering Cape Hatteras, NC, to Sandy Hook, NJ, (35.23oN-40.5oN), and from the mainland shore to the 25 m isobath. This survey provided coverage and abundance estimates for the Northern Migratory (NM) and Northern North Carolina (NNC) management units. However, coverage of the NNC unit was incomplete as the surveys did not cover the region south of Cape Hatteras, NC, to Cape Lookout, NC. Abundance was estimated for each stratum pooling across the three replicate surveys. The winter survey was conducted between January 27 and March 6, covering from Fort Pierce, FL, to Cape Hatteras, NC, from the mainland shore to 9.25 km (5 Nautical Miles) beyond the inshore edge of the Gulf Stream or <200 km offshore. This survey included coverage of the NNC, Southern North Carolina (SNC), South Carolina (SC), Georgia (GA), Northern Florida (NFL) and Central Florida (CFL) management units. However, the coverage of the NNC management unit was incomplete and did not include the region north of Cape Hatteras, NC. These abundance estimates also include NM unit animals that have migrated south of the NC/VA border during winter. Abundance for each management unit was estimated using line transect methods and the program DISTANCE (Buckland et al. 1993) for both the winter and summer surveys. There was no significant difference between the abundance estimates for the combined NM and NNC management units in summer and the combined NM, NNC, and SNC stocks in winter. Another set of aerial surveys was conducted parallel to the coastline from the North Carolina/South Carolina border to the Maryland/Delaware border during 1998 and 1999 to document the distribution of dolphins and fishing gear in nearshore waters (Hohn et al. unpubl. data). These

strip/ transect surveys were conducted weekly, weather permitting, over 12 months in most of North Carolina and for six months (May to December) in Virginia and Maryland. In retrospect, they provide seasonal coverage of the Southern North Carolina, Northern North Carolina, and Northern Migratory management units. The strip transect surveys cannot be used directly for abundance estimation because they did not follow the design constraints of line transect survey methods and covered only a small proportion of the habitat of coastal bottlenose dolphin. The density of dolphins near the coastline is high relative to habitats farther offshore, and the use of density estimates in this region to calculate overall abundance would likely result in significant positive bias. However, these surveys do provide information on the relative abundance of dolphins between regions that may be used to supplement the abundance estimates from the line transect surveys conducted in 1995 (Garrison and Hohn 2001). Both sets of aerial surveys covered ocean coasts only. An abundance estimate was generated for bottlenose dolphins in estuarine waters of North Carolina using mark-recapture methodology (Read et al. In review). It is possible to post-stratify the mark-recapture estimates consistent with management unit definitions (Palka et al. 2001). Abundance estimates for each management unit are the sum of estimates, where appropriate, from the recent analyses. Estimated overall abundance was 9,206 from summer surveys and 19,459 from winter surveys. However, for consistency with achieving the goals of the MMPA, such as maintaining marine mammals as functioning components of their ecosystems, it is more appropriate to establish abundance estimates for each management unit. Abundance for each management unit was estimated by post-stratifying sightings and effort data consistent with geographic and seasonal management unit boundaries (Garrison and Yeung 2001; Palka et al. 2001). Although these estimates are improved relative to previous abundance estimates for coastal bottlenose dolphins, potential biases remain. The aerial survey estimates are not corrected for g(0), the probability of detecting a group on the track line as a function of perception bias and availability bias. The exclusion of g(0) from the abundance estimate results in a negative bias of unknown magnitude. A positive bias may occur if the longitudinal boundaries have been extended too far offshore resulting in offshore dolphins being included in the abundance estimates for the coastal morphotype or if estuarine dolphins were over-represented in coastal waters during the time of the survey. Further uncertainties in the abundance estimates result from incomplete coverage of some seasonal management units during the line transect surveys. While the strip transect surveys were used to supplement the survey coverage, uncertainties associated with that analysis also introduce uncertainty in the overall abundance estimate (Garrison and Hohn 2001).

The minimum population size (NMIN) for each management was calculated by Waring et al. (2002) according to he Potential Biological Removal (PBR) Guidelines (Wade and Angliss 1997): NMIN= N/exp(0.842×[ln(1+[CV(N)]2)]½). It was recognized that these estimates may be negatively biased because they do not include corrections for g(0) and, for some of the managements units, do not include the entire spatial range of the unit during that season. The strip transect surveys compensate for some of the abundance omitted during line-transect survey; nonetheless, for some management units the entire range was not covered. There are insufficient data to determine the population trend for this stock (Waring et al. 2002).

In addition, Current and maximum net productivity rates are not known for the WNA coastal morphotype. The maximum net productivity rate was assumed to be 0.04. This value is based on theoretical modeling showing that cetacean populations may not grow at rates much greater than

4% given the constraints of their reproductive life history (Barlow et al. 1995; Waring et al. 2002).

