

**2007 Summer Flounder, Scup, and Black Sea Bass
Recreational Specifications**

*Environmental Assessment,
Regulatory Impact Review, and
Initial Regulatory Flexibility Analysis*

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*Mid-Atlantic Fishery Management Council
in cooperation with the
National Marine Fisheries Service*

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Note regarding version control: This document was originally submitted to the National Marine Fisheries Service (NMFS) by the Mid-Atlantic Fishery Management Council on February 6, 2007. NMFS staff made minor revisions to this document to reflect an increase in the summer flounder recreational harvest limit to 6.845 million lb (3.105 million kg) as implemented through an emergency rule published in the Federal Register on January 19, 2007 (72 FR 2458). This adjustment resulted from the extension of the summer flounder rebuilding time frame from 2010 to no later than January 1, 2013, based on authority in the Magnuson-Stevens Act. These revisions were subsequently reviewed by Mid-Atlantic Fishery Management Council staff and found to be consistent with the intent of the recommendations put forward by the Council.

1.0 EXECUTIVE SUMMARY

The proposed action would implement recreational fishery management measures to achieve the recreational harvest limits for the summer flounder, scup, and black sea bass fisheries. These management measures would be designed to achieve the recreational harvest limits for scup and black sea bass, as published in the Federal Register (71 FR 75134; December 14, 2006) as part of the 2007 annual quota specification. For summer flounder, the proposed management measures would be designed to achieve the recreational harvest limit as published in the Federal Register in an emergency rule (72 FR 2458; January 19, 2007) which increased the 2007 Total Allowable Landings (TAL) from the level previously published as part of the 2007 annual quota specification. The increased TAL is based on a revised stock rebuilding time frame as authorized by the Magnuson-Stevens Act¹. This Environmental Assessment analyzes the possession, size, and/or seasonal limits that will most likely achieve the 2007 recreational harvest limits for the three species.

Summer Flounder Alternatives

For the summer flounder fishery, the preferred alternative (status quo alternative 1) would implement conservation equivalency, as recommended by the Mid-Atlantic Fishery Management Council (Council or MAFMC) and the Summer Flounder, Scup, and Black Sea Bass Management Board (Board) of the Atlantic States Marine Fisheries Commission (Commission). Conservation equivalency requires the states to develop state-specific or regional management measures (i.e., possession limits, fish size limits, and seasons) to achieve state-specific or regional harvest limits. Under this approach, each state or region may implement unique management measures appropriate to that state or region, so long as they are determined by the Commission to provide equivalent conservation as coastwide measures developed to achieve the overall recreational harvest limit. Also, as required under the conservation equivalency guidelines, the Council recommended precautionary default measures of an 18.5-inch total length (TL) minimum fish size, a 1-fish possession limit, and no closed season; these measures would apply to Federal permit holders landing summer flounder in states that do not implement conservation equivalency measures or for which conservation equivalency measures are not approved by the Board. In addition, based on a Monitoring Committee recommendation, the Council and Commission adopted a non-preferred coastwide alternative (no action alternative 2) to be implemented in the exclusive economic zone (EEZ; 3-200 miles) if conservation equivalency is not implemented. These measures include a 19-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season.

There were no habitat or protected resources impacts associated with alternatives 1 and 2. However, the conservation equivalency measures under alternative 1 have positive socioeconomic impacts relative to the no action alternative (alternative 2). There are also no biological impacts associated with the status quo alternative (alternative 1). More specifically, conservation equivalency recreational management measures would require

¹ Magnuson-Stevens Fishery Conservation and Management Act, portions retained plus revisions made by the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006.

each state or region to develop specific recreational measures to allow the fishery to operate in each state or region during critical fishing periods while still achieving conservation goals. This would enable the summer flounder fishery to operate in a way that dissipates potential adverse economic effects in specific states. Conservation equivalency measures are likely to provide recreational anglers with about the same recreational fishing opportunities in 2007 relative to 2006. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for summer flounder in 2006 will continue to do so in 2007. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Lastly, it is possible that the contribution of size and possession limits under no action alternative 2 would have a positive impact on the stock when compared to the status quo alternative 1, because alternative 2 would have a greater proportional reduction in the number of summer flounder landed in 2007 relative to alternative 1. However, the proportional reduction of summer flounder (in number) landed under alternative 2 may be greater than necessary to achieve the required summer flounder recreational harvest limit for 2007.

Scup Alternatives

For scup, the Council and Commission evaluated three alternatives. The preferred alternative (no action alternative 1) would implement a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 30 for 2007. Alternative 1 is the status quo alternative, and there are no biological, socioeconomic, habitat, or protected resources impacts associated with this alternative. Alternative 2 includes a 10-inch TL minimum fish size, 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through September 30. Alternative 3 includes a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 17 for the 2007 recreational fishery. There are no socioeconomic, habitat, or protected resources impacts associated with alternatives 2 and 3 in 2007, when compared to the status quo alternative (alternative 1). However, positive biological impacts may occur as a result of the overall reduction in landings under alternatives 2 and 3, relative to the status quo alternative (alternative 1).

In addition, the Board adopted state-by-state conservation equivalency measures for scup in 2007 and directed the Commission staff to develop a draft addendum for conservation equivalency using the same parameters that were approved in Addendum VII to the Commission's Interstate Scup Fishery Management Plan (FMP). Because the Federal FMP does not contain provisions for scup conservation equivalency and states will be adopting their own unique measures, it is likely that Federal and state recreational scup measures will differ for the 2007 season. As such, the Federal measures would only apply to party/charter boats fishing in Federal waters with Federal permits.

Black Sea Bass Alternatives

For black sea bass, the Council and Commission evaluated three alternatives. The preferred alternative (no action alternative 1) would implement a 12-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through

December 31 for the 2007 recreational fishery. Alternative 1 is the status quo alternative, and there are no biological, socioeconomic, habitat, or protected resources impacts associated with this alternative. Alternative 2 includes a coastwide 11.5-inch TL minimum fish size, 25-fish per person possession limit, and open seasons of January 1 through December 31. Alternative 3 includes a 12.5-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through December 31 for the 2007 recreational fishery. There are no habitat, protected resources, or economic impacts associated with alternatives 2 and 3 in 2006, when compared to the status quo alternative (alternative 1). However, there may be slight positive biological impacts associated with alternative 3 and slight negative biological impacts with alternative 2.

Research Set Aside-Alternatives

A preferred maximum research set-aside for summer flounder, scup, and black sea bass of 389,490 lb (176,670 kg), 360,000 lb (163,293 kg), and 150,000 lb (68,039 kg), respectively was allocated to the 2007 fishing year (71 FR 75134; December 14, 2006). A detailed description of the research set-aside alternative and the impacts of that alternative for summer flounder, scup, and black sea bass are described in sections 5.4 and 7.4 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. The emergency rule effective as of January 19, 2007, that modified the summer flounder quota (72 FR 2458; January 19, 2007) did not modify the research set-aside for summer flounder.

Table ES-1 presents a qualitative summary of the impacts of the various alternatives. The environmental impacts of the proposed measures were analyzed and the anticipated level of significance of these impacts is discussed in accordance with the National Environmental Policy Act (NEPA) and National Oceanic and Atmospheric Administration Administrative Order (NAO) 216-6. Because none of the preferred action alternatives are associated with significant impacts to the biological, social or economic, or physical environment, a “Finding of No Significant Impact” is determined.

The measures are expected to achieve the levels of recreational landings for summer flounder, scup, and black sea bass for 2007 as implemented by the National Marine Fisheries Service (NMFS). For each species, the Council analyzed the biological, social, and economic impacts of the preferred alternatives and one or two other alternatives. The proposed action is not expected to result in significant social or economic impacts or significant natural or physical environmental effects.

Table ES-1. Overall qualitative summary of expected impacts from various alternatives considered in this document. A minus sign signifies an expected negative impact, a plus sign signifies a positive impact, zero is used for null impact, and (?) indicates uncertainty associated with a given impact. (S=short-term; L=long-term).

Environmental Dimensions

| Species | Alternative | Biological | EFH | Protected Resources | Economic | Social |
|------------------------|---|------------|-----|---------------------|----------|--------|
| Summer Flounder | Alternative 1 (preferred; status quo) Conservation Equivalency and Precautionary Default Measures | 0 | 0 | 0 | + | + |
| | Alternative 2 Coastwide (non-preferred; no action) | 0 | 0 | 0 | - | - |
| | Alternative 2 Coastwide (non-preferred; no action) | 0/+ | 0 | 0 | 0/- | 0/- |
| Scup | Alternative 1 Coastwide (preferred; status quo; no action) | 0 | 0 | 0 | 0 | 0 |
| | Alternative 2 Coastwide (non-preferred) | + | 0 | 0 | 0/- | 0/- |
| | Alternative 3 Coastwide (non-preferred) | 0/+ | 0 | 0 | 0/- | 0/- |
| Black Sea Bass | Alternative 1 Coastwide (preferred; status quo; no action) | 0 | 0 | 0 | 0 | 0 |
| | Alternative 2 Coastwide (non-preferred) | 0/- | 0 | 0 | 0 | 0 |
| | Alternative 3 Coastwide (non-preferred) | 0/+ | 0 | 0 | 0 | 0/- |

2.0 LIST OF ACRONYMS

| | |
|---------------|--|
| <i>ALWTRP</i> | Atlantic Large Whale Take Reduction Plan |
| <i>ASMFC</i> | Atlantic States Marine Fisheries Commission |
| <i>B</i> | Biomass |
| <i>CEQ</i> | Council on Environmental Quality |
| <i>CFR</i> | Code of Federal Regulations |
| <i>CZMA</i> | Coastal Zone Management Act |
| <i>EA</i> | Environmental Assessment |
| <i>EEZ</i> | Exclusive Economic Zone |
| <i>EFH</i> | Essential Fish Habitat |
| <i>EIS</i> | Environmental Impact Statement |
| <i>E.O.</i> | Executive Order |
| <i>ESA</i> | Endangered Species Act of 1973 |
| <i>F</i> | Fishing Mortality Rate |
| <i>FR</i> | <u>Federal Register</u> |
| <i>FRFA</i> | Final Regulatory Flexibility Analysis |
| <i>FMP</i> | Fishery Management Plan |
| <i>GRA</i> | Gear Restricted Area |
| <i>HPTRP</i> | Harbor Porpoise Take Reduction Plan |
| <i>I/O</i> | Input/Output |
| <i>IRFA</i> | Initial Regulatory Flexibility Analysis |
| <i>LTPC</i> | Long-term Potential Catch |
| <i>M</i> | Natural Mortality Rate |
| <i>MA</i> | Mid-Atlantic |
| <i>MAFMC</i> | Mid-Atlantic Fishery Management Council |
| <i>MMPA</i> | Marine Mammal Protection Act |
| <i>MRFSS</i> | Marine Recreational Fisheries Statistics Survey |
| <i>MSFCMA</i> | Magnuson-Stevens Fishery Conservation and Management Act |
| <i>MSY</i> | Maximum Sustainable Yield |
| <i>mt</i> | metric tons |
| <i>NAO</i> | National Oceanic and Atmospheric Administration Administrative Order |
| <i>NE</i> | New England |
| <i>NEFSC</i> | Northeast Fisheries Science Center |
| <i>NEPA</i> | National Environmental Policy Act |
| <i>NMFS</i> | National Marine Fisheries Service |
| <i>NOAA</i> | National Oceanic and Atmospheric Administration |
| <i>OY</i> | Optimal Yield |
| <i>PRA</i> | Paperwork Reduction Act |
| <i>PREE</i> | Preliminary Regulatory Economic Evaluation |
| <i>PSE</i> | Percent Standard Error |
| <i>RIR</i> | Regulatory Impact Review |
| <i>RFA</i> | Regulatory Flexibility Analysis |
| <i>RFF</i> | Reasonably Foreseeable Future |
| <i>RSA</i> | Research Set-Aside |
| <i>SARC</i> | Stock Assessment Review Committee |
| <i>SAW</i> | Stock Assessment Workshop |
| <i>SDWG</i> | Southern Demersal Working Group |
| <i>SFA</i> | Sustainable Fisheries Act |
| <i>SSB</i> | Spawning Stock Biomass |
| <i>TAL</i> | Total Allowable Landings |
| <i>TEDs</i> | Turtle Excluder Devices |
| <i>TL</i> | Total Length |
| <i>VMS</i> | Vessel Monitoring System |
| <i>VPA</i> | Virtual Population Analysis |
| <i>VTR</i> | Vessel Trip Report |

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ENVIRONMENTAL ASSESSMENT

4.0 INTRODUCTION AND BACKGROUND OF SPECIFICATION PROCESS

4.1 Purpose and Need of the Action

This action is needed to establish management measures for the 2007 fishing year that will achieve recreational harvest limits for summer flounder, scup, and black sea bass in Federal waters and for vessels in possession of a Federal fisheries permit. The purpose of this action is to propose measures (i.e., recreational size limits, possession limits, and fishing seasons) that would constrain recreational landings in 2007 to the annual recreational harvest limit. In addition, specific to the summer flounder fishery, the purpose of this document is to provide an alternative whereby states may determine and implement appropriate management measures to achieve their recreational harvest limits. The combined effect of these state management measures must achieve the same level of conservation as would Federal coastwide measures developed to adhere to the overall recreational harvest limit.

Background of Specification Process

Comprehensive measures enacted by Amendment 2 of the Summer Flounder Fishery Management Plan (FMP) and modified in Amendments 3 through 7 were designed to rebuild the severely depleted summer flounder stock. Amendments 8 and 9 to the Summer Flounder, Scup, and Black Sea Bass FMP implemented recovery strategies to rebuild the scup and black sea bass stocks, respectively. The management programs for summer flounder, scup, and black sea bass were examined in detail in the Environmental Impact Statements (EIS) prepared for each of the fisheries in Amendment 2 (for summer flounder), Amendment 8 (for scup), and Amendment 9 (for black sea bass). Those analyses considered the impacts of the overall management measures including rebuilding schedules and annual exploitation rates on the environment (biological, socioeconomic, essential fish habitat, and protected resources). Those EISs were updated in Amendment 13 (approved on March 4, 2003; 68 FR 10181; MAFMC 2002). A summary of the management actions taken in the FMP, Amendments, and framework adjustments to the FMP (frameworks) is given in Box 4.1.

| Box. 4.1 Summary of the history of the Summer Flounder, Scup, and Black Sea Bass FMP. | | | |
|--|-----------------|---|--|
| Year | Document | Plan Species | Management Action |
| 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, permits, and reporting requirements for summer flounder - Created the Summer Flounder Monitoring Committee |
| 1993 | Amendment 3 | summer flounder | - Revised the exempted fishery line - Increased the large mesh net threshold - Established 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 - Established deadline for publishing catch limits, commercial mgmt. measures for summer flounder |
| 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, and 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 |

| Box. 4.1 Cont. Summary of the history of the Summer Flounder, Scup, and Black Sea Bass FMP. | | | |
|--|-----------------|---|--|
| Year | Document | Plan Species | Management Action |
| 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 | Amendment 13 | summer flounder, scup, and black sea bass | - Addressed disapproved sections of Amendment 12 and included new EIS |
| 2003 | Framework 3 | scup | - Allowed the rollover of winter scup quota - Revised start date for summer quota period for scup fishery |
| 2003 | Framework 4 | scup | - Established system to transfer scup at sea |
| 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 |

Amendments 2, 8, and 9 established Monitoring Committees which meet annually to review the best available scientific data and make recommendations regarding the total allowable landings (TAL) and other management measures in the plan. The Committee makes recommendations that achieve the target mortality rates established in the amendments to reduce overfishing. The Committee bases its recommendations on the following information: (1) commercial and recreational catch data; (2) current estimates of fishing mortality; (3) stock status; (4) recent estimates of recruitment; (5) population assessment models; (6) target mortality levels; (7) levels of regulatory noncompliance by fishers or individual states; (8) impact of fish size and net mesh regulations; (9) sea sampling data; (10) impact of gear other than otter trawls on the mortality of each species; and (11) other relevant information.