PBR is the product of the minimum population size, one-half the maximum productivity rate, and a "recovery" factor (Wade and Angliss 1997). The "recovery" factor is assumed to be 0.50, the default for depleted stocks and stocks of unknown status. At least part of the range-wide stock complex is depleted; for the remainder, status is unknown. For consistency with achieving the goals of the MMPA, such as maintaining marine mammals as functioning components of their ecosystems, it is more appropriate to establish separate PBRs for each management unit.

Total estimated average annual fishery-related mortality or serious injury resulting from observed fishing trips during 1996-2000 was 233 bottlenose dolphins (CV=0.16) in the mid-Atlantic coastal gillnet fishery (Waring et al. 2002). The management units affected by this fishery would be the NM, NNC, and SC. An estimated 24 (CV=0.89) were taken in the shark drift gillnet fishery off the coast of Florida during 1999-2000, affecting the Central and Northern Florida management units. No estimates of mortality from observed trips are available for any of the other fisheries that interact with WNA coastal bottlenose dolphins. Therefore, the total average annual mortality estimate is considered to be a lower bound of the actual annual human-caused mortality and serious injury (Waring et al. 2002).

Bottlenose dolphins are known to interact with commercial fisheries and occasionally are taken in various kinds of fishing gear including gillnets, seines, long-lines, shrimp trawls, and crab pots (Read 1994; Wang et al. 1994) especially in near-shore areas where dolphin densities and fishery efforts are greatest. There are nine Category II commercial fisheries that interact with WNA coastal bottlenose dolphins in the 2001 MMPA List of Fisheries (LOF), six of which occur in North Carolina waters. Category II fisheries include the mid-Atlantic coastal gillnet, NC inshore gillnet, mid-Atlantic haul/beach seine, NC long haul seine, NC stop net, Atlantic blue crab trap/pot, Southeast Atlantic gillnet, Southeastern U.S. Atlantic shark gillnet and the Virginia pound net (see 2001 List of Fisheries, 66 FR 42780, August 15, 2001; Waring et al. 2002). The mid-Atlantic haul/beach seine fishery also includes the haul seine and swipe net fisheries. There are five Category III fisheries that may interact with WNA coastal bottlenose dolphins. Three of these are inshore gillnet fisheries: the Delaware Bay inshore gillnet, the Long Island Sound inshore gillnet, and the Rhode Island, southern Massachusetts, and New York Bight inshore gillnet. The remaining two are the shrimp trawl and mid-Atlantic menhaden purse seine fisheries. There have been no takes observed by the NMFS observer programs in any of these fisheries (Waring et al. 2002).

The mid-Atlantic coastal gillnet fishery is actually a combination of small-vessel fisheries that target a variety of fish species, including bluefish, croaker, spiny and smooth dogfish, kingfish, Spanish mackerel, spot, striped bass, and weakfish (Steve et al. 2001). These fisheries operate in different seasons targeting different species in different states throughout the range of the coastal morphotype. Most nets are set gillnets without anchors and are fished close to shore. Anchored set gillnets or drift gillnets are used in some fisheries (e.g., monkfish or dogfish). A comprehensive description of coastal gillnet gears and fishing effort in North Carolina is available in Steve et al. (2001). This fishery has the highest documented level of mortality of WNA coastal bottlenose dolphins; the North Carolina sink gillnet fishery is its largest component

in terms of fishing effort and observed takes. Bycatch estimates are available for the period 1996-2000 (Waring et al. 2002). Of 12 observed mortalities from 1995-2000, 5 occurred in sets targeting spiny or smooth dogfish and another in a set targeting “shark” species, 2 occurred in striped bass sets, 2 occurred in Spanish mackerel sets, and the remainder were in sets targeting kingfish, weakfish, or "finfish" (Rossman and Palka 2001; Waring et al. 2002).

The shark gillnet fishery operates in Federal waters from southern Florida to southern Georgia. The fishery is defined by vessels using relatively large mesh nets (>10 inches) and net lengths typically greater than 1500 feet. The fishery primarily uses drifting nets that are set overnight; however, recently it has been employing a small number of shorter duration “strike” sets that encircle targeted schools of sharks. Since 1999, the Atlantic Large Whale Take Reduction Plan restricted the activities of the fishery to waters south of 27° 51’ N latitude during the critical right whale season from 15 November – 31 March and mandated 100% observer coverage during this period. During the remainder of the year, these vessels generally operate north of Cape Canaveral, FL and there is little observer coverage of the fleet. The fishery potentially interacts with the Georgia, Northern Florida, and Central Florida management units of coastal bottlenose dolphin. During an observer program in 1993 and 1994 and limited observer coverage during the summer of 1998, no takes of bottlenose dolphin were observed (Trent et al. 1997; Carlson and Lee, 2000). However, takes resulting in mortality were observed in the Central Florida management unit during 1999 and 2000. Total bycatch mortality for this management unit has been estimated for 1999 and 2000 (Garrison 2001b).