The Council met jointly with the Board in August 2006 to consider the 2007 commercial quotas and recreational harvest limits for summer flounder, scup, and black sea bass. The Monitoring Committees made recommendations to the Council which, in turn, made recommendations to the Regional Administrator. The Regional Administrator reviewed the recommendations to ensure that the FMP objectives were achieved. The "2007 Summer Flounder, Scup, and Black Sea Bass Specifications," which were submitted to NMFS by the Council in September 2006, described the environmental, economic, and social impacts of the 2007 commercial quotas and recreational harvest limits for summer flounder, scup, and black sea bass, as well as the impacts of commercial measures aimed at achieving the commercial quotas. NMFS implemented summer flounder, scup, and black sea bass commercial quotas and recreational harvest limits for 2007, on January 1, 2007 (71 FR 75134; December 14, 2006).

The Council and Commission met again in December 2006 to recommend specific measures to attain the recreational harvest limits that had been specified in August 2006. The Council and Commission were informed at this meeting that should the rebuilding time frame be extended under provisions of the reauthorized Magnuson-Stevens Act to end no later than January 1, 2013, the summer flounder recreational harvest limit would be increased by NMFS through emergency rule making. Following the determination that the criteria to extend the summer flounder rebuilding time frame had been met, NMFS published an emergency rule increasing the summer flounder recreational harvest limit (effective January 19, 2007). The emergency rule pertained only to summer flounder, thus, the recreational harvest limits for scup and black sea bass remained unchanged from those published by NMFS in December 2006. In this specifications package, all recreational management alternatives (possession, sizes, and seasonal limits) are evaluated for the 2007 fishing year for scup and black sea bass as outlined in the December 14, 2006, final rule and for summer flounder as outlined in the January 19, 2007, emergency rule.

The Council and Commission considered the recommendations of the Summer Flounder, Scup, and Black Sea Bass Monitoring Committees and information provided by Council staff, advisors, and the public in the development of their recommendations for these recreational fisheries.

4.2 Management Objective 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 the following measures including commercial quotas, minimum sizes, gear regulations, recreational harvest limits, recreational possession limits, seasons, and no-sale provisions may be specified annually. The proposed action is intended to meet the objectives stated above by setting the minimum fish size, possession limits, and fishing seasons for the 2007 summer flounder, scup, and black sea bass recreational fisheries.

4.3 Methods of Analysis

This EA analyzes the possession, size, and/or seasonal limits that will most likely achieve the 2007 recreational harvest limits for summer flounder, scup, and black sea bass. It is

an assessment of the impact of various alternatives on the environment relative to the no action alternative, as required by NEPA. A full description of each alternative, including a discussion of a no action alternative, is given in section 5.0 of the EA. The following discussion details the changes in management measures, if any, that will most likely be required to achieve the 2007 recreational harvest limits for summer flounder, scup, and black sea bass.

The 2007 summer flounder recreational harvest limit is 6.84 million lb (3.10 million kg), as published in the emergency rule (72 FR 2458; January 19, 2007). This is a 1.65 million lb (0.74 million kg) increase from the initial level of 5.19 million lb contained in the Summer Flounder, Scup, and Black Sea Bass Specifications (71 FR 75134; December 14, 2006). The recreational harvest limit implemented by the emergency rule is approximately 26% less than the 2006 recreational harvest limit of 9.29 million lb (4.22 million kg). Based on MRFSS 2006 waves 1-5 and the proportions of landings by wave in 2005, projected landings are 11.74 million lb (5.33 million kg). Under conservation equivalency, states will develop state-specific or regional measures that meet state-specific or regional recreational harvest targets and any required reductions.

The 2007 quota specifications for scup implemented a recreational harvest limit of 2.74 million lb (1.24 million kg), which is lower than the 2006 recreational harvest limit of 3.99 million lb (1.81 million kg). Based on 2006 waves 1-5 and the proportions of landings by wave in 2005, projected landings in 2006 are expected to be 2.80 million lb (1.27 million kg). Assuming the same level of fishing effort in 2007 as in 2006, a coastwide reduction in landings of 2.1% would be required to achieve the 2007 recreational harvest limit for scup; however, the 2007 recreational harvest limit is within the 95% confidence intervals for the landings estimates.

The black sea bass recreational harvest limit for 2007 is 2.47 million lb (1.12 million kg), which is 38% less than the 2006 recreational harvest limit of 3.99 million lb (1.81 million kg). Based on 2006 waves 1-5 and the proportions of landings by wave in 2005, projected landings are 1.91 million lb (0.87 million kg). Assuming the same level of fishing effort in 2007 when compared to 2006, no coastwide reductions in landings would be required to achieve the recreational harvest limit for black sea bass in 2007.

5.0 MANAGEMENT ALTERNATIVES

This section provides a description of all considered management alternatives. Further discussion and evaluation of these alternatives is found in section 7.0 of the EA.

5.1 Summer Flounder

5.1.1 Alternative 1 (Preferred: Status Quo Conservation Equivalency)

Based on a Monitoring Committee recommendation, the Council and Commission voted to recommend conservation equivalency to achieve the 2007 summer flounder recreational harvest limit. The Council and Commission's preferred alternative

(alternative 1 - conservation equivalency) would allow states to implement conservation equivalent management measures. State-specific reductions associated with the 2007 coastwide recreational harvest limit of 6.84 million lb (3.10 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2006 based on waves 1-5 is 4.17 million fish (Table 1). State-specific landings from 1998 are used as a base because 1998 is the last year that recreational summer flounder regulations were consistent along the coast. Recreational landings in 1998 were 6.978 million fish coastwide. As such, the 2007 recreational harvest limit in number of fish (the 2006 recreational harvest limit divided by the mean weight of summer flounder from 2005-2006) would have to be reduced by 65.0% to achieve this limit. State-specific 1998 landings were reduced by 65.0% to derive state-specific targets for 2007. These targets were then compared to 2006 landings to determine if state-specific reductions were necessary. Landings projections for 2006 indicate that all states, except for Maryland, will be required to reduce recreational summer flounder landings in 2007 (Table 1).

To constrain recreational landings to the overall recreational harvest limit, the Commission established conservation equivalency guidelines that require each state to determine and implement an appropriate possession limit, size limit, and closed season to achieve the landings target for each state. The state-specific tables are adjusted to account for the past effectiveness of the regulations in each state. In addition, under Framework 6 to the FMP, the 2007 fishing year is the first under which regional conservation equivalency could be applied. This involves states forming voluntary regions and pooling their recreational harvest limits and landings such that they develop identical regulations for all the states within the region that meet the pooled regional 2007 recreational harvest limit.

The Commission requires each state to submit its conservation equivalency proposal by January 15, 2007 (Table 2). The Commission's Summer Flounder Technical Committee will evaluate the proposals and advise the Board of each proposal's consistency with respect to achieving the coastwide recreational harvest limit. After the Technical Committee evaluation, the Board will meet to approve or disapprove each state's proposal. During the comment period for the proposed rule, the Commission will notify NMFS as to which state proposals have been approved or disapproved. If, at the final rule stage, the Commission recommends and NMFS accepts conservation equivalency, then NMFS would waive the Federal recreational measures that would otherwise apply in the Exclusive Economic Zone (EEZ). Federally permitted vessels, as well as vessels fishing in the EEZ, would be subject to the recreational fishing measures implemented by the state in which they land.

The FMP requires that the Council and Commission specify precautionary default measures when conservation equivalency is recommended as the preferred alternative. These would be the measures required to be implemented by a state that either does not submit a summer flounder management proposal or for states whose measures do not achieve the required reduction. For 2007, the precautionary default measures include an 18.5-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season.

An examination of 2006 landings and state regulations indicates that an 18.5-inch TL minimum fish size and 1-fish possession limit could constrain landings to the recreational harvest limit for most individual states in 2007, assuming the same effort and fish availability as in 2006. Relative to the current conservation equivalent regulations adopted for 2006, an 18.5-inch TL minimum fish size and 1-fish possession limit would be a more restrictive measure for all states. As such, the reductions in 2007 landings could be estimated using state-specific bag-size limit tables for these states. An analysis of the 2006 landings information indicates that had an 18.5-inch TL minimum fish size and 1-fish possession limit been in place for all states during the 2006 recreational fishing year, approximately 1.62 million fish could have been landed in 2006 under those regulations, assuming the 2006 seasonal restrictions in all states were the same. Liberalizing those seasons so the fishery is open all year would result in increased landings along the coast. Therefore, the 2007 landings under those regulations are expected to be less than the 2007 coastwide recreational target of approximately 2.44 million fish. Given it is unlikely the precautionary default would be applied to all states, or more than one state in a given year, it is anticipated that even with a more liberal season these measures could constrain landings to the coastwide limit in 2007.

The Commission would allow states that had been assigned the precautionary default measures to resubmit revised management measures. In this case, the Commission would notify NMFS of any resubmitted proposals that were approved after publication of the final rule implementing the recreational specifications. Afterwards, NMFS would publish a notice in the Federal Register to notify the public of any changes to a state's management measures.

5.1.2 Alternative 2 (Non-preferred: Coastwide Measure/No Action)

Based on a Monitoring Committee recommendation, the Council and Commission adopted a non-preferred coastwide alternative to be implemented in the EEZ if conservation equivalency is not implemented. These measures include a 19.0-inch total length (TL) minimum fish size, a 1-fish per person possession limit, and no closed season. An examination of 2006 landings and state regulations indicates that a 19.0-inch TL minimum fish size and 1-fish possession limit could constrain landings to the recreational harvest limit on a coastwide basis in 2007, assuming the same effort and fish availability as in 2006. Relative to the current regulations, a 19.0-inch TL minimum fish size and 1-fish possession limit would be a more restrictive measure for all states. As such, the reductions in 2007 landings could be estimated using state-specific bag-size limit tables for these states. An analysis of the 2006 landings information indicates that had an 19.0-inch TL minimum fish size and 1-fish possession limit been in place for all states during the 2006 recreational fishing year, approximately 1.33 million fish could have been landed in 2006 under those regulations, assuming the 2006 seasonal restrictions in all states were the same. Liberalizing those seasons so the fishery is open all year would result in increased landings along the coast. Therefore, the 2007 landings under those regulations are expected to be less than the 2007 coastwide recreational target of approximately 2.44 million fish. Therefore, even with a more liberal season it is

anticipated that these measures could constrain landings to the coastwide limit in 2007.

5.2 Scup

5.2.1 Alternative 1 (Preferred: Status Quo Coastwide Measure/No Action)

The scup landings in 2006 based on waves 1-5 are projected to be 2.80 million lb (1.27 million kg), which is slightly higher than the 2007 recreational harvest limit of 2.74 million lb (1.24 million kg). The Council and Commission voted to recommend a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 30 for the 2007 scup recreational measures.

Based on the projected landings estimate for 2006, landings would have to be reduced by 2.1% to achieve the recreational harvest limit for 2007. Changes in the possession limits, size limits, and fishing seasons could be considered to achieve the harvest limit; however, the preferred alternative could allow for the 2.1% required reduction based on the following logic. From 1996 to 2005, the percent standard error (PSE) for scup landings (in pounds) estimated from MRFSS has averaged 11.22, with the 2005 wave 1-5 PSE at 11.8. Assuming a PSE of 11.8 for 2006, the 95% confidence interval around the 2006 wave 1-5 projected recreational landings of 2.80 million lb (1.27 million kg) is between 2.15 and 3.44 million lb (0.98 and 1.56 million kg, respectively). The 2007 harvest limit of 2.74 million lb (1.24 million kg) is within the average observed PSE, or margin of error for estimation of landings in pounds. As such, no additional restrictions would be required, and it is likely that the current measures would not result in an overage in 2007. Updated MRFSS wave 6 data will likely be available before final rule making for the 2007 scup recreational management measures. If those data indicate landings in 2006 were much higher than anticipated and a concurrent need to implement more restrictive measures to achieve the 2007 target, then the measures proposed in alternative 2, alternative 3, or management measures within the range of alternatives presented in this document for scup could be adopted.

The Commission adopted state-by-state conservation equivalency measures for 2007 and directed the Commission staff to develop a draft addendum for conservation equivalency using the same parameters that were approved in Addendum VII (ASMFC 2002) to the Commission's Interstate Scup FMP. Addendum VII (ASMFC 2002) required states from Massachusetts through New Jersey to develop state-specific management measures. The Commission approved the retention of existing recreational scup measures from 2006 for 2007. Because the Federal FMP does not contain provisions for conservation equivalency and states will be adopting their own unique measures under an addendum to the Commission's Interstate FMP, it is likely that Federal and state recreational scup measures will differ for the 2007 season. As such, the Federal measures would only apply to party/charter boats fishing in Federal waters with Federal permits. Based on 1996 to 2005 MRFSS data, on average about 7% of scup landings occur in the EEZ.

5.2.2 Alternative 2 (Non-preferred: Coastwide Measure)

This non-preferred alternative for scup includes a 10-inch TL minimum fish size, 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through September 30 for the 2007 recreational fishery. It is estimated that this alternative could reduce recreational landings by 30.2% by closing 31 days in October (wave 5) and 30 additional days in November (wave 6). This reduction assumes that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit (Tables 3 and 4a-b). This measure is more restrictive than necessary to meet the 2.1% reduction.

5.2.3 Alternative 3 (Non-preferred: Coastwide Measure)

This non-preferred alternative for scup includes a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 17 for the 2007 recreational fishery. It is estimated that this alternative could decrease recreational landings by 2.1% by closing 13 days in November (wave 6); thus, it would meet the 2.1% reduction to achieve but not exceed the 2007 recreational harvest limit. This estimate assumes that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit (Tables 3 and 4a-b).

5.3 Black Sea Bass

5.3.1 Alternative 1 (Preferred: Status Quo Coastwide Measure/No Action)

The black sea bass landings in 2006 based on waves 1-5 are projected to be 1.91 million lb (0.87 million kg), or 23% below the 2007 recreational harvest limit of 2.47 million lb (1.12 million kg). The Council and Commission recommended implementation of regulations in 2007 that maintained the same minimum size, possession limits, and seasons that were in place in 2006. To constrain recreational black sea bass landings to the 2007 recreational harvest limit, the Council and Commission recommended a 12-inch TL minimum fish size, a 25-fish per person possession limit, and open season of January 1 through December 31.