A beach seine fishery operates along northern North Carolina beaches targeting striped bass, mullet, spot, weakfish, sea trout, and bluefish. The fishery operates on the Outer Banks of North Carolina primarily in the spring (April through June) and fall (October through December). It uses two primary gear types: a “beach anchored gill net” and a “beach seine.” Both systems utilize a small net anchored to the beach. The beach seine system also uses a bunt and a wash net that are attached to the beach and are in the surf (Steve et al. 2001). The North Carolina beach seine fishery has been observed since April 7, 1998 by the NMFS fisheries sampling program (observer program) based at the Northeast Fisheries Science Center. Through 2001, there were 101 sets observed during the winter season (Nov-Apr) and 65 sets observed during the summer season (May-Oct). A total of 2 coastal bottlenose dolphin takes were observed, 1 in May 1998 and 1 in December 2000. The beach seine observer data are currently being reviewed but estimates of mortality are not yet available (Waring et al. 2002).

Between 1994 and 1998, 22 bottlenose dolphin carcasses (4.4 dolphins per year on average) recovered by the Stranding Network between North Carolina and Florida’s Atlantic coast displayed evidence of possible interaction with a trap/pot fishery (i.e., rope and/or pots attached, or rope marks). Additionally, at least 5 dolphins were reported to be released alive (condition unknown) from blue crab traps/pots during this time period. In recent years, reports of strandings with evidence of interactions between bottlenose dolphins and both recreational and commercial crab-pot fisheries have been increasing in the Southeast Region (McFee and Brooks 1998). The increased reporting may result from increased effort towards documenting these marks or increases in mortality (Waring et al. 2002).

Data from the Chesapeake Bay suggest that the likelihood of bottlenose dolphin entanglement in pound net leads may be affected by the mesh size of the lead net (Bellmund et al. 1997), but the information is not conclusive. Stranding data for 1993-1997 document interactions between WNA coastal bottlenose dolphins and pound nets in Virginia. Two bottlenose dolphin carcasses were found entangled in the leads of pound nets in Virginia during 1993-1997, for an average of 0.4 bottlenose dolphin strandings per year. A third record of an entangled bottlenose dolphin in Virginia in 1997 may have been applicable to this fishery. This entanglement involved a bottlenose dolphin carcass found near a pound net with twisted line marks consistent with the twine in the nearby pound net lead rather than with monofilament gillnet gear. Given that other sources of annual serious injury and mortality estimates (e.g., observer data) are not available, the stranding data (0.4 bottlenose dolphins per year) were used as a minimum estimate of annual serious injury and mortality and this fishery was classified as a Category II fishery in the 2001 List of Fisheries (Waring et al. 2002).

The shrimp trawl fishery operates from North Carolina through northern Florida virtually year around, moving seasonally up and down the coast. One bottlenose dolphin was recovered dead from a shrimp trawl in Georgia in 1995 (Southeast USA Marine Mammal Stranding Network unpublished data), and another was taken in 1996 near the mouth of Winyah Bay, SC, during a research survey. No other bottlenose dolphin mortality or serious injury has been previously reported to NMFS (Waring et al. 2002).

The Atlantic menhaden purse seine fishery targets the Atlantic menhaden in Atlantic coastal waters. Smith (1999) summarized menhaden fishing patterns by the Virginia-North Carolina vessels from 1985-1996. Most of the catch and sets during that time occurred within three miles of the shore. Between 1994 and 1997, menhaden were processed at only three facilities, two in Reedville Beach, VA, and one in Beaufort, NC. Each of the Virginia facilities had a fleet of 9-10 vessels while the Beaufort facility is supported by 2-6 vessels. Since 1998, only one plant has operated in Virginia and the number of vessels has been reduced to ten in Virginia and two in North Carolina (Vaughan et al. 2001). The fishery moves seasonally, with most effort occurring off of North Carolina from November-January and moving northward to southern New England during warmer months. Menhaden purse seiners have reported an annual incidental take of 1 to 5 bottlenose dolphins, although observer data are not available (Waring et al. 2002).

From 1997-1999, 995 bottlenose dolphins were reported stranded along the Atlantic coast from New York to Florida (Hohn and Martone 2001; Hohn et al. 2001; Palka et al. 2001). Of these, it was possible to determine whether a human interaction had occurred for 449 (45%); for the remainder it was not possible to make that determination. The proportion of carcasses determined to have been involved in a human interaction averaged 34%, but ranged widely from 11-12% in Delaware and Georgia to 49% and 53% in Virginia and North Carolina, respectively.

The nearshore habitat occupied by the coastal morphotype is adjacent to areas of high human population and in the northern portion of its range is highly industrialized. The blubber of stranded dolphins examined during the 1987-88 mortality event contained anthropogenic contaminants in levels among the highest recorded for a cetacean (Geraci 1989). There are no estimates of indirect human-caused mortality resulting from pollution or habitat degradation.