Based on the projected landing estimate for 2006, landings would not have to be reduced to achieve the recreational harvest limit for 2007. Inter-annual changes in distribution and availability are suspected to have resulted in landings below the 2006 coastwide harvest limit. Given the potential for increased availability and/or angler effort in 2007 exists, the status quo measures under this alternative were preferred.

5.3.2 Alternative 2 (Non-preferred: Coastwide Measure)

This non-preferred alternative would include a coastwide 11.5-inch TL minimum fish size, 25-fish per person possession limit, and open season of January 1 through December 31 for the 2007 recreational fishery. This alternative differs from the preferred by

recommending a reduction in the minimum fish size of 0.5 inch TL as proposed by industry advisors to the Council. Based on the projected landings estimate for 2006, landings would not have to be reduced to achieve the recreational harvest limit for 2007. As the landings have been consistently lower than the harvest limits in recent years (section 6.1), relaxation of the minimum fish size is considered under this alternative.

5.3.3 Alternative 3 (Non-preferred: Coastwide Measure)

This non-preferred alternative would include a coastwide 12.5-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through December 31 for the 2007 recreational fishery. This alternative would increase the minimum fish size by 0.5 inch TL, while maintaining the same size and possession limits. Based on the projected landings estimate for 2006, landings would not have to be reduced to achieve the recreational harvest limit for 2007. This alternative could decrease landings by about 14% and may be more restrictive than necessary to achieve the recreational harvest limit. This estimate assumes that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit (Tables 5a-b and 6).

5.4 No action Alternative

Section 5.03(b) of 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 has explained that there are two distinct interpretations of the “no action”: One interpretation is that the no action alternative is essentially the status quo, i.e., no change from the current management. The other interpretation is the situation that would exist if the proposed action did not take place.

The status quo management for these fisheries involves a set of indefinite (i.e., in force until otherwise changed) management measures. These measures would continue as is, even if the proposed specifications are not implemented. However, the current management program includes specifications of possession limits, minimum fish sizes, and fishing seasons that are specific to the 2006 fishing year, and based on the 2006 TALs. It would be inappropriate to roll-over specific recreational measures from one year to the subsequent year if the harvest limits differ.

For the purposes of this EA, the no action alternative is defined as implementation of the following: (1) For summer flounder, coastwide measures of a 19-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season; (2) for scup, a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 30; and (3) for black sea

bass, a 12-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through December 31.

The implications of the no action alternative are substantial. For summer flounder, the no action could constrain the landings to the coastwide harvest limit in 2007 (see section 5.1.2). The state-specific implications of the no action alternative for summer flounder would be quite varied, however, and result in regulations that are more restrictive for some states and more liberal for others. For scup and black sea bass, the no action alternative could also constrain landings to the harvest limit for 2007.

In consideration of the Council-recommended recreational harvest limits established for the 2007 fishing year, implementation of the same recreational measures established for the 2006 fishing year for scup and black sea bass would be consistent with the goals and objectives of the FMP and its implementing regulations because it could result in measures in the scup and black sea bass fisheries that would prevent anglers from exceeding the recreational harvest limits in 2007. It would, however, be inconsistent with the goals and objectives of the FMP to implement the same recreational measures established for summer flounder in 2006 for the 2007 fishing year as the recreational harvest limit in 2007 would likely be exceeded. The impacts of the no action alternative for each species are presented in section 7.0 of the EA.

5.5 Research Set-Aside

A research set-aside for summer flounder, scup, and black sea bass of 389,490 lb (176,670 kg), 360,000 lb (163,293 kg), and 150,000 lb (68,039 kg), respectively, was allocated to the 2007 fishing year (71 FR 75134; December 14, 2006). A detailed description of the research set-aside alternatives and the impacts of these alternatives for summer flounder, scup, and black sea bass were described in detail in sections 5.4 and 7.4 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. As discussed above in section 5.1.1, the rebuilding time period for summer flounder was extended to January 1, 2013, causing the TAL for summer flounder to be increased. The emergency rule effective as of January 19, 2007, published in the Federal Register modified the summer flounder quota (72 FR 2458; January 19, 2007). However, the research set-aside amount for summer flounder for 2007 was not modified.

6.0 DESCRIPTION OF THE AFFECTED ENVIRONMENT AND FISHERIES

6.1 Description of the Managed Resource

6.1.1 Description of the Fisheries

The recreational and commercial fisheries for summer flounder, scup, and black sea bass are fully described in section 3.3.2, of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP and are outlined by principal port in section 3.4.2 of that document.

6.1.1.1 Summer Flounder

Recreational catch and landings have fluctuated since Amendment 2 regulations were implemented in 1993. Landings increased to 8.84 million lb (4.01 million kg) in 1993 from the 1992 level of 7.16 million lb (3.25 million kg; Table 7). From 1994 to 1999, recreational landings ranged from 5.42 million lb (2.46 million kg; 1995) to 12.52 million lb (5.68 million kg; 1998). Recreational landings in 2000 were estimated to be 16.52 million lb (7.49 million kg), which were the highest since 1986. Recreational landings dropped to 8.03 million lb (3.64 million kg) in 2002, increased to 11.66 million lb (5.29 million kg) in 2003, and decreased slightly to 10.99 million lb (4.98 million kg) in 2004. In 2005, recreational landings increased slightly to 11.17 million lb (5.07 million kg). Based on 2006 MRFSS data for waves 1-5 (January through October) and the proportions of landings by wave in 2005, summer flounder recreational landings for 2006 are projected to be 11.74 million lb (5.33 million kg).

6.1.1.1.1 Harvest Limits and Management Measures - A Review

Recreational harvest limits and management measures have varied since the FMP was first implemented. Since 1993, the recreational harvest limit has varied from a low of 7.41 million lb (3.36 million kg) annually from 1996 through 2000 to a high of 11.98 million lb (5.43 million kg) in 2005 (Table 7). Over the time period from 1993 to 2001, coastwide possession limits ranged from 3 to 10-fish with size limits ranging from 14 to 15.5-inch TL until conservation equivalency was implemented in 2002 through 2006. In 2004 and 2005, the state-specific possession limits ranged from 2 to 8-fish with size limits ranging from 14 to 17.5-inch TL, and assorted seasons (Tables 8 and 9). In 2006, the state-specific possession limits ranged from 2 to 8-fish with size limits ranging from 14 to 18-inch TL, and assorted seasons (Table 10). The Council and Commission also adopted a non-preferred and precautionary default measures in 2006 of 4-fish with a minimum size of 17-inch TL and 1-fish with an 18-inch TL minimum fish size, respectively. Based on projected landings for 2006, Massachusetts, Rhode Island, New York, New Jersey, and Virginia will exceed their targets in 2006 (Table 11).

6.1.1.2 Scup

Recreational catch and landings of scup have fluctuated since 1981. Recreational catch peaked in 1986 at 30.87 million fish and then declined to 2.67 million fish in 1998, the lowest value in the time series (1981-present). Recreational landings peaked at 11.61 million lb (5.27 million kg) in 1986 and then trended downward to a low of 0.88 million lb (0.40 million kg) in 1998. In 2004, catch and landings were 9.53 million fish and 4.41 million lb (1.75 million kg), respectively. In 2005, catch and landings declined to 6.24 million fish and 2.67 million lb (1.21 million kg), respectively. Based on 2006 MRFSS data for waves 1-5 (January through October) and the proportions of landings by wave in 2005, scup recreational landings for 2006 are projected to be 2.80 million lb (1.27 million kg).

6.1.1.2.1 Harvest Limits and Management Measures - A Review

Recreational harvest limits and management measures have varied since the FMP was first implemented. Beginning in 1997, recreational harvest limits were established to achieve the target exploitation rates. Since 1997, the recreational harvest limit has varied from a low of 1.24 million lb (0.56 million kg) annually in 1999 and 2000 to a high of 4.01 million lb (1.82 million kg) in 2003 (Table 12). In the most recent years (2003-2006), the coastwide possession limit has been 50-fish. The minimum size limit has increased from 7-inch TL in 1993 to 10-inch TL from 2002 onward. In 2004, the minimum fish sizes ranged from 8 to 11-inch TL, possession limits varied from 20 to 100-fish, and seasons varied by state (Table 13). In 2005, the Council and Commission adopted management measures that included a 50-fish possession limit, a 10-inch TL size limit, and an open season from January 1 through February 28 and September 18 through November 30. The Commission adopted a regional approach which resulted in relatively consistent regulations for the states from Massachusetts to New York (Table 14).

In 2006, the Council adopted the same measures as 2005. Specifically, they adopted a 50-fish possession limit, a 10-inch TL size limit, and an open season from January 1 through February 28 and September 18 through November 30. The Commission once again adopted a regional approach based on a harvest target allocation of 97% of the fish to the states from Massachusetts to New York and 3% to the states from New Jersey to North Carolina, resulting in the combination of management measures shown in Table 15.

6.1.1.3 Black Sea Bass

Recreational catch and landings of black sea bass have fluctuated since 1981. Recreational catches peaked in 1986 at 28.95 million fish and then fluctuated between 5.05 and 14.06 million fish from 1987 through 1999. Catches increased significantly in 2000 to 16.93 million fish and then dropped to 12.13 million fish in 2003. Catches for the last three years 2004-2006 have been around 7 million fish. Recreational landings peaked at 12.39 million lb (5.62 million kg) in 1986 and then fluctuated between 1.15 and 6.21 million lb (0.52 and 2.82 million kg) from 1987 through 2003. Landings were estimated at 2.01 million lb (0.91 million kg) in 2005. Based on 2006 MRFSS data for waves 1-5 (January through October) and the proportions of landings by wave in 2005, black sea bass recreational landings for 2006 are projected to be 1.91 million lb (0.87 million kg).

6.1.1.3.1 Harvest Limits and Management Measures - A Review

The Council and the Commission have recommended various harvest limits and other management measures since the FMP was first implemented. Harvest limits have ranged from a low of 3.15 million lb (1.43 million kg) from 1998-2001 to a high of 4.13 million lb (1.87 million kg) in 2005 (Table 16). Most recently, in 2006 the recreational harvest limit was 3.99 million lb (1.81 million kg). In 2004 and 2005, all states adopted Federal regulations of 25-fish, 12-inch TL minimum fish size, and matched the Federal season, with the exception of Massachusetts (Tables 17 and 18). Massachusetts opted for a more

restrictive 20-fish possession limit and adopted all other Federal regulations in 2006 (Table 19).

6.1.2 Status of the Stock

6.1.2.1 Summer Flounder

The status of the summer flounder stock is evaluated annually. The Northeast Fisheries Science Center's (NEFSC) Southern Demersal Working Group (SDWG) met in June 2006 to update the stock assessment for summer flounder (Terceiro 2006). However, in October 2006 the "Summer Flounder Assessment and Biological Reference Point Update for 2006" was conducted, with those results superseding the update conducted by the SDWG. The following is taken from the "Summer Flounder Biological Reference Point Update for 2006." These documents are available online at the NEFSC website: <http://www.nefsc.noaa.gov>.

"The summer flounder stock is not overfished but overfishing is occurring relative to the 2006 S&T Peer Review Panel updated biological reference points. Fishing mortality calculated from the average of the currently fully recruited ages (3-5) was very high during 1982-1997, varying between 0.9 and 2.2. The fishing mortality rate has declined since 1997 and was estimated to be about 0.4 during 2003-2005. The estimate of F for 2005 (0.407) is 45% above the updated F_{MSY} proxy = $F_{max} = 0.280$; therefore overfishing is occurring."

"Stock biomass (Jan 1; age 1+) increased substantially during the 1990s and through 2005 but decreased slightly in 2006 to 51,317 mt. Spawning stock biomass (SSB; Age 0+) declined 69% from 1983 to 1989 (22,582 mt to 7,025 mt), but with improved recruitment and decreased fishing mortality had increased to 47,498 mt by 2005 (Figure 5). The estimate of SSB for 2005 (47,498) is 53% of the updated B_{MSY} proxy = $SSB_{max} = 89,411$ mt; therefore the stock is not overfished."

"The 1982 and 1983 year classes were the largest of the VPA series, at 74 and 80 million fish, respectively. The 1988 year class was the smallest of the series, at only 13 million fish. The arithmetic average recruitment from 1982 to 2005 is 37 million fish at age 0, with a median of 33 million fish. The 2005 year class is estimated to be the smallest since 1988, at about 15 million fish."

6.1.2.2 Scup

The most recent assessment on scup was completed in June 2002 (35th SARC or Stock Assessment Review Committee). That 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." However, they did indicate that "survey data indicate strong recruitment and some rebuilding of age structure" in recent years.

State and Federal surveys indicated an increase in stock abundance since the mid to late 90s; however, NEFSC spring survey results indicate that spawning stock decreased in 2004. Biomass estimates are based on a 3-year average (2003-2005), and the estimate for 2004 was 0.69 kg/tow. This is below the biomass threshold value of 2.77 kg/tow. Therefore, the stock is considered overfished. In 2005, the NEFSC Spring SSB 3-year average (2004-2006) index value increased to 1.32 kg/tow.

The spring survey index increased significantly in 2004 to 1.85 relative to the low value of 0.15 derived in 2003. In 2005, the spring index dropped to 0.10; 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 2002 and 2003, the Council and Commission discussed the uncertainty associated with the spring survey estimate for 2002 and decided not to use it in setting the TAC. In fact, the 35th SARC noted the “high degree of inter-annual variation in individual survey indices.” They noted that the “abundance of all age groups in the survey increased substantially as compared with the 2001 results,” suggesting that increased availability of scup to the survey gear was an important determinant in the 2002 survey results.

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 SARC also noted the predominance of the 2000 year class in several of the state surveys. The most recent information indicates a below average year class was produced in 2004 and in 2005.

Estimates of fishing mortality rates for scup are uncertain. The 31st 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 F s 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 period. 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 due to the drop in the 3-year average SSB value, but has since decreased to 9.0 in 2005.

6.1.2.3 Black Sea Bass

The most recent assessment on black sea bass was completed in June 2006 at SAW/SARC 43. The SARC panelists rejected this assessment of the black sea bass stock.

The most recent, peer-reviewed, accepted assessment on black sea bass was completed in June 2004. It indicated that black sea bass were no longer overfished and overfishing was not occurring. Amendment 12 to the Summer Flounder, Scup and Black Sea Bass FMP, 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 2005 biomass index is 0.8 (the three-year average for 2004-2006). 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 in recent years. The index for 2002 of 0.799 is the highest value in the time series (1968-2006). The biomass index declined to 0.493 in 2003, 0.321 in 2004, 0.374 in 2005, and 0.288 in 2006. The 2003-2006 indices were above the time series average. 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 2005 of 0.328.

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 is 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. Preliminary results indicate an above average year class was produced in 2004.

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 2005, 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."

6.1.3 Stock Characteristics and Ecological Relationships

6.1.3.1 Summer Flounder

A full description of stock characteristics and ecological relationships of summer flounder is presented in section 3.1.1 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP. Additional information can be found in the 41st Stock Assessment Workshop (SAW 41). The Northeast Fisheries Science Center's (NEFSC) Southern Demersal Working Group (SDWG) met in June 2006 to update the stock assessment for summer flounder (Terceiro 2006). However, in October 2006 the "Summer Flounder Assessment and Biological Reference Point Update for 2006" was conducted, with those results superseding the update conducted by the SDWG. The following is taken from the "Summer Flounder Biological Reference Point Update for

2006.” These documents are available online at the NEFSC website: <http://www.nefsc.noaa.gov>.

“The summer flounder stock is not overfished but overfishing is occurring relative to the 2006 S&T Peer Review Panel updated biological reference points. Fishing mortality calculated from the average of the currently fully recruited ages (3-5) was very high during 1982-1997, varying between 0.9 and 2.2. The fishing mortality rate has declined since 1997 and was estimated to be about 0.4 during 2003-2005. The estimate of F for 2005 (0.407) is 45% above the updated F_{MSY} proxy = $F_{max} = 0.280$; therefore overfishing is occurring. The estimate of F for 2005 may understate the actual fishing mortality, as retrospective analysis shows that the current assessment method tends to underestimate recent fishing mortality rates, continuing the pattern observed in recent assessments (NEFSC 2000, MAFMC 2001, NEFSC 2002, Terceiro 2003, SDWG 2004, NEFSC 2005, Terceiro 2006). Over the last 5 years, the annual retrospective increase in fishing mortality has averaged 34%.”

“Stock biomass (Jan 1; age 1+) increased substantially during the 1990s and through 2005 but decreased slightly in 2006 to 51,317 mt. Spawning stock biomass (SSB; Age 0+) declined 69% from 1983 to 1989 (22,582 mt to 7,025 mt), but with improved recruitment and decreased fishing mortality had increased to 47,498 mt by 2005 (Figure 5). The estimate of SSB for 2005 (47,498) is 53% of the updated B_{MSY} proxy = $SSB_{max} = 89,411$ mt; therefore the stock is not overfished. Retrospective analysis shows a tendency to overestimate the SSB in the most recent years, continuing the pattern observed in recent assessments (NEFSC 2000, MAFMC 2001, NEFSC 2002, Terceiro 2003, SDWG 2004, NEFSC 2005, Terceiro 2006). Over the last 5 years, the annual retrospective decrease in SSB has averaged 12%.%.” “

“The 1982 and 1983 year classes were the largest of the VPA series, at 74 and 80 million fish, respectively. The 1988 year class was the smallest of the series, at only 13 million fish. The arithmetic average recruitment from 1982 to 2005 is 37 million fish at age 0, with a median of 33 million fish. The 2005 year class is estimated to be the smallest since 1988, at about 15 million fish. Retrospective analysis shows a variable pattern in the estimation of recruitment; over the last 5 years, the annual retrospective increase in recruitment has averaged 4%.”

“The precision and bias of the 2005 fishing mortality rates, 2006 stock sizes, and 2005 SSB estimates are presented in Appendix A. Bias was generally less than 10% for estimated 14 parameters estimated. The bootstrap estimate of the 2005 SSB was relatively precise, with a corrected CV of 11%. There is an 80% chance that SSB in 2005 was between 39,900 and 57,200 mt. The bootstrap estimate of the 2005 F had a corrected CV of 43%. There is an 80% chance that F in 2005 was between about 0.33 and 0.57.”

6.1.3.2 Scup

The stock characteristics and ecological relationships of scup are fully described in section 3.1.2 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP.

Scup was last fully assessed at SAW-35 in 2002. As in previous assessment reviews, the SARC concluded that estimates of commercial fishery discards were unreliable due to limited sample size and uncertainty as to their representative nature of the sea sampling data for scup. The uncertainties associated with the catch data led the SARC to conclude that an analytical assessment would be inappropriate as the basis for management decisions for scup at this time. An analytical formulation for scup is not feasible until the quality and quantity of the input data (biological sampling and estimates of all components of catches) are significantly improved and an adequate time series developed.

Although the 31st SARC concluded that the F on age 0-3 scup was at least 1.0, the 35th SARC determined that “absolute estimates of fishing mortality for scup could not be calculated.” However, the relative exploitation index may offer some clue as to current levels of mortality for older fish. Because the index is based primarily on landings of scup larger than 9" TL (the commercial minimum fish size) and SSB, the index may indicate fishing mortality rates for the larger fish have declined in recent years.

The SARC-35 draft Advisory Report stated that, “Indices of recruitment from the NEFSC fall survey suggest improved recruitment in 1999-2001, with estimated age-0 abundance exceeding the 1984-2001 average of 69.03 fish per tow. NEFSC spring and winter indices of stock biomass and abundance for 2002 were the highest within each respective time series. Other survey indices have increased since the mid-1990s.”

The spring survey estimate for 2002 is highly uncertain. The 35th SARC noted the “high degree of inter-annual variation in individual survey indices.” They also noted that the “abundance of all age groups in the survey increased substantially as compared with the 2001 results” suggesting that increased availability of scup to the survey gear was an important determinant in the 2002 survey results. Additional, detailed information is available in the SAW-35 documents.

6.1.3.3 Black Sea Bass

A full description of stock characteristics and ecological relationships is presented in section 3.1.3 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP. The most recent assessment on black sea bass was completed in June 2006 at SAW/SARC 43. The SARC panelists rejected this assessment of the black sea bass stock. The most recent, peer-reviewed, accepted assessment on black sea bass was completed in June 2004 at SAW/SARC 39. The following is taken from the “39th Northeast Regional Stock Assessment Workshop (39th SAW) Assessment Summary Report & Assessment Report” (NEFSC 2004).

"The Coastal/Pelagic Working Group concluded that data were adequate to conduct an assessment of the stock. The status of the resource was evaluated from NEFSC spring survey indices. Exploitation rates were estimated with tag recapture models for two periods, October 2002 to September 2003 and May 2003 to April 2004."

"Fishing mortality (F) for 2003 estimated from tag recapture models was less than 0.26. Exploitation rates from tagging data indicate that exploitation was between 15 and 20%. Relative F based on survey indices was well below the value necessary for stock replacement (replacement ratio=0)."

"The NEFSC spring survey recruitment index (mean number per tow) in 2004 (0.08 per tow) was below the average for the last decade (0.187 per tow)."

"SSB was not estimated in the current assessment. However, preliminary mean weight per tow of black sea bass > 22 cm (approximately age 2) in the 2004 NEFSC spring survey decreased to 0.94 kg/tow, yet remained above average for the 1986-2003 period."

"Uncertainty in the tag reporting rates may potentially result in under-estimated exploitation rates. Also, discard losses in the commercial fisheries were not estimated and remain an uncertain component of the fishery. In light of decreasing biomass indices since the peak in 2002, the Working Group recommends caution in exploitation of the resource."

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, and a brief summary of that information is given here. The impact of fishing on summer flounder, scup, and black sea bass EFH and the impact of the summer flounder, scup, and black sea bass fisheries on other species' EFH can be found in Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (section 3.2). Potential impacts associated with the proposed measures under this specifications package 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 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 post larvae migrate inshore and enter 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 movements inshore and offshore. Adult flounder normally inhabit shallow coastal and estuarine waters during the warmer months of the year and remain offshore during the colder months.

EFH for summer flounder includes pelagic waters, demersal waters, salt marsh creeks, seagrass beds, mudflats, and open bay areas, from the Gulf of Maine to North Carolina. 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. Summer flounder are primarily landed in the commercial fishery with otter trawls. As stated in section 3.2.8 of Amendment 13 to the Summer Flounder,

Scup, and Black Sea Bass FMP, the Council determined that both mobile bottom tending and stationary gear have a potential to adversely impact EFH. The same conclusion was drawn for other species with overlapping EFH. Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP analyzed includes several alternatives that would have minimized the adverse effects of these three fisheries on EFH as required pursuant to section 303(a)(7) of the SFA and concluded that none of them were needed or practicable. The principal gear types used in the recreational fishery for summer flounder are rod and reel and handlines. The habitat impacts of these two gear types were not evaluated in Amendment 13 (because it only deals with the commercial fishery), in the 2001 NMFS Gear Effects Workshop (NREFHSC 2002), or in Stevenson et al. (2004). Barnette (2001) reports that there are few studies of the physical habitat impacts of these gear types, but concludes that “impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers).” The only published evidence reported by Barnette related to the effects of discarded or lost fishing line on branching and digitate corals (Schleyer and Tomalin (2000). Corals are not a component of EFH for summer flounder. A panel of experts that did evaluate hook and line gear concluded that the physical and biological habitat impacts were “very low” (Morgan and Chuenpagdee 2003).

For all the reasons cited above, the potential impacts of fishing gear used in the recreational fishery for summer flounder are not expected to be more than minimal or temporary in nature.

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 and summer. Juvenile and adult scup are demersal, using inshore waters in the spring and moving offshore in the winter.

Scup EFH includes demersal waters, sands, muds, and mussel and seagrass beds, from the Gulf of Maine to Cape Hatteras, North Carolina. 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. Scup are primarily landed in the commercial fishery by fish pots/traps, bottom and mid-water trawls, and lines. As stated in section 3.2.8 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP, the Council determined that both mobile bottom tending and stationary gear have the potential to adversely impact EFH. The same conclusion was drawn for other species with overlapping EFH. Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP analyzed includes several alternatives that would have minimized the adverse effects of these three fisheries on EFH as required pursuant to section 303(a)(7) of the SFA and concluded that none of them were needed or practicable. The principal gear types used in the recreational fishery for scup are rod and reel and handlines. The habitat impacts of these two gear types were not evaluated in Amendment 13 (because it only deals with the commercial fishery), in the 2001 NMFS Gear Effects Workshop (NREFHSC 2002), or in Stevenson et al. (2004). Barnette (2001)

reports that there are few studies of the physical habitat impacts of these gear types, but concludes that “impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers).” The only published evidence reported by Barnette related to the effects of discarded or lost fishing line on branching and digitate corals (Schleyer and Tomalin (2000). Corals are not a component of EFH for scup. A panel of experts that did evaluate hook and line gear concluded that the physical and biological habitat impacts were “very low” (Morgan and Chuenpagdee 2003).

For all the reasons cited above, the potential impacts of fishing gear used in the recreational fishery for scup are not expected to be more than minimal or temporary in nature.

6.2.3 Black Sea Bass

The northern population spawns on the Middle Atlantic Bight continental shelf during the spring through fall, and their eggs are pelagic. 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; eggs are naturally closely associated with spawning. Based on collections of ripe fish and egg distributions, 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 comprises demersal, structured habitat such as sponge beds, rocky, and sand/shell covered bottom from the Gulf of Maine to Cape Hatteras, North Carolina. Black sea bass are primarily landed in the commercial fishery by fish pots/traps, bottom and midwater trawls, and lines. As stated in section 3.2.8 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP, the Council determined that both mobile bottom tending and stationary gear have the potential to adversely impact EFH. The same conclusion was drawn for other species with overlapping EFH. Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP analyzed includes several alternatives that would have minimized the adverse effects of these three fisheries on EFH as required pursuant to section 303(a)(7) of the SFA and concluded that none of them were needed or practicable. The principal gear types used in the recreational fishery for black sea bass are rod and reel and handlines. The habitat impacts of these two gear types were not evaluated in Amendment 13 (because it only deals with the commercial fishery), in the 2001 NMFS Gear Effects Workshop (NREFHSC 2002), or in Stevenson et al. (2004). Barnette (2001) reports that

there are few studies of the physical habitat impacts of these gear types, but concludes that “impacts may include entanglement and minor degradation of benthic species from line abrasion and the use of weights (sinkers).” The only published evidence reported by Barnette related to the effects of discarded or lost fishing line on branching and digitate corals (Schleyer and Tomalin (2000). Corals are not a component of EFH for black sea bass. A panel of experts that did evaluate hook and line gear concluded that the physical and biological habitat impacts were “very low” (Morgan and Chuenpagdee 2003).

For all the reasons cited above, the potential impacts of fishing gear used in the recreational fishery for black sea bass are not expected to be more than minimal or temporary in nature.

6.3 Endangered and Protected Species

There are numerous species which inhabit the environment within the management unit of summer flounder, scup, and black sea bass that are afforded protection under the Endangered Species Act of 1973 (ESA; i.e., for those designated as threatened or endangered) and/or the Marine Mammal Protection Act of 1972 (MMPA). Sixteen are classified as endangered or threatened under the ESA, while the remaining species are protected by the provisions of the MMPA. The Council has determined that the following list of species protected either by the ESA, the MMPA, or the Migratory Bird Act of 1918 may be found in the environment utilized by summer flounder, scup, and black sea bass:

Cetaceans

Species

Northern right whale (*Eubalaena glacialis*)
 Humpback whale (*Megaptera novaeangliae*)
 Fin whale (*Balaenoptera physalus*)
 Blue whale (*Balaenoptera musculus*)
 Sei whale (*Balaenoptera borealis*)
 Sperm whale (*Physeter macrocephalus*)
 Minke whale (*Balaenoptera acutorostrata*)
 Beaked whale (*Ziphius and Mesoplodon spp.*)
 Risso's dolphin (*Grampus griseus*)
 Pilot whale (*Globicephala spp.*)
 White-sided dolphin (*Lagenorhynchus acutus*)
 Common dolphin (*Delphinus delphis*)
 Spotted and striped dolphins (*Stenella spp.*)
 Bottlenose dolphin (*Tursiops truncatus*)

Status

Endangered
 Endangered
 Endangered
 Endangered
 Endangered
 Endangered
 Protected
 Protected
 Protected
 Protected
 Protected
 Protected
 Protected
 Protected

Sea Turtles

Species

Leatherback sea turtle (*Dermochelys coriacea*)
 Kemp's ridley sea turtle (*Lepidochelys kempii*)

Status

Endangered
 Endangered

| | |
|--|------------|
| Green sea turtle (<i>Chelonia mydas</i>) | Endangered |
| Hawksbill sea turtle (<i>Eretmochelys imbricata</i>) | Endangered |
| Loggerhead sea turtle (<i>Caretta caretta</i>) | Threatened |

Fish

| <u>Species</u> | <u>Status</u> |
|--|---------------|
| Shortnose sturgeon (<i>Acipenser brevirostrum</i>) | Endangered |
| Atlantic salmon (<i>Salmo salar</i>) | Endangered |
| Smalltooth sawfish (<i>Pristis pectinata</i>) | Endangered |

Birds

| <u>Species</u> | <u>Status</u> |
|--|---------------|
| Roseate tern (<i>Sterna dougallii dougallii</i>) | Endangered |
| Piping plover (<i>Charadrius melodus</i>) | Endangered |

Critical Habitat Designations

| <u>Species</u> | <u>Area</u> |
|----------------|---|
| Right whale | Cape Cod Bay and the Great South Channel Area |

A description of the species listed as endangered or threatened which inhabit the management unit of the FMP is presented in Appendix B. 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>.

The principle gears used in the recreational fishery for summer flounder, scup, and black sea bass are rod and reel and handlines. Recreational fisheries, in general, have very limited interaction with marine mammals and endangered or threatened species. Potential impacts to protected species associated with the proposed measures under this specifications package are discussed in section 7.0.