The coastal migratory stock is designated as depleted under the MMPA. From 1995-2001, NMFS recognized only a single migratory stock of coastal bottlenose dolphins in the WNA and, therefore, the entire stock was listed as depleted. The management units in this report now replace the single coastal migratory stock. A re-analysis of the depletion designation on a management unit basis needs to be undertaken. In the interim, because one or more of the management units may be depleted, all management units retain the depleted designation. In addition, mortality in multiple units exceeded PBR (Waring et al. 2002). There are no rigorous results that would provide reliable information on current abundance relative to historical abundance. All prior estimates cover only part of the range of management units spatially or temporally, include the offshore morphotype, or are otherwise compromised. Population trends cannot be determined due to insufficient data. Over the past five years, estimated average annual mortality exceeded PBR in the mid-Atlantic gillnet fisheries for the northern migratory and northern NC management units during summer and for the NC mixed management units in winter (Waring et al. 2002).

The species is not listed as threatened or endangered under the Endangered Species Act, but because, as noted above, the stock is listed as depleted under the MMPA it is a strategic stock. This stock is also considered strategic under the MMPA because fishery-related mortality and serious injury exceed the potential biological removal level.

*Leatherback Sea Turtle*

Leatherback turtles are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, Caribbean, and the Gulf of Mexico (Ernst and Barbour 1972). The leatherback sea turtle is the largest living turtle and ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS and USFWS, 1995). Evidence from tag returns and strandings in the western Atlantic suggests that adults engage in routine migrations between boreal, temperate and tropical waters (NMFS and USFWS, 1992). In the U.S., leatherback turtles are found throughout the action area of this consultation. Located in the northeastern waters during the warmer months, this species is found in coastal waters of the continental shelf and near the Gulf Stream edge, but rarely in the inshore areas. However, leatherbacks may migrate close to shore, as a leatherback was satellite tracked along the mid-Atlantic coast, thought to be foraging in these waters. A 1979 aerial survey of the outer Continental Shelf from Cape Hatteras, North Carolina to Cape Sable, Nova Scotia showed leatherbacks to be present throughout the area with the most numerous sightings made from the Gulf of Maine south to Long Island. Shoop and Kenney (1992) also observed concentrations of leatherbacks during the summer off the south shore of Long Island and off New Jersey. Leatherbacks in these waters are thought to be following their preferred jellyfish prey. This aerial survey estimated the leatherback population for the northeastern U.S. at approximately 300-600 animals (from near Nova Scotia, Canada to Cape Hatteras, North Carolina).

Compared to the current knowledge regarding loggerhead populations, the genetic distinctness of leatherback populations is less clear. However, genetic analyses of leatherbacks to date indicate female turtles nesting in St. Croix/Puerto Rico and those nesting in Trinidad differ from each other and from turtles nesting in Florida, French Guiana/Suriname and along the South African Indian Ocean coast. Much of the genetic diversity is contained in the relatively small insular

subpopulations. Although populations or subpopulations of leatherback sea turtles have not been formally recognized, based on the most recent reviews of the analysis of population trends of leatherback sea turtles, and due to our limited understanding of the genetic structure of the entire species, the most conservative approach would be to treat leatherback nesting populations as distinct populations whose survival and recovery is critical to the survival and recovery of the species. Further, any action that appreciably reduces the likelihood for one or more of these nesting populations to survive and recover in the wild, would appreciably reduce the species' likelihood of survival and recovery in the wild.

Leatherbacks are predominantly a pelagic species and feed on jellyfish (i.e., *Stomolophus, Chryaora*, and *Aurelia* (Rebel 1974)), cnidarians (*medusae, siphonophores*) and tunicates (*salps, pyrosomas*). Time-Depth-Recorder data recorded by Eckert et al. (1998b) indicate that leatherbacks are night feeders and are deep divers, with recorded dives to depths in excess of 1000 meters. However, leatherbacks may come into shallow waters if there is an abundance of jellyfish nearshore. Leary (1957) reported a large group of up to 100 leatherbacks just offshore of Port Aransas, Texas associated with a dense aggregation of *Stomolophus*. Leatherbacks also occur annually in places such as Cape Cod and Narragansett Bays during certain times of the year, particularly the fall.

Although leatherbacks are a long lived species (> 30 years), they are somewhat faster to mature than loggerheads, with an estimated age at sexual maturity reported as about 13-14 years for females, and an estimated minimum age at sexual maturity of 5-6 years, with 9 years reported as a likely minimum (Zug and Parham 1996) and 19 years as a likely maximum (NMFS 2001). In the U.S. and Caribbean, female leatherbacks nest from March through July. They nest frequently (up to 7 nests per year) during a nesting season and nest about every 2-3 years. During each nesting, they produce 100 eggs or more in each clutch and thus, can produce 700 eggs or more per nesting season (Schultz 1975). The eggs will incubate for 55-75 days before hatching. The habitat requirements for post-hatchling leatherbacks are virtually unknown (NMFS and USFWS 1992).

Anthropogenic impacts to the leatherback population are similar to those discussed above for the loggerhead sea turtle, including fishery interactions as well as intense exploitation of the eggs (Ross 1979). Eckert (1996) and Spotila et al. (1996) record that adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries. Zug and Parham (1996) attribute the sharp decline in leatherback populations to the combination of the loss of long-lived adults in fishery related mortality, and the lack of recruitment stemming from elimination of annual influxes of hatchlings because of intense egg harvesting.