6.4 Fishery and Socioeconomic Environment

6.4.1 Economic and Social Environment

6.4.1.1 Summer Flounder

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 from Maine through North Carolina indicates that summer flounder has increased in importance from 1991 to 2001, from a low of 3.8 million trips in 1992 to a high of 6.1 million trips in 2001. For 2002 through 2006, the number of recreational fishing trips reported by anglers as targeting summer flounder ranges from 4.6 to 5.6 million trips. A detailed description of the economic aspects of the commercial and recreational fisheries for summer flounder was presented in section 3.3.1 of Amendment 13. Additional economic analysis regarding this fishery is presented in section 7.0 of the EA and in the Regulatory Impact Review/Initial Regulatory Flexibility Analysis (RIR/IRFA) section. Information regarding fishing trends is presented in section 4.3 of the RIR/IRFA.

6.4.1.2 Scup

A detailed description of the economic aspects of the commercial and recreational fisheries for scup was presented in section 3.3.2 of Amendment 13. Additional economic analysis regarding this fishery is presented in section 7.0 of the EA and in the RIR/IRFA section. Information regarding fishing trends is presented in section 4.3 of the RIR/IRFA.

6.4.1.3 Black Sea Bass

A detailed description of the economic aspects of the commercial and recreational fisheries for black sea bass is presented in section 3.3.3 of Amendment 13. Additional economic analysis regarding this fishery is presented in section 7.0 of the EA and in the RIR/IRFA section. Information regarding fishing trends is presented in section 4.3 of the RIR/IRFA.

6.5 Human Communities

6.5.1 Port and Community Description

The recreational summer flounder, scup, and black sea bass fisheries are important to many communities along the East Coast. Recent summer flounder, scup, and black sea bass landing patterns among ports are presented in section 6.5.1 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. A brief description of the relative importance of summer flounder, scup, and black sea bass recreational landings at the state level follows. The ports and communities that are dependent on summer flounder, scup, and black sea bass are fully described in Amendment 13 (section 3.4).

Data are not available to identify to what extent communities are dependent upon these recreational fisheries. The MRFSS program does not identify port and community level data. Vessel Trip Report (VTR or “logbook”) data can be analyzed on the port-level for party/charter boat landings. However, MRFSS data indicate that party/charter landings represented 14%, 16%, and 63%, of the total number (A+B1) of summer flounder, scup, and black sea bass recreational landings, respectively, from Maine through North Carolina, on average from 1981-2005 (Tables 20-22). As such, VTR data may not be representative of the importance of the entire summer flounder, scup, and black sea bass recreational fisheries to ports. However, as stated in section 6.5.2 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications, for party/charter vessels, the largest number of permit holders for these species are located in Massachusetts, followed by New Jersey and New York.

According to MRFSS estimates, the top five states from Maine through North Carolina in 2005 that landed summer flounder were New Jersey, New York, Virginia, Connecticut, and Massachusetts (Table 23). Rhode Island, Delaware, Maryland and North Carolina combined accounted for less than 12% of the total summer flounder landings. VTR data indicate that summer flounder accounted for 25%, 12%, 7%, and 5% of the total catch by party/charter vessels in the states of Rhode Island, New Jersey, Delaware, and New York, respectively, in 2005 (Table 24).

The top five states that landed scup in 2005 were Connecticut, New York, Rhode Island, Massachusetts, and New Jersey (Table 23). These states accounted for nearly 100% of the total recreational scup landings in 2005. VTR data indicate that scup accounted for 27%, 11%, 9%, 6%, and 5% of the total catch by party/charter vessels in the states of New York, Massachusetts, Rhode Island, New Jersey, and Connecticut, respectively, in 2005 (Table 25).

The top five states that landed black sea bass in 2005 were New Jersey, North Carolina, New York, Massachusetts, and Maryland (Table 23). New Jersey alone accounted for 45% of the landings. The states of Rhode Island, Connecticut, Delaware, and Virginia each accounted for less than 5% of the total black sea bass recreational landings. VTR data indicate that black sea bass accounted for 86%, 35%, 28%, and 17% of the total catch by party/charter vessels in the states of Maryland, Delaware, New Jersey, and Virginia, respectively, in 2005 (Table 26).

6.5.2 Analysis of Permit Data

A full description and analysis of the vessels permitted to participate in the commercial and recreational fisheries for summer flounder, scup, and black sea bass are presented in section 6.5.2 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. Data from the Northeast permit application database indicates that 920 vessels held some combination of summer flounder, scup, and black sea bass permits in 2005. However, VTR data indicate that less than half (331) of these vessels reported landings of summer flounder, scup, and/or black sea bass in 2005.

6.6 Marine Recreational Descriptive Statistics

In 1994, sportfishing surveys were conducted by NMFS in the Northeast Region (Maine to Virginia) to obtain demographic and economic information on marine recreational fishing participants from Maine to Virginia. Data from the surveys were then used to access socioeconomic characteristics of these participants, as well as to identify their marine recreational fishing preferences and their perceptions of current and prospective fishery management regulations. This information will be used in future stages of the research to estimate statistical models of the demand for marine recreational fishing for eight important recreational species. The information that follows is excerpted and paraphrased from a preliminary report by Steinback et al. (1999).

"Marine recreational fishing is one of the most popular outdoor recreational activities in America. In 1992, the lowest level of participation during the last ten years, approximately 2.57 million residents of coastal states in the Northeast Region participated in marine recreational fishing in their own state. Participation increased approximately 5% in 1993 (2.7 million) and increased another 14% in 1994 (3.1 million), exceeding the ten-year average of 2.9 million. Although the total number of finfish caught in the Northeast Region has declined over the past ten years, effort (trips) has remained relatively stable. An estimated 22.4 million fishing trips were taken in 1994, up from 19.3 million in 1993."

The following discussion contains demographic and socioeconomic characteristics of anglers, as well as their preferences, attitudes, and opinions, toward recreational fishing activities and regulations. There was little or no difference in mean age across subregions. "The largest proportion of anglers in both subregions were 36-45 years old (NE=28%, MA=25%). However, New England (NE) anglers were younger than Mid-Atlantic (MA) anglers. Results show that participation in marine recreational fishing increased with age, peaked between ages of 36 to 45, and subsequently declined thereafter. The resultant age distribution is similar to the findings of other marine recreational studies. However, the distribution is not reflective of the general population in these subregions. Bureau of the Census estimates indicated population peaks between the ages of 25 to 34 in both subregions, declines until the age of 64 and then increases substantially." The complete distribution of recreational anglers by age for both subregions is as follows: less than 18, 25.2% in NE and 25.6% in MA; between the ages of 18-24, 9.8% in NE and 9.7% in MA; between 25-34, 16.4% in NE and 17.0% in MA; between 35-44, 16.3% in NE and 16.2% in MA; between 45-54, 11.5% in NE and 11.8% in MA; between 55-64, 8.2% in NE and 8.4% in MA; and 65 and over, 12.6% in NE and 11.3% in MA. In this survey, anglers under the age of 16 were not interviewed and are not included in the analysis.

In both subregions, at least 88% of the anglers (age 25 and over) had obtained at least a high school degree (NE=91%, MA=88%). "While the educational background is similar across subregions, a greater portion of the anglers in New England earned college or post graduate/professional degrees (NE=29%, MA=23%). The shape of the educational distribution essentially mirrored the general population in both subregions. However, the

average number of anglers without a high school degree was considerably lower than Bureau of the Census estimates (age 25 and over) for the general population. On the other hand, it appears that anglers in New England and the Mid-Atlantic earned less post graduate/professional degrees than Bureau of Census estimates."

When anglers were asked to describe their racial or ethnic origin, almost all of the anglers interviewed in both subregions considered themselves to be white (NE=95%, MA=90%). "In the Mid-Atlantic, most of the remaining individuals were black (7%), leaving 3% to be of other ethnic origins. In New England, the remaining anglers were evenly distributed across other ethnic origins. The high occurrence of white fishermen is representative of the general population of the coastal states in New England. Approximately 94% of the population in 1993 was estimated to be white. However, in the Mid-Atlantic, the percentage of white anglers was considerably higher than Bureau of Census populations estimates, and the percentage of black fishermen was 12% lower."

When anglers were asked to indicate from a range of categories what their total annual household income was, only minor differences between subregions were found. "The largest percentage of household incomes fell between \$30,001 and \$45,000 for both subregions (NE=27%, MA=26%). In comparison to the general population, anglers' annual household incomes are relatively higher in both subregions...Results are consistent with previous studies which showed that angler household incomes are generally higher than the population estimates."

If it is assumed that "years fished" is a proxy for "experience," the survey data shows that anglers in New England are relatively less experienced than anglers in the Mid-Atlantic. The distribution of recreational anglers years of experience is as follows: 0-5 years of experience, 22% in NE and 16% in MA; 6-10 years of experience, 10% in NE and 10% in MA; 11-15 years of experience, 13% in NE and 14% in MA; 16-20 years of experience, 9% in NE and 9% in MA; 21-25 years of experience, 12% in NE and 12% in MA; 26-30 years of experience, 13% in NE and 12% in MA; and 30 or more years of experience, 21% NE and 26% in MA.

Survey results show that over 50% of the anglers in both subregions indicated boat ownership (NE=51%, MA=53%). These results were obtained when anglers were asked if anyone living in their household owns a boat that is used for recreational saltwater fishing.

Regarding the duration of the interviewed trip, "at least 80% of the anglers in both subregions indicated they were on a one-day fishing trip (NE=80%, MA=84%). One-day fishing trips were defined to be trips in which an angler departs and returns on the same day. Less than one fourth of the respondents indicated the day fishing was part of a longer trip which they spent at least one night away from their residence (NE=20%, MA=16%)."

"Respondents were asked why they chose to fish at the site they were interviewed... 'Convenience' and 'better catch rates' were the main reasons why anglers chose fishing sites in both subregions. Forty-nine percent of the anglers in New England and 57% of

the anglers in the Mid-Atlantic indicated 'convenience' as either a first or second reason for site choice. 'Better catch rates' was the first or second stated reason for site choice by 51% of the anglers in New England and 50% of the anglers in the Mid-Atlantic. Other notable responses were 'always go there,' 'boat ramp,' 'access to pier,' and 'scenic beauty.'...Results indicate that although anglers chose fishing sites for many different reasons, sites that offered good catch rates and were convenient attracted the most anglers."

Recreational anglers were asked to rate recreational fishing against their other outdoor activities during the last two months. Specifically, they were asked if fishing was their most important outdoor activity, their second most important outdoor activity, or only one of many outdoor activities? "Over 60% of the respondents in both subregions (NE=61%, MA=68%) reported marine recreational fishing was their most important outdoor activity during the past two months. Less than 30% in both subregions (NE=27%, MA=20%) said recreational fishing was only one of many outdoor activities." This is consistent with national outdoor recreation surveys carried out over the past three decades indicating that fishing is consistently one of the top outdoor recreational activities in terms of number of people who participate.

Recreational anglers' ratings of reasons (7 pre-established reasons) for marine fishing are presented in Table 27. More than 65% of the anglers in both subregions said that it was very important to go marine fishing because it allowed them to: spend quality time with friends and family (NE=81%, MA=85%); enjoy nature and the outdoors (NE=89%, MA=87%); experience or challenge of sport fishing (NE=69%, MA=66%); and relax and escape from my daily routine (NE=83%, MA=86%). "The reasons that were rated as not important by the largest proportion of anglers consisted of: catch fish to eat (NE=42%), to be alone (NE=55%, MA=58%), and to fish in a tournament or when awards were available (NE=79%, MA=73%). In the Mid-Atlantic, although to catch fish to eat was rated as being somewhat important by the largest proportion of anglers (40%), approximately 31% felt that catching fish to eat was very important. However, in New England, only 20% concurred. It is clear from these responses that marine recreational fishing offers much more than just catching fish to anglers. Over 80% of the respondents in both subregions perceived recreational fishing as a time to spend with friends and family, a time to escape from their daily routine, and time to enjoy nature and outdoors. While catching fish to eat is somewhat important to anglers, findings of this survey generally concur with previous studies that found non-catch reasons are rated highly by almost all respondents while catch is very important for about a third and catching to eat fish is moderately important for about another third."

"The economic survey sought to solicit anglers opinions regarding four widely applied regulatory methods used to restrict total recreational catch of the species of fish for which they typically fish: (1) limits on the minimum size of the fish they can keep; (2) limits on the number of fish they can keep; (3) limits on the times of the year when they can keep the fish they catch; and (4) limits on the areas they fish. Anglers were asked whether or not they support or opposed the regulations." As indicated in Table 28, strong support existed for all regulatory methods in both subregions. Limits on the minimum size of fish

anglers could keep generated the highest support in both regions (NE=93%, MA=93%), while limits on the area anglers can fish, although still high, generated relatively lower support (NE=68%, MA=66%).

Regulations which limit the number of fish anglers can keep ranked second (NE=91%, MA=88%). The results from this solicitation indicate that recreational anglers in the Northeast Region appear to be conservation-oriented and generally support regulations employed to restrict total catch. Not surprisingly, when analyzing anglers' opinions regarding the four widely applied regulatory methods, it was found that anglers in all modes indicated strong support for the regulatory measures. With minimum size limits generating the strongest support, followed by catch limits, seasonal closures, and lastly, area closures (Table 29). "Although party/charter, private/rental, and shore respondents did offer varying degrees of support for each of a selection of regulatory measures, similar support existed across all modes. Support was highest for common regulatory methods currently being implemented in New England and the Mid-Atlantic (e.g., size and bag limits), than for area and seasonal closures."

6.7 Vessel Trip Report (VTR) Data

Vessel Trip Reports (logbook data) have been collected by NMFS since 1994 for the recreational and commercial fisheries. In the recreational fishery, these data are collected from party/charter vessels permitted to operate in federal waters as required by the species FMPs or amendments. VTR data for 1994 and 1995 had some auditing and reporting problems; therefore, the VTR data for 1996 to 2005 were used in the following analyses. While vessel trip reports are an incomplete representation of the summer flounder, scup, and black sea bass fisheries, they can provide information on trends within the fishery assuming the submitted reports are representative and the information is accurate. In addition, there are some underlying problems with the VTR reporting process ranging from unclear writing on the reports to submission of misinformation. As such, inter-annual trends in total numbers of trips, catch, and landings based on VTR for all three species are likely to be strongly influenced by these issues and should be interpreted with caution. VTR data for the party/charter sector from 1996-2005 were used to describe the catch, landings, and participation in this fishing sector. It should be noted that changes in availability/abundance and regulations may have an underlying effect on the observed trends.

The number of summer flounder trips, catch, and vessels reporting based on general trends in the VTR data for party and charter vessels has changed over time (Table 30). The mean number of anglers for party boats that caught summer flounder peaked in 2002, with a mean of 32.08 anglers per trip. Charter boats had the lowest mean number of anglers in that same year. In general, the mean number of anglers for scup and black sea bass from both party and charter boats remained relatively stable with some interannual variability. (Table 30).