Poaching is not known to be a problem for U.S. nesting populations. However, numerous fisheries that occur in both U.S. state and Federal waters are known to negatively impact juvenile and adult leatherback sea turtles. These include incidental take in several commercial and recreational fisheries. Fisheries known or suspected to incidentally capture leatherbacks include those deploying bottom trawls, off-bottom trawls, purse seines, bottom longlines, hook and line, gill nets, drift nets, traps, haul seines, pound nets, beach seines, and surface longlines (NMFS and USFWS 1992). At a workshop held in the Northeast in 1998 to develop a management plan

for leatherbacks, experts expressed the opinion that incidental takes in fisheries were likely higher than is being reported.

Leatherback interactions with the southeast shrimp fishery are also common. Turtle Excluder Devices (TEDs), typically used in the southeast shrimp fishery to minimize sea turtle/fishery interactions, are less effective for the large-sized leatherbacks. Therefore, the NMFS has used several alternative measures to protect leatherback sea turtles from lethal interactions with the shrimp fishery. These include establishment of a Leatherback Conservation Zone (60 FR 25260). NMFS established the zone to restrict, when necessary, shrimp trawl activities from off the coast of Cape Canaveral, Florida to the Virginia/North Carolina Border. It allows the NMFS to quickly close the area or portions of the area to the shrimp fleet on a short-term basis when high concentrations of normally pelagic leatherbacks are recorded in more coastal waters where the shrimp fleet operates. Other emergency measures may also be used to minimize the interactions between leatherbacks and the shrimp fishery. For example, in November 1999 parts of Florida experienced an unusually high number of leatherback strandings. In response, the NMFS required shrimp vessels operating in a specified area to use TEDs with a larger opening for a 30-day period beginning December 8, 1999 (64 FR 69416) so that leatherback sea turtles could escape if caught in the gear.

Leatherbacks are also susceptible to entanglement in lobster and crab gear, possibly as a result of attraction to gelatinous organisms and algae that collect on buoys and buoy lines at or near the surface, attraction to the buoys which could appear as prey, or the gear configuration which may be more likely to wrap around flippers. The total number of leatherbacks reported entangled from New York through Maine from all sources for the years 1980 - 2000 is 119; out of this total, 92 of these records occurred from1990-2000. Entanglements are also common in Canadian waters where Goff and Lien (1988) reported that 14 of 20 leatherbacks encountered off the coast of Newfoundland/Labrador were entangled in fishing gear including salmon net, herring net, gillnet, trawl line and crab pot line. It is unclear how leatherbacks become entangled in such gear. Prescott (1988) reviewed stranding data for Cape Cod Bay and concluded that for those turtles where cause of death could be determined (the minority), entanglement in fishing gear is the leading cause of death followed by capture by dragger, cold stunning, or collision with boats.

Spotila et al. (1996) describe a hypothetical life table model based on estimated ages of sexual maturity at both ends of the species' natural range (5 and 15 years). The model concluded that leatherbacks maturing in 5 years would exhibit much greater population fluctuations in response to external factors than would turtles that mature in 15 years. Furthermore, the simulations indicated that leatherbacks could maintain a stable population only if both juvenile and adult survivorship remained high, and that if other life history stages (i.e., egg, hatchling, and juvenile) remained static. Model simulations indicated that an increase in adult mortality of more than 1% above background levels in a stable population was unsustainable. As noted, there are many human-related sources of mortality to leatherbacks; a tally of all leatherback takes anticipated annually under current biological opinions completed for the NMFS June 30, 2000, biological opinion on the pelagic longline fishery projected a potential for up to 801 leatherback takes, although this sum includes many takes expected to be nonlethal. Leatherbacks have a number of pressures on their populations, including injury or mortality in fisheries, other Federal activities (e.g., military activities, oil and gas development, etc.), degradation of nesting habitats, direct

harvest of eggs, juvenile and adult turtles, the effects of ocean pollutants and debris, lethal collisions, and natural disturbances such as hurricanes (which may wipe out nesting beaches).

Spotila et al. (1996) recommended not only reducing mortalities resulting from fishery interactions, but also advocated protection of eggs during the incubation period and of hatchlings during their first day, and indicated that such practices could potentially double the chance for survival and help counteract population effects resulting from adult mortality. They conclude, "stable leatherback populations could not withstand an increase in adult mortality above natural background levels without decreasing . . . the Atlantic population is the most robust, but it is being exploited at a rate that cannot be sustained and if this rate of mortality continues, these populations will also decline. ".

Estimated to number approximately 115,000 adult females globally in 1980 (Pritchard 1982) and only 34,500 by 1995 (Spotila et al. 1996), leatherback populations have been decimated worldwide, not only by fishery related mortality but, at least historically, primarily due to intense exploitation of the eggs (Ross 1979). On some beaches nearly 100% of the eggs laid have been harvested (Eckert 1996). Eckert (1996) and Spotila et al. (1996) record that adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries. Spotila (2000) states that a conservative estimate of annual leatherback fishery-related mortality (from longlines, trawls and gillnets) in the Pacific during the 1990s is 1,500 animals. He estimates that this represented about a 23% mortality rate (or 33% if most mortality was focused on the East Pacific population).