7.0 ENVIRONMENTAL CONSEQUENCES AND REGULATORY ECONOMIC EVALUATION OF ALTERNATIVES

This EA analyzes the impacts of the recreational management measures considered for the year 2007 specifications for summer flounder, scup, and black sea bass, relative to the status quo measures for each species. The analyses of the TALs (commercial quotas and recreational harvest limits), which are necessary to achieve the annual target exploitation rates established under the individual species' rebuilding schedules, and other commercial management measures were conducted under the 2007 Summer Flounder Scup, and Black Sea Bass Specifications document. The Council and Commission met in December 2006 to adopt specific recreational management measures (i.e., bag limits, size limits, and seasonal closures) for 2007. As stated in the FMP, the recreational specifications may alter the fishing season, minimum fish size, and the possession limit to achieve the recreational harvest limit. None of the preferred alternatives contain major changes to existing management programs. In fact, all of the preferred alternatives recommend status quo management measures for each species in 2007. The impact of each alternative is analyzed below.

The nature of the management programs for the summer flounder, scup, and black sea bass fisheries was examined in detail in the EISs prepared for each of the fisheries; in Amendment 2 for summer flounder (1992), Amendment 8 for scup (1996), and Amendment 9 for black sea bass (1996). Those analyses considered the impacts of the overall management measures including rebuilding schedules and annual exploitation rates on stock health and abundance, spawning stock biomass, EFH, protected species, the economy, and affected fishermen. Those EISs were updated in Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (approved on March 4, 2003; 68 FR 10181). The description of the environment (biological, human - socioeconomic, EFH, and protected resources) in which these fisheries are prosecuted was updated and described in detail in Amendment 13. The FMP regulates the black sea bass and scup fisheries from Maine to Cape Hatteras, North Carolina, while the summer flounder fishery is regulated from Maine to the southern border of North Carolina. The fisheries are prosecuted by vessels throughout the range, although the geographic focus of the fishery varies somewhat from year to year.

7.1 Summer Flounder Alternatives

7.1.1 Alternative 1 (Preferred: Status Quo Conservation Equivalency)

The preferred alternative for summer flounder is the status quo alternative and would require states to use conservation equivalency to develop state-specific management measures in 2007. A full description of this alternative is presented in section 5.0 of the EA.

7.1.1.1 Biological Impacts

Projected landings for 2006 (based on waves 1-5) are 11.74 million lb (5.33 million kg), which is greater than the 2006 recreational harvest limit of 9.29 million lb (4.21 million kg). A comparison of the projected 2006 landings with the 2006 state-specific targets indicates that the states of Connecticut, Delaware, Maryland, and North Carolina will not exceed their targets in 2006 (Table 11). State-specific reductions associated with the 2007 coastwide recreational harvest limit of 6.84 million lb (3.10 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2006 (Table 1). Assuming the same level of fishing effort in 2006, a coastwide reduction in landings (pounds) of 41.7% would be required for summer flounder to achieve the 2007 recreational harvest limit. Under conservation equivalency, all states except Maryland would be required to reduce landings (in number of fish; Table 1).

Conservation equivalent recreational management measures would allow each state to develop specific recreational measures to allow the fishery to operate in each state during critical fishing periods while still achieving conservation goals. It is expected that state-specific management measures for summer flounder will constrain summer flounder landings to the recreational harvest limit in 2007. This alternative would have no additional biological impacts beyond those analyzed for the no action alternative.

A full description of the precautionary default measures (an 18.5-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season) is presented in section 5.0 of the EA.

Specific states, or states within a conservation equivalency region, that fail to implement conservation equivalent measures as specified in Frameworks 2 and 6 to the Summer Flounder, Scup, and Black Sea Bass FMP would be required to implement precautionary default measures. Precautionary default measures are defined as measures that would achieve at least the overall required reduction in landings for each state. The precautionary default measures could constrain coastwide landings to the 2007 harvest limit (see section 5.1.1). The state-specific reductions in landings associated with the precautionary default measures are likely to be substantially higher than the state reductions to be implemented via conservation equivalency. As such, it is expected that states will avoid the impacts of precautionary approach measures by establishing conservation equivalency management measures.

7.1.1.2 Habitat Impacts

The environment in which these fisheries are prosecuted was described in Amendment 13, section 3.2.4. The fishery management unit for summer flounder is from Maine to the southern border of North Carolina. The analyses in Amendment 13 include the impacts of the overall management measures on stock health and abundance, spawning stock biomass, and protected species, as well as on the economy and affected fishermen. A brief description of the physical environment is presented in section 6.2 of the EA.

The measures in this alternative do not contain major changes to existing management measures. The FMP limits recreational specifications to minimum fish size, possession limit, and fishing season. The principal gears used in the recreational fishery for summer flounder are rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (see section 6.2). Therefore, this alternative would have no additional EFH impacts beyond those analyzed for the no action alternative (alternative 2).

7.1.1.3 Impacts on Endangered and Other Protected Species

Numerous species of marine mammals and threatened or endangered species occur in the Northwest Atlantic Ocean. These species are described in detail in Appendix A. The impacts of the summer flounder, scup, and black sea bass recreational fisheries upon endangered and threatened species and marine mammal populations are also described in detail in Amendment 13. Recreational fisheries, in general, have very limited interactions with marine mammals and endangered or threatened species. However, recreational fishermen do contribute to difficulties for endangered and threatened marine species in that it is estimated that recreational fishermen discard over 227 million lb (103 million kg) of litter each year (O'Hara et al. 1988). More than nine million recreational vessels are registered in the United States. The greatest concentrations of recreational vessels in the United States are found in the waters off New York, New Jersey, the Chesapeake Bay, and Florida (O'Hara et al. 1988). As previously stated, recreational fishermen are a major source of debris in the form of monofilament fishing line. The amount of fishing line lost or discarded by the 17 million U.S. fishermen during an estimated 72 million fishing trips in 1986 is not known, but if the average angler snares or cuts loose only one yard of line per trip, the potential amount of deadly monofilament line is enough to stretch around the world (O'Hara et al. 1988). Although the recreational fishery may impact these marine species, nothing considered in this alternative will have a significant impact on marine mammals and threatened or endangered species when compared to 2006.

The measures in this alternative do not contain major changes to existing management measures. Changes in overall fishing effort as a result of changes in recreational harvest limits, possession and size limits, and seasons are unknown. Because the alternative is not expected to cause large changes in fishing effort, it is concluded that this alternative will not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations. Therefore, any potential negative impacts on protected species associated with this alternative are expected to be negligible when compared to 2006.

7.1.1.4 Socioeconomic Impacts

Conservation equivalency recreational management measures would allow each state to develop specific recreational measures to allow the fishery to operate in each state during critical fishing periods while still achieving conservation goals. This would enable the summer flounder fishery to operate in a way that dissipates potential adverse economic

effects in specific states. Table 31 details the proportion of summer flounder harvested in state and Federal waters. On average (1995-2005), approximately 90% of the harvested summer flounder (by number) came from state waters. The Board will either approve or disapprove each state's measures in February 2007 (Table 2). No quantitative analysis is provided here since the measures have yet to be adopted by the states.

There is very little information available to empirically estimate how sensitive the affected anglers might be to regulations implemented through conservation equivalency. It is possible that proposed management measures by states could restrict the recreational fishery for 2007 (i.e., via a reduced possession limit, larger minimum fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

There are no data available at the port or community level that shows the dependence of the party/charter boat fishery, the private/rental boat fishery, or the shore fishery on summer flounder, scup, and black sea bass. However, for party/charter vessels, the largest number of permit holders for these species is located in Massachusetts, followed by New Jersey and New York (section 6.5.2 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications). Projected data from MRFSS indicate that anglers fished 36.98 million days in 2006 in the Northeast Region (Maine through North Carolina). Party/charter anglers comprised about 5.1% (1.90 million) of the angler fishing days in 2006, 50.5% (18.69 million) for private/rental mode, and 44.3% (16.39 million) for shore mode (Table 32).

A description by port of importance to the commercial summer flounder, scup, and black sea bass fisheries is presented in Amendment 13. In addition to this, demographic and economic information on marine recreational fishing participants by region is presented in section 6.5 of the EA. There is a distinction to be made between negative impacts to individuals and negative impacts to the larger communities. If the number of affected individuals in a community is large (i.e., large numbers of recreational anglers in a community), the degree of impacts on individuals and communities would be expected to be the same. However, where the number of recreational anglers in a community is proportionally small, the degree of impacts on individuals and communities would differ. In this situation, some individual fishermen and their families could find the final recreational management measures for 2007 to have significant impacts, whereas the larger communities and towns in which they live would not. The economic diversity of a community may enable a community to be sustained, although the recreational fishing sector might be adversely impacted. On the other hand, small, remote and less economically diverse communities that are more dependent upon recreational fishing are less likely to be sustained through restrictive regulations.

If the harvesting restrictions adopted under conservation equivalency in 2007 are more restrictive than the 2006 measures, there could be a decline in the demand for summer flounder fishing trips. However, it is not likely that the new measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some anglers may reduce their overall fishing effort in response to the 2007 summer flounder regulations, it is expected that most anglers that

fished for summer flounder during 2006 will continue to do so in 2007 under the new limits. The proposed regulations will likely result in changes to the number and size of the fish that can be landed, but they will not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their summer flounder effort in 2007 in response to the new regulations are likely to transfer this effort to alternative species (i.e., scup, black sea bass, 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.

The Council and Board also must recommend precautionary default measures for Federal permit holders landing summer flounder in states that do not submit approved conservation equivalency measures. The precautionary default measures consist of an 18.5-inch TL minimum fish size, a 1-fish possession limit, and no closed season. It is expected that states will avoid the impacts of the precautionary default measures by establishing conservation equivalency measures. Because states have a choice, it is more rational for the states to adopt the conservation equivalency measures that result in fewer adverse economic impacts than to adopt the much more restrictive precautionary default measures.

Impacted trips were defined as trips taken in 2006 that landed at least one summer flounder smaller than 18.5 inches TL or landed more than 1 summer flounder. The analysis concluded that the measure could affect 4.06% of the party/charter boat trips, 5.14% of the private/rental boat trips, and less than 0.1% of the shore trips (Table 33). It is possible that the potential effects on angler effort associated with the precautionary default measures would be greater than those associated with conservation equivalency or the coastwide measures. The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.1.2 Alternative 2 (Non-preferred: Coastwide Measure/No Action)

The summer flounder non-preferred alternative (coastwide management measures) adopted by the Council and Commission was a 19-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season for the 2007 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.1.2.1 Biological Impacts

Projected landings for 2006 (based on waves 1-5) are 11.74 million lb (5.33 million kg), which is greater than the 2006 recreational harvest limit of 9.29 million lb (4.21 million kg). A comparison of the projected 2006 landings with the 2006 state-specific targets indicates that the states of Connecticut, Delaware, Maryland, and North Carolina will not exceed their targets in 2006 (Table 11).

Angler catches and landings in 2006 may be explained by regulatory effects. Analysis of coastwide intercept data indicates that 90% of the trips landed less than 3 fish in 2006 based on data through wave 4 (Table 34). This compares to 90% of the trips landing 4 fish or less in 1992, the year before the fishery was regulated with possession limits (Table 35). Landings were constrained by the various minimum size limits that were in effect in 2006 based on an analysis of length frequencies (Table 36). However, there were significant numbers of fish measured less than the size limit in some states. The percent of measured fish less than the specific size limit in 2006 ranged from 1.3% (New Jersey) to 13.9% (New York).

Analysis of wave data suggests that some landings may have been affected by seasonal restrictions in 2006 (Table 37). Obviously, greater effects would be associated with seasonal closures in waves with a greater proportion of landings.

State-specific reductions associated with the 2007 coastwide recreational harvest limit of 6.84 million lb (3.10 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2006 (Table 1). Assuming the same level of fishing effort in 2006, a coastwide reduction in landings (pounds) of 41.7% would be required for summer flounder. The non-preferred coastwide alternative could constrain landings to the recreational harvest limit for 2007 (see section 5.1.2). As such, this alternative is expected to result in no biological impacts or possible positive biological impacts on the resource.

7.1.2.2 Habitat Impacts

For reasons stated in section 6.2 of the EA, the EFH impacts under this alternative are minimal.

7.1.2.3 Impacts on Endangered and Other Protected Species

The protected resources impacts under this alternative are minimal and similar to those described in section 7.1.1.3 of the EA.

7.1.2.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.1.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one summer flounder smaller than 19 inches TL or landed more than 1 summer flounder. The analysis concluded that the measure could affect 4.13% of the party/charter boat trips, 5.17% of the private/rental boat trips, and less than 0.1% of the shore trips (Table 33).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed coastwide fishing regulations. Nonetheless, the

coastwide measures are much more restrictive than the conservation equivalency measures that were in place during 2006 so there likely would be an overall reduction in the demand for summer flounder fishing trips. Many of the anglers that might reduce their summer flounder effort would likely transfer at least some of this fishing effort to alternative species (i.e., scup, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), thereby lessening the reduction in overall fishing effort in response to the coastwide measures. Headboat businesses that rely at least partially on summer flounder anglers fishing for food would likely be faced with reduced passenger loads in response to the low bag limit proposed under the coastwide measures (1 fish). The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.2 Scup Alternatives

7.2.1 Alternative 1 (Preferred: Status Quo Coastwide Measure/No Action)

The preferred alternative for scup includes a coastwide 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 30 for the 2007 recreational fishery. This alternative is also the status quo/no action alternative. A full description of this alternative is presented in section 5.0 of the EA.

7.2.1.1 Biological Impacts

The 2007 specifications for scup implemented a recreational harvest limit of 2.74 million lb (1.24 million kg), which is lower than the recreational harvest limit of 3.99 million lb (1.81 million kg) implemented in 2006. The 2006 recreational scup landings are projected to be 2.80 million lb (1.27 million kg). Assuming the same level of fishing effort in 2007, a 2.1 % coastwide reduction in landings would be required; however, as discussed in section 5.2.1, this is within the average observed PSE (margin of error) for estimation of landings in pounds. As such, no additional restrictions would be required.

Possession and size limits can be used to constrain landings to the harvest limit in 2007. Potential reductions need to be adjusted to account for levels of effectiveness. It is improbable that a regulation will be 100% effective. In fact, analyses of catch and length frequencies indicate that anglers do exceed the possession limit and land scup smaller than the size limit (Table 38). In 2001, the Commission, with the assistance of the Commission's Technical Committee, determined that an effective way to deal with this inefficiency was to remove fish less than the size limit or in excess of the possession limits from the data before constructing the table that is used to determine the reductions associated with the size/possession limit combinations. The adjusted table, based on 2006 data, can then be used to guide recommendations on the appropriate limits for 2007 (Table 39).

Recreational limits act to constrain landings as the availability of fish increases. If availability is low, few anglers will be affected by the regulations, and landings will be

lower than the harvest limit. As availability of scup to anglers increases, constraints imposed by the limits increase, i.e., anglers are more constrained by a size limit when there is a good year class of scup produced and more constrained by a possession limit when the availability of larger fish is high. The correct management measures will allow anglers to land up to the harvest limit but not exceed the limit.

Analysis of length frequencies indicates that landings were constrained in Massachusetts, Rhode Island, Connecticut and New York by the 10.5-inch TL size limit implemented in 2006. Coastwide, approximately 25.4% of the measured fish were less than 10-inch TL in the first four waves of 2006 (Table 38). In 2002, 6.1% of the measured fish were less than 10-inch TL.