Nest counts are currently the only reliable indicator of population status available for leatherback turtles. The status of the leatherback population in the Atlantic is difficult to assess since major nesting beaches occur over broad areas within tropical waters outside the United States. Recent information suggests that Western Atlantic populations declined from 18,800 nesting females in 1996 (Spotila et al. 1996) to 15,000 nesting females by 2000. Eastern Atlantic (i.e., off Africa, numbering ~ 4,700) and Caribbean (4,000) populations appear to be stable, but there is conflicting information for some sites and it is certain that some populations (e.g., St. John and St. Thomas, U.S. Virgin Islands) have been extirpated (NMFS and USFWS 1995). It does appear, however, that the Western Atlantic population is being subjected to mortality beyond sustainable levels, resulting in a continued decline in numbers of nesting females.

*Hawksbill Sea Turtle*

The following is a summary of information on the Hawksbill sea turtle made available by NMFS at the following website: http://www.nmfs.noaa.gov/pr/species/turtles/hawksbill.html

The hawksbill occurs in tropical and subtropical seas of the Atlantic, Pacific and Indian Oceans. The species is widely distributed in the Caribbean Sea and western Atlantic Ocean, with representatives of at least some life history stages regularly occurring in southern Florida and the northern Gulf of Mexico (especially Texas); in the Greater and Lesser Antilles; and along the Central American mainland south to Brazil. Within the United States, hawksbills are most common in Puerto Rico and its associated islands, and in the U.S. Virgin Islands. In the continental U.S., the species is recorded from all the gulf states and from along the eastern

seaboard as far north as Massachusetts, with the exception of Connecticut, but sightings north of Florida are rare.

The hawksbill is a small to medium-sized sea turtle. In the U.S. Caribbean, nesting females average about 62-94cm in straight carapace length. Weight is typically to 80 kg in the wider Caribbean, with a record weight of 127 kg. Hatchlings average about 42 mm straight carapace length and range in weight from 13.5-19.5 g. The following characteristics distinguish the hawksbill from other sea turtles: two pairs of prefrontal scales; thick, posteriorly overlapping scutes on the carapace; four pairs of coastal scutes; two claws on each flipper; and a beak-like mouth. The carapace is heart-shaped in very young turtles, and becomes more elongate or subovate with maturity. Its lateral and posterior margins are sharply serrated in all but very old individuals.

Hawksbills utilize different habitats at different stages of their life cycle. Posthatchling hawksbills occupy the pelagic environment, taking shelter in weedlines that accumulate at convergence points. Hawksbills reenter coastal waters when they reach approximately 20-25 cm carapace length. Coral reefs are widely recognized as the resident foraging habitat of juveniles, subadults and adults. This habitat association is undoubtedly related to their diet of sponges, which need solid substrate for attachment. The ledges and caves of the reef provide shelter for resting both during the day and night. Hawksbills are also found around rocky outcrops and high energy shoals, which are also optimum sites for sponge growth. Hawksbills are also known to inhabit mangrove-fringed bays and estuaries, particularly along the eastern shore of continents where coral reefs are absent. In Texas, juvenile hawksbills are associated with stone jetties.

Hawksbills utilize both low- and high-energy nesting beaches in tropical oceans of the world. Both insular and mainland nesting sites are known. Hawksbills will nest on small pocket beaches, and, because of their small body size and great agility, can traverse fringing reefs that limit access by other species. They exhibit a wide tolerance for nesting substrate type. Nests are typically placed under vegetation.

The hawksbill turtle's status has not changed since it was listed as endangered in 1970. It is a solitary nester, and thus, population trends or estimates are difficult to determine. The decline of nesting populations is accepted by most researchers. In 1983, the only known apparently stable populations were in Yemen, northeastern Australia, the Red Sea, and Oman. Commercial exploitation is the major cause of the continued decline of the hawksbill sea turtle. There is a continuing demand for the hawksbill's shell as well as other products including leather, oil, perfume, and cosmetics. Prior to being certified under the Pelly Amendment, Japan had been importing about 20 metric tons of hawksbill shell per year, representing approximately 19,000 turtles. A negotiated settlement was reached regarding this trade on June 19, 1992. The hawksbill shell commands high prices (currently $225/kilogram), a major factor preventing effective protection.

Incidental catch of hawksbill turtles during fishing operations is an unquantified and potentially significant source of mortality. Gill nets, longlines and shrimp trawls all take turtles in Gulf of Mexico waters. The extent to which hawksbills are killed or debilitated after becoming entangled

in marine debris are unknown, but it is believed to be a serious and growing problem. Hawksbills have been reported entangled in monofilament gill nets, "fish nets", fishing line and rope. Hawksbill turtles eat a wide variety of debris such as plastic bags, plastic and styrofoam pieces, tar balls, balloons and plastic pellets. Effects of consumption include interference in metabolism or gut function, even at low levels of ingestion, as well as absorption of toxic byproducts.

*Kemp's Ridley Sea Turtle*

The Kemp's ridley is probably the most endangered of the world's sea turtle species. The only major nesting site for ridleys is a single stretch of beach near Rancho Nuevo, Tamaulipas, Mexico (Carr 1963). Estimates of the adult population reached a low of 1,050 in 1985, but increased to 3,000 individuals in 1997. First-time nesting adults have increased from 6% to 28% from 1981 to 1989, and from 23% to 41% from 1990 to 1994, indicating that the ridley population may be in the early stages of growth (TEWG 1998). More recently the TEWG (2000) concluded that the Kemp's Ridley population appears to be in the early stages of exponential expansion. While the number of females nesting annually is estimated to be orders of magnitude less than historical levels, the mean rate of increase in the annual number of nests has accelerated over the period 1987-1999. Preliminary analyses suggest that the intermediate recovery goal of 10,000 nesting females by 2020 may be achievable (TEWG 2000).

Juvenile Kemp's ridleys inhabit northeastern US coastal waters where they forage and grow in shallow coastal areas during the summer months. Juvenile ridleys migrate southward with autumnal cooling and are found predominantly in shallow coastal embayments along the Gulf Coast during the late fall and winter months.

Ridleys found in mid-Atlantic waters are primarily post-pelagic juveniles averaging 40 cm in carapace length, and weighing less than 20 kg. After loggerheads, they are the second most abundant sea turtle in Virginia and Maryland waters, arriving in there during May and June and then emigrating to more southerly waters from September to November. In the Chesapeake Bay, ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation (Lutcavage and Musick 1985). The juvenile population in Chesapeake Bay is estimated to be 211 to 1,083 turtles.

The model presented by Crouse et al. (1987) illustrates the importance of subadults to the stability of loggerhead populations and may have important implications for Kemp's ridleys. The vast majority of ridleys identified along the Atlantic Coast have been juveniles and subadults. Sources of mortality in this area include incidental takes in fishing gear, pollution and marine habitat degradation, and other man-induced and natural causes. Loss of individuals in the Atlantic, therefore, may impede recovery of the Kemp's ridley sea turtle population. Sea sampling data from the northeast otter trawl fishery and southeast shrimp and summer flounder bottom trawl fisheries has recorded takes of Kemp's ridley turtles.

*Shortnose Sturgeon*

Shortnose sturgeon occur in large rivers along the western Atlantic coast from the St. Johns River, Florida (possibly extirpated from this system), to the Saint John River in New Brunswick,

Canada. The species is anadromous in the southern portion of its range (i.e., south of Chesapeake Bay), while northern populations are amphidromous (NMFS 1998). Population sizes vary across the species' range with the smallest populations occurring in the Cape Fear and Merrimack Rivers and the largest populations in the Saint John and Hudson Rivers (Dadswell 1979; NMFS 1998).

Shortnose sturgeon are benthic and mainly inhabit the deep channel sections of large rivers. They feed on a variety of benthic and epibenthic invertebrates including mollusks, crustaceans (amphipods, chironomids, isopods), and oligochaete worms (Vladykov and Greeley 1963; Dadswell 1979). Shortnose sturgeon are long-lived (30 years) and mature at relatively old ages. In northern areas, males reach maturity at 5-10 years, while females reach sexual maturity between 7 and 13 years.

In the northern part of their range, shortnose sturgeon exhibit three distinct movement patterns that are associated with spawning, feeding, and overwintering periods. In spring, as water temperatures rise above 8° C, pre-spawning shortnose sturgeon move from overwintering grounds to spawning areas. Spawning occurs from mid/late April to mid/late May. Post-spawned sturgeon migrate downstream to feed throughout the summer.

As water temperatures decline below 8° C again in the fall, shortnose sturgeon move to overwintering concentration areas and exhibit little movement until water temperatures rise again in spring (NMFS 1998). Young-of-the-year shortnose sturgeon are believed to move downstream after hatching (NMFS 1998) but remain within freshwater habitats. Older juveniles tend to move downstream in fall and winter as water temperatures decline and the salt wedge recedes. Juveniles move upstream in spring and feed mostly in freshwater reaches during summer.

Shortnose sturgeon spawn in freshwater sections of rivers, typically below the first impassable barrier on the river (e.g., dam). Spawning occurs over channel habitats containing gravel, rubble, or rock-cobble substrates (NMFS 1998). Environmental conditions associated with spawning activity include decreasing river discharge following the peak spring freshet, water temperatures ranging from 9 -12 C, and bottom water velocities of 0.4 - 0.7 m/sec (NMFS 1998).