Landing frequencies for the first four waves of 2006 indicate about 90% of the trips had 16 or less fish per trip with about 50% of the trips landing 3 or less scup (Table 40). Anglers were about as successful in 2006 compared to 2005 (Table 41).

The Council and Commission voted to recommend a 10-inch TL minimum fish size, a 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through November 30 for the 2007 scup recreational measures. Because these measures constrained the landings to the recreational harvest limit in 2006, it is likely that maintaining the current measures would not result in an overage in 2007. As such, this alternative will result in no biological impacts in 2007 relative to impacts in 2006.

7.2.1.2 Habitat Impacts

The environment in which these fisheries are prosecuted was described in Amendment 13, section 3.2.4. The fishery management unit for scup is from Maine to Cape Hatteras, North Carolina. A brief description of the physical environment is presented in section 6.2 of the EA.

The measures in this alternative do not contain major changes to existing management measures. The FMP limits recreational specifications to minimum fish size, possession limit, and fishing season. The principal gears used in the recreational fishery for scup are rod and reel and handline. For reasons stated in section 6.2 of the EA, the EFH impacts associated with the use of these gears are minimal. Therefore, the impact of this alternative on EFH would be minimal.

7.2.1.3 Impacts on Endangered and Other Protected Species

Numerous species of marine mammals and threatened or endangered species occur in the Northwest Atlantic Ocean. These species are described in detail in Appendix A. The impacts of the summer flounder, scup, and black sea bass recreational fisheries upon endangered and threatened species and marine mammal populations are also described in detail in Amendment 13. Recreational fisheries, in general, have very limited interactions with marine mammals and endangered or threatened species. However, recreational

fishermen do contribute to difficulties for endangered and threatened marine species as discussed section 7.1.1.3 of this EA.

The measures in this alternative do not contain major changes to existing management measures. Changes in overall fishing effort as a result of changes in recreational harvest limits, possession and size limits, and seasons are unknown. Because the alternative is not expected to cause large changes in fishing effort, it is concluded that this alternative will not affect endangered and threatened species in any manner not considered in prior consultations. Therefore, any potential negative impacts on protected species associated with the alternative are expected to be negligible.

7.2.1.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.1.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one scup smaller than 10 inches TL, landed more than 50 scup, or landed 1 scup during the closed season (March 1 through September 17 and December 1 through December 31). The analysis concluded that the measure could affect 1.86% of the party/charter boat trips, 1.11% of the private/rental boat trips, and 0.52% of the shore trips (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for scup in 2006 will continue to do so in 2007. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their scup effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, black sea bass, 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.

This alternative evaluates the status quo management measures for scup. Even though these are the same coastwide management measures that were in place in 2006, the analysis conducted indicates that there could be a small number of impacted trips in 2007 if these measures were implemented. This is due to the fact that not all states implemented these coastwide measures in 2006, and angler compliance was not 100%. The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.2.2 Alternative 2 (Non-preferred: Coastwide Measure)

Scup non-preferred alternative 2 includes a coastwide 10-inch TL minimum fish size, 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 18 through September 30 for the 2007 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.2.2.1 Biological Impacts

This alternative could decrease landings in 2007 by 30.2% with the reduction of the season by 31 days in the month of October (wave 5) and an additional 30 days in the month of November (wave 6).

The projected reductions are based on the assumption that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit for 2006 (Tables 4a-b). These measures may be more restrictive than necessary to constrain scup landings to the 2007 recreational harvest limit. As such, this alternative is expected to result in positive biological impacts relative to the no action alternative (alternative 1).

7.2.2.2 Habitat Impacts

The EFH impacts under this alternative are minimal (see section 6.2 of the EA).

7.2.2.3 Impacts on Endangered and Other Protected Species

The protected resources impacts under this alternative are minimal and similar to those described in section 7.2.1.3 of the EA.

7.2.2.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.2.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one scup smaller than 10 inches TL, or landed more than 50 scup, or landed 1 scup during the closed season (March 1 through September 17 and October 1 through December 31). The analysis concluded that the measure could affect 2.71% of the party/charter boat trips, 1.35% of the private/rental boat trips, and 0.54% of the shore trips (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is

expected that most anglers that fished for scup in 2006 will continue to do so in 2007 under this alternative. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their scup effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, black sea bass, 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.

The potential effects on angler effort associated with this alternative are estimated to be greater than those associated with coastwide measures under preferred alternative 1 (no action/status quo) because the reductions associated with the management measures under this alternative have a greater impact on angler effort compared to those under alternative 1 (Table 33). The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.2.3 Alternative 3 (Non-preferred: Coastwide Measure)

Scup non-preferred alternative 3 includes a coastwide 10-inch TL minimum fish size, 50-fish per person possession limit, and open seasons of January 1 through February 28 and September 3 through November 17 for the 2007 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.2.3.1 Biological Impacts

This alternative could decrease landings in 2007 by 2.1% relative to the status quo, by closing 13 days in the month of September (wave 5).

The projected increases are based on the assumption that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit for 2007 (Tables 4a-b). These measures are expected to constrain scup landings in 2007 and are expected to achieve the 2007 recreational harvest limit. As such, this alternative is expected to result in no biological impacts or slightly positive impacts relative to the no action alternative (alternative 1).

7.2.3.2 Habitat Impacts

The EFH impacts under this alternative are minimal (see section 6.2 of the EA).

7.2.3.3 Impacts on Endangered and Other Protected Species

The protected resources impacts under this alternative are minimal and similar to those described in section 7.2.1.3 of the EA.

7.2.3.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.2.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one scup smaller than 10 inches TL, landed more than 50 scup, or landed 1 scup during the closed season (March 1 through September 17 and November 18 through December 31). The analysis concluded that the measure could affect 1.87% of the party/charter boat trips, 1.11% of the private/rental boat trips, and 0.52% of the shore trips (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for scup in 2006 will continue to do so in 2007 under this alternative. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their scup effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, black sea bass, 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.

The potential effects on angler effort associated with this alternative are estimated to be slightly larger than those associated with alternative 1 (preferred: no action/status quo), because the reductions associated with the management measures under this alternative have a greater impact on angler effort compared to alternative 1. In contrast, the estimated impacts on effort under this alternative are smaller than those associated with alternative 2 because the open season is longer under alternative 3 (Table 33). The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.3 Black Sea Bass Alternatives

7.3.1 Alternative 1 (Preferred: Status Quo Coastwide Measure/No Action)

The preferred alternative for black sea bass includes a coastwide 12-inch TL minimum fish size, a 25-fish per person possession limit, and open season of January 1 through December 31 for the 2007 recreational fishery. This alternative is also the status quo/no action alternative. A full description of this alternative is presented in section 5.0 of the EA.

7.3.1.1 Biological Impacts

The black sea bass landings in 2006 are projected to be 1.91 million lb (0.87 million kg), which is lower than the 2006 recreational harvest limit of 3.99 million lb (1.81 million kg). This implies that the management measures in place for 2006 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2006. Projected landings for 2006 are less than the 2007 recreational harvest limit of 2.47 million lb (1.12 million kg). Therefore, the Council and Commission recommended implementing regulations in 2007 that were identical to those in 2006. To constrain recreational black sea bass landings to the 2007 recreational harvest limit, the Council and Commission recommended a 12-inch TL minimum fish size, a 25-fish per person possession limit, and open seasons of January 1 through December 31.

Possession and size limits can be used to constrain landings to the harvest limit. However, potential reductions need to be adjusted to account for levels of effectiveness. It is improbable that a regulation will be 100% effective. In 2001, the Commission, with the assistance of the Commission's Technical Committee, determined that an effective way to deal with this inefficiency was to remove fish less than the size limit or in excess of the possession limit from the data before constructing the table used to determine the reductions associated with the size/possession limit combinations. The adjusted table can then be used to guide recommendations on the appropriate limits for 2007.

Recreational limits act to constrain landings as the availability of fish increases. If availability is low, few anglers will be affected by the regulations, and landings will be lower than the harvest limit. As availability of black sea bass to anglers increases, constraints imposed by the limits increase, i.e., anglers are more constrained by a size limit when there is a good year class of black sea bass produced and more constrained by a possession limit when the availability of larger fish are plentiful.

Landing frequencies for the first four waves of 2006 indicate that 90% of the trips landed 7 or less fish per trip, with 50% of the successful trips landing between 1 and 2 black sea bass (Table 42). This compares to 2005 when 90% of the trips landed 7 or less black sea bass per trip (Table 43).

Analysis of length frequencies indicates that landings were constrained by the 12-inch TL size limit in the first four waves of 2006 (Table 44). A total of 28.9% of the measured black sea bass was less than the minimum size (12-inch TL) in 2006 samples compared to 42.3% in 1996, which is the year a 9-inch TL size limit was implemented. The correct size and possession limits will allow anglers to land up to the harvest limit but not exceed the limit in 2007. This preferred black sea bass alternative contains the same minimum size, possession limit, and season as 2007.

The management measures under this alternative are expected to constrain black sea bass landings to the 2007 recreational harvest limit based on the assumption that regulations would be implemented by all states. This alternative would have no additional biological impacts relative to impacts in 2006.

7.3.1.2 Habitat Impacts

The environment in which these fisheries are prosecuted was described in Amendment 13, section 3.2.4. The fishery management unit for black sea bass is from Maine to Cape Hatteras, North Carolina. A brief description of the physical environment is presented in section 6.2 of the EA.

The measures in this alternative do not contain changes to existing management measures. The FMP limits recreational specifications to minimum fish size, possession limit, and fishing season. The principal gear used in the recreational fishery for black sea bass is rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (see section 6.2), as they were in 2006.

7.3.1.3 Impacts on Endangered and Other Protected Species

Numerous species of marine mammals and threatened or endangered species occur in the Northwest Atlantic Ocean. These species are described in detail in Appendix A. The impacts of the summer flounder, scup, and black sea bass recreational fisheries upon endangered and threatened species and marine mammal populations are also described in detail in Amendment 13. Recreational fisheries, in general, have very limited interactions with marine mammals and endangered or threatened species. However, recreational fishermen do contribute to difficulties for endangered and threatened marine species as discussed section 7.1.1.3 of this EA. Although the recreational fishery may impact these marine species, nothing considered in this alternative (alternative 1) will have a significant impact on marine mammals and threatened or endangered species.

The measures in this alternative do not contain major changes to existing management measures. Changes in overall fishing effort as a result of changes in recreational harvest limits, possession and size limits, and seasons are unknown. Because the alternative is not expected to cause large changes in fishing effort, it is concluded that this alternative will not affect endangered and threatened species or critical habitat in any manner not considered in prior consultations. Therefore, any potential negative impacts on protected species associated with this alternative are expected to be negligible.

7.3.1.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.1.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one black sea bass smaller than 12 inches TL or landed more than 25 black sea bass. The analysis concluded that the measure could affect 0.37% of the party/charter boat trips, less than 0.1% of the private/rental boat trips, and less than 0.1% of the shore trips (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for black sea bass in 2006 will continue to do so in 2007. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their black sea bass effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, scup, 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.

This alternative evaluates the status quo management measures for black sea bass. Even though these are the same coastwide management measures that were in place in 2006, the analysis conducted indicates that there could be a small number of impacted trips in 2007 if these measures were implemented. This is due to the fact that not all states implemented these coastwide measures in 2006 and angler compliance was not 100%. The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.3.2 Alternative 2 (Non-preferred: Coastwide Measure)

Black sea bass non-preferred alternative 2 includes a coastwide 11.5-inch TL minimum fish size, 25-fish per person possession limit, and open season of January 1 through December 31 for the 2007 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.3.2.1 Biological Impacts

The technical information regarding the role of recreational limits, recreational landings, and the effects of possession limits and size limits discussed in section 7.3.1.1 of the EA is also relevant to this section.

The black sea bass landings in 2006 are projected to be 1.91 million lb (0.87 million kg), which is lower than the 2006 recreational harvest limit of 3.99 million lb (1.81 million kg). This implies that the management measures in place for 2006 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2006. Projected landings for 2006 are less than the 2007 recreational harvest limit of 2.47 million lb (1.12 million kg). This alternative recommends implementing regulations in 2007 that were identical to those in 2002. In 2002, an 11.5-inch TL minimum fish size, a 25-fish per person possession limit, and open season of January 1 through December 31 resulted in landings of 4.35 million lb (1.97 million kg).

If fewer fish are available to recreational fishermen in 2007 than in 2002, then measures proposed in this alternative may constrain landings to the recreational harvest limit in 2006. However, the 2002 landings of 4.35 million lb (1.97 million kg) indicate these measures may not constrain the 2007 landings to the 2007 recreational harvest limit, resulting in negative biological impacts on the black sea bass resource. Therefore, the biological impact of this alternative could range from no impact to a negative impact when compared to the no action alternative (alternative 1).

7.3.2.2 Habitat Impacts

The measures in this alternative do not contain major changes to existing management measures. The FMP limits recreational specifications to minimum fish size, possession limit, and fishing season. The principal gears used in the recreational fishery for black sea bass are rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (see section 6.2)

7.3.2.3 Impacts on Endangered and Other Protected Species

The protected resources impacts under this alternative are minimal and similar to those described in section 7.3.1.3 of the EA.

7.3.2.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.1.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one black sea bass smaller than 11.5 inches TL or landed more than 25 black sea bass. The analysis concluded that the measure could affect 0.32% of the effort fishing aboard party/charter boats in 2007 and less than 0.1% of both private/rental boat effort and shore effort in 2007 (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for black sea bass in 2006 will continue to do so in 2007. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their black sea bass effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, scup, 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.

The potential effects on angler effort associated with this alternative are estimated to be slightly smaller than those associated with the coastwide measures under the preferred alternative 1 (status quo) and non-preferred alternative 3, because the reductions associated with the management measures under this alternative have a smaller impact on angler effort compared to those under alternatives 1 and 3 (Table 33). The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.3.3 Alternative 3 (Non-preferred: Coastwide Measure)

Black sea bass non-preferred alternative 3 includes a coastwide 12.5-inch TL minimum fish size, 25-fish per person possession limit, and open season of January 1 through December 31 for the 2007 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.3.3.1 Biological Impacts

The black sea bass landings in 2006 are projected to be 1.91 million lb (0.87 million kg), which is lower than the 2006 recreational harvest limit of 3.99 million lb (1.81 million kg). This implies that the management measures in place for 2006 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2006. Projected landings for 2006 are less than the 2007 recreational harvest limit of 2.47 million lb (1.12 million kg). This alternative recommends implementing regulations in 2007 that include a more restrictive size limit and similar possession limit and season when compared to 2006 (status quo alternative 1).

The technical information regarding the role of recreational limits, recreational landings, and the effects of possession limits and size limits discussed in section 7.3.1.1 of the EA is also relevant to this section.

This alternative contains management measures that are more restrictive than necessary to constrain black sea bass recreational landings to the harvest limit in 2007. These more restrictive measures in 2007 may allow more rapid rebuilding of the black sea bass stock. Therefore, this alternative would result in no impacts or slight positive impacts when compared to those analyzed for the no action alternative (alternative 1).