*Atlantic salmon*

The recent ESA-listing for Atlantic salmon covers the wild population of Atlantic salmon found in rivers and streams from the lower Kennebec River north to the U.S.-Canada border. These include the Dennys, East Machias, Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot Rivers and Cove Brook. Atlantic salmon are an anadromous species with spawning and juvenile rearing occurring in freshwater rivers followed by migration to the marine environment. Juvenile salmon in New England rivers typically migrate to sea in May after a two to three year period of development in freshwater streams, and remain at sea for two winters before returning to their U.S. natal rivers to spawn from mid October through early November. While at sea, salmon generally undergo an extensive northward migration to waters off Canada and Greenland. Data from past commercial harvest indicate that post-smolts overwinter in the southern Labrador Sea and in the Bay of Fundy. The numbers of returning wild Atlantic salmon within the Gulf of Maine Distinct Population Segment (DPS) are perilously small with total run

sizes of approximately 150 spawners occurring in 1999 (Baum 2000). Although capture of Atlantic salmon has occurred in commercial fisheries (usually otter trawl or gillnet gear) or by research/survey, no salmon have been reported captured in the Atlantic surfclam and ocean quahog fisheries.

*Smalltooth sawfish*

NMFS issued a final rule to list the DPS of smalltooth sawfish in the United States as an endangered species on April 1, 2003. Smalltooth sawfish are tropical marine and estuarine fish that have the northwestern terminus of their Atlantic range in the waters of the eastern United States. In the United States, smalltooth sawfish are generally a shallow water fish of inshore bars, mangrove edges, and seagrass beds, but larger animals can be found in deeper coastal waters. In order to assess both the historic and the current distribution and abundance of the smalltooth sawfish, a status review team collected and compiled literature accounts, museum collection specimens, and other records on the species. This information indicated that prior to around 1960, smalltooth sawfish occurred commonly in shallow waters of the Gulf of Mexico and eastern seaboard up to North Carolina, and more rarely as far north as New York. Subsequently their distribution has contracted to peninsular Florida and, within that area, they can only be found with any regularity off the extreme southern portion of the state. The current distribution is centered in the Everglades National Park, including Florida Bay (NMFS 2003).

Smalltooth sawfish have declined dramatically in U.S. waters over the last century, as indicated by publication and museum records, negative scientific survey results, anecdotal fishermen observations, and limited landings per unit effort (NMFS 2003). The fact that documented smalltooth sawfish catch records have declined during the twentieth century despite tremendous increases in fishing effort underscores the population reduction in the species. While NMFS lacks time-series abundance data to quantify the extent of the DPS's decline, the best available information indicates that the abundance of the U.S. DPS of smalltooth sawfish is at an extremely low level relative to historic levels.

The smalltooth sawfish continues to face threats from: (1) loss of wetlands, (2) eutrophication, (3) point and non point sources of pollution, (4) increased sedimentation and turbidity, (5) hydrologic modifications, and (6) incidental catch in fisheries (NMFS 2003). Commercial bycatch has played the primary role in the decline of this species. While Federal, state, and interjurisdictional laws, regulations, and policies lead to overall environmental enhancements indirectly aiding smalltooth sawfish, very few have been applied specifically for the protection of smalltooth sawfish. Based on the species' low intrinsic rate of increase resulting from their slow growth, late maturation, and low fecundity, population recovery potential for the species is limited and the species is at risk of extinction. Current protective measures and conservation efforts underway to protect the smalltooth sawfish are confined to: actions directed at increasing general awareness of this species and the risks it faces; possession prohibitions in the state waters of Florida and Louisiana; and research being pursued by the Mote Marine Laboratory's Center for Shark Research. There are no Federal or state conservation plans for the smalltooth sawfish.

*Seabirds*

Most of the following information about seabirds is taken from the Mid-Atlantic Regional Marine Research Program (1994) and Peterson (1963). Fulmars occur as far south as Virginia in late winter and early spring. Shearwaters, storm petrels (both Leach's and Wilson's), jaegers, skuas, and some terns pass through this region in their annual migrations. Gannets and phalaropes occur in the Mid-Atlantic during winter months. Nine species of gulls breed in eastern North America and occur in shelf waters off the northeastern US. These gulls include: glaucous, Iceland, great black-backed, herring, laughing, ring-billed, Bonaparte's and Sabine's gulls, and black-legged caduceus. Royal and sandwich terns are coastal inhabitants from Chesapeake Bay south to the Gulf of Mexico. The Roseate tern is listed as endangered under the ESA, while the least tern is considered threatened (Safina pers. comm.). In addition, the bald eagle is listed as threatened under the ESA and is a bird of aquatic ecosystems. Piping plover are listed as threatened and their critical habitat includes prairie alkali wetlands and surrounding shoreline; river channels and associated sandbars and islands; and reservoirs and inland lakes and their sparsely vegetated shorelines, peninsulas, and islands. These areas provide primary courtship, nesting, foraging, sheltering, brood-rearing and dispersal habitat for piping plovers.

Like marine mammals, seabirds are vulnerable to entanglement in commercial fishing gear. Human activities such as coastal development, habitat degradation, and the presence of organochlorine contaminants are considered the major threats to some seabird populations.

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