7.3.3.2 Habitat Impacts

The measures in this alternative do not contain major changes to existing management measures. The FMP limits recreational specifications to minimum fish size, possession limit, and fishing season. The principal gears used in the recreational fishery for black

sea bass are rod and reel and handline. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (see section 6.2)

7.3.3.3 Impacts on Endangered and Other Protected Species

The protected resources impacts under this alternative are minimal and similar to those described in section 7.3.1.3 of the EA.

7.3.3.4 Socioeconomic Impacts

The impacts of recreational management measures on the demand for trips and the social impacts of recreational measures on ports and communities described in section 7.3.1.4 of the EA also apply here.

Impacted trips were defined as trips taken in 2006 that landed at least one black sea bass smaller than 12.5 inches TL or landed more than 25 black sea bass. The analysis concluded that the measure could affect 0.46% of the party/charter boat trips, less than 0.1% of the private/rental boat trips, and less than 0.1% of the shore trips (Table 33).

It is possible that the proposed measures could cause some decrease in recreational satisfaction for anglers restricted by the landing limits. However, it is not likely that the measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the regulations, it is expected that most anglers that fished for black sea bass in 2006 will continue to do so in 2007. The proposed regulations do not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Anglers that choose to reduce their black sea bass effort in 2007 are likely to transfer this effort to alternative species (i.e., summer flounder, scup, 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.

The potential effects on angler effort associated with this alternative are estimated to be larger than those associated with coastwide measures under the preferred alternative 1 (no action/status quo) and non-preferred alternative 2, because the reductions associated with the management measures under this alternative have a larger impact on angler effort compared to those under alternatives 1 and 2 (Table 33). The economic impacts of the proposed measures under this and other alternatives are further discussed in section 7.5.6 of the EA.

7.4 Research Set-Aside Measures

A maximum research set-aside for summer flounder, scup, and black sea bass of 389,490 lb (176,670 kg), 360,000 lb (163,293 kg), and 150,000 lb (68,039 kg), respectively, was

allocated to the 2007 fishing year (70 FR 77060; December 29, 2005). A detailed description of the research set-aside alternatives and the impacts of these alternatives for summer flounder, scup, and black sea bass were described in sections 5.4 and 7.4 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications.

7.5 Cumulative Impacts of Preferred Alternative

7.5.1 Introduction; Definition of Cumulative Effects

A cumulative impact analysis is required by the Council on Environmental Quality's (CEQ) regulation for implementation of NEPA. Cumulative effects are defined under NEPA as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other action (40 CFR section 1508.7)." A formal cumulative impact assessment is not necessarily required as part of an Environmental Assessment under NEPA as long as the significance of cumulative impacts has 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.

In terms of past actions for fisheries, habitat and socioeconomic impacts, the temporal scope of this analysis is primarily focused on actions that have taken place since the late 1970s, which is when the Council began discussions regarding the development of FMPs for summer flounder, scup, and black sea bass. For endangered and other protected species, the context is largely focused on the 1980s and 1990s, which is when NMFS began generating stock assessments for marine mammals and turtles that inhabit waters of the U.S. EEZ. In terms of future actions, the analysis examines the period between implementation of these specifications in March 2007 through January 2012 (5 years). The temporal scope does not extend beyond ten years because the dynamic nature of resource management and lack of information on projects that may occur in the future makes it difficult to predict impacts beyond this timeframe with any certainty.

The geographic scope of the analysis of impacts to fish species and habitat for this action is the range of the fisheries in the Western Atlantic Ocean, as described in the Affected Environment and Environmental Consequences sections of the document (Sections 6.0 and 7.0). For endangered and protected species, the geographic range is the total range of each species (Appendix A). The geographic range for socioeconomic impacts is defined as those fishing communities bordering the range of the recreational summer flounder, scup, and black sea bass fisheries (Section 6.5.1) from the U.S.-Canada border to, and including, North Carolina.

The cumulative impacts of the past, present, and future Federal fishery management actions (including the specification recommendations proposed in this document) should generally be positive. Although past fishery management actions to conserve and protect fisheries resources and habitats may have been timelier, the mandates of the MSFCMA as currently amended by the SFA and the Magnuson-Stevens Fishery Conservation and

Management Reauthorization Act of 2006 require that management actions be taken only after consideration of impacts to the biological, physical, economic, and social dimensions of the human environment. It is, therefore, expected that under the current management regime, the totality of Federal fisheries management impacts to the environment will, in general, contribute toward improving the human environment.

To compensate for any overharvesting and to preserve the conservation intent of the management regime, the FMP under which summer flounder, scup, and black sea bass are managed includes provisions that require that any commercial landings that exceed the specifications in one year, or the quota period, be deducted from the commercial quota that would otherwise have been allowed in the following year. Thus, the FMP and the annual specifications anticipate the possibility that landings may exceed targets in any given year and provide a remedy that at least partially compensates for such occurrences in terms of maintaining the conservation goals of the FMP and the rebuilding programs, thereby mitigating the impacts of those overages. In addition, overages in the recreational fishery are addressed by way of changes in management measures to reduce the harvest in the following year to the specified level. The annual nature of the management measures 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. A detailed historical account of overages in these fisheries is presented below (see "historical account of overages").

Cumulative effects to the physical and biological dimensions of the environment may also come from non-fishing activities. Non-fishing activities, in this sense, relate to habitat loss and alteration from human interaction or natural disturbances. These activities are widespread and can have localized impacts on habitat such as accretion of sediments from at-sea disposal areas, oil and mineral resource exploration, and significant storm events. In addition to guidelines mandated by the MSFMCA, NMFS reviews these types of effects during 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 authority. The jurisdiction of these activities is in "waters of the United States" and includes both riverine and marine habitats. A database which could facilitate documentation regarding cumulative impacts of non-fishing activities on the physical and biological habitat covered by the summer flounder, scup, and black sea bass management units is not available at this time. The development of a habitat and effect database would accelerate the review process and outline areas of increased disturbance. Inter-agency coordination would also prove beneficial.

The Council first considered the development of an FMP for summer flounder in late 1977. During the early discussions, it was recognized that a significant portion of the catch was taken from state waters. As a result, on March 17, 1978, a questionnaire was sent by the Council to east coast state fishery administrators seeking comment on whether the plan should be prepared by the Council or by the states acting through the Commission.

It was decided that the initial plan would be prepared by the Commission. The Council arranged for NMFS to make some of the Council's programmatic grant funds available to finance preparation of the Commission's plan. New Jersey was designated as the state with lead responsibility for the plan. The state/federal draft was adopted by the Commission at its annual meeting in October 1982. The original Council Summer Flounder FMP was based on the Commission's management plan. NMFS approved the original FMP on September 19, 1988.

Amendment 1 to the FMP was developed in the summer of 1990 solely to protect the 1989 and 1990 year classes by imposing a minimum net mesh size comparable to the 13-inch minimum fish size included in the original FMP. On February 15, 1991, the Council was notified that NMFS had approved the overfishing definition for summer flounder contained in Amendment 1 but had disapproved the minimum net mesh provision.

Amendment 2, which was fully implemented in 1993, was a comprehensive amendment designed to rebuild a severely depleted summer flounder stock. Amendment 2 was approved by NMFS on August 6, 1992. It contained a number of management measures to regulate the commercial and recreational fisheries for summer flounder. These included a rebuilding schedule, commercial quotas, recreational harvest limits, size limits, gear restrictions, and permit and reporting requirements. Amendment 2 also established the Summer Flounder Monitoring Committee, which meets annually to review the best available biological and fisheries data and make recommendations regarding the commercial quota, recreational harvest limit, and other management measures.

Amendment 3 to the Summer Flounder FMP was developed in response to fishermen's concerns that the demarcation line for the small mesh exempted fishery bisected Hudson Canyon, making it difficult to enforce. Amendment 3 revised the Northeast exempted fishery line to 72°30.0'W. In addition, Amendment 3 increased the large mesh net threshold to 200 lb during the winter fishery, November 1 to April 30. Furthermore, Amendment 3 stipulated that otter trawl vessels fishing from 1 May through 31 October could only retain up to 100 lb of summer flounder before using the large mesh net. Amendment 3 was approved by the Council on January 21, 1993, and submitted to NMFS on February 16, 1993.

Amendment 4 adjusted Connecticut's commercial landings of summer flounder and revised the state-specific shares of the coastwide commercial summer flounder quota as requested by the Commission. Amendment 5 allowed states to transfer or combine the commercial quota. Amendment 6 allowed multiple nets on Commission as long as they were properly stowed and changed the deadline for publishing the overall catch limits and commercial management measures to October 15 and the recreational management measures to February 15. Amendment 7 revised the fishing mortality rate reduction schedule for summer flounder.

The Council began the development of an FMP for black sea bass in 1978. Although preliminary work was done to support the development of an FMP, a plan was not

completed. Work on an FMP began again in January 1990 when the Council and the Commission began the development of an FMP for black sea bass. However, the development of a black sea bass plan was delayed through a series of amendments to the Summer Flounder FMP and work on a separate Black Sea Bass FMP was not resumed until 1993.

In 1996, NMFS requested that the black sea bass and scup regulations be incorporated into another FMP to reduce the number of separate fisheries regulations issued by the federal government. As a result, the Scup FMP and the Black Sea Bass FMP were incorporated into the summer flounder regulations as Amendment 8 and 9 (included EISs) to the Summer Flounder FMP, respectively. Amendment 8 established management measures for scup, and Amendment 9 established a management program for black sea bass. Both of these were major amendments that implemented a number of management measures for scup and black sea bass including commercial quotas, commercial gear requirements, minimum size limits, recreational harvest limits, and permit and reporting requirements.

The Council was notified at a June 1996 meeting that the Regional Director planned to disapprove the provision in Amendment 9 that would implement a state-by-state commercial quota. The official disapproval letter was dated July 16, 1996. In the letter, the Regional Director concluded that the state-by-state quota provision was not consistent with National Standard 7. Specifically, he stated that the provisions that apply to the area north of Cape Hatteras, North Carolina would impose significant administrative and enforcement costs on NMFS and the state of North Carolina. The letter referenced the fact that Cape Hatteras separates two distinct stocks of black sea bass, a northern stock that would be managed by Amendment 9 regulations and a southern stock regulated by the Snapper/Grouper FMP. The disapproval letter stated that the amendment failed to address how a commercial quota that bifurcated the state of North Carolina and only applied to the northern stock of black sea bass would be implemented. Based on these comments, the Council voted to replace the state-by-state quota system with a coastwide quota allocated in quarterly periods over the year.

Amendment 10 made a number of changes to the summer flounder regulations implemented by Amendment 2 and later amendments to the Summer Flounder, Scup and Black Sea Bass FMP. Specifically, this amendment modified the commercial minimum mesh regulations, continued the moratorium on entry of additional commercial vessels, removed provisions that pertain to the expiration of the moratorium permit, prohibited the transfer of summer flounder at sea, and established a special permit for party/charter vessels to allow the possession of summer flounder parts smaller than the minimum size. Amendment 11, approved by NMFS in 1998, was implemented to achieve consistency among Mid-Atlantic and New England FMPs regarding vessel replacement and upgrade provisions, permit history transfer, splitting, and renewal regulations for fishing vessels issued Northeast Limited Access federal fishery permits.

Amendment 12 was developed to bring the Summer Flounder, Scup, and Black Sea Bass FMP into compliance with the new and revised National Standards and other required

provisions of SFA. Specifically, the amendment revised the overfishing definitions (National Standard 1) for summer flounder, scup, and black sea bass and addressed the new and revised National Standards (National Standard 8 - consider effects on fishing communities; National Standard 9 - reduce bycatch; and National Standard 10 - promote safety at sea) relative to the existing management measures. The amendment also identified essential habitat for summer flounder, scup and black sea bass. In addition, Amendment 12 added a framework adjustment procedure that allows the Council to add or modify management measures through a streamlined public review process. Amendment 12 was partially approved on April 28, 1999.

Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP, which became effective March 31, 2003, established an annual (calendar year) coastwide quota to complement a state-by-state quota system adopted by the Commission for the commercial black sea bass fishery. This system replaces the quarterly quota allocation system previously in place (i.e., implemented in Amendment 9).

The historical management practices described above have resulted in positive impacts on stock health with the summer flounder, scup, and black sea bass stocks. The size of the stocks is expanding and summer flounder and black sea bass are no longer considered overfished as determined by the most recent stock assessments.

The cumulative impacts of this FMP were last fully addressed in the EIS for Amendment 13. All three species in the management units are managed primarily via annual quotas to control fishing mortality. This FMP requires a specifications process which allows for the review and modifications to management measures specified in the FMP on an annual basis. In addition, as mentioned previously, the Council added a framework adjustment procedure in Amendment 12 which allows the Council to add or modify management measures through a streamlined public review process.

Through development of the FMP and the subsequent annual specification process, the Council continues to manage these resources in accordance with the National Standards required under the Magnuson-Stevens Act. First and foremost the Council has met the obligations of National Standard 1 by adopting and implementing conservation and management measures that have prevented overfishing, while achieving, on a continuing basis, the optimum yield for the three species and the United States fishing industry. The Council uses the best scientific information available (National Standard 2) and manages these three resources throughout their range (National Standard 3). The management measures do not discriminate among residents of different states (National Standard 4), they do not have economic allocation as the sole purpose (National Standard 5), the measures account for variations in fisheries (National Standard 6), avoid unnecessary duplication (National Standard 7), they take into account the fishing communities (National Standard 8) and promote safety at sea (National Standard 10). Finally, the management measures are consistent with National Standard 9, which addresses bycatch in fisheries. Amendment 13 fully addresses how the management measures implemented to successfully manage these three species comply with the National Standards. Amendment 13 also addresses the fishing gear impacts to essential fish habitat. 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 Magnuson-Stevens Act through future FMP Amendments and actions, the Council will ensure that cumulative impacts of these actions will remain overwhelmingly positive for the ports and communities that depend on these fisheries, the Nation as a whole, and certainly for the resources.

In terms of Reasonably Foreseeable Future (RFF) Actions that relate to the federally managed summer flounder, scup, and black sea bass fisheries, the development of Amendment 14 and 15 to the Summer Flounder, Scup, and Black Sea Bass FMP and the proposed wind farm in Nantucket Sound warrant discussion. As described above, any FMP development would continue to manage these resources in accordance with the National Standards required under the Magnuson-Stevens Act. Amendment 14 has been developed to address rebuilding of the scup stock and will likely be implemented in 2008. This would be expected to result in positive biological impacts on scup; however, the direction and magnitude of impacts on habitat, protected resources, and socioeconomics cannot be predicted until further along in the development of the amendment. While the issues to be addressed in Amendment 15 are speculative, issues addressing allocation among states and user groups are likely to be included. As such, allocation issues are not expected to effect changes in coastwide effort or quota and would likely not result in biological, habitat, or protected resources impacts. There may, however, be socioeconomic impacts based on reallocation of quota and harvest limits to different states and/or user groups. For the proposed wind farm in Nantucket Sound to be permitted under the Mineral Management Service (MMS), the MMS will conduct examinations of potential biological, socioeconomic, and habitat impacts. It is possible that implementation of wind farms would limit fishery access to these areas, resulting in negative socioeconomic impacts. As such, it could also potentially result in positive biological, EFH, and protected resources impacts through creation of a fishery closed area.

Council staff determined that the five areas chosen for analysis (target species, non-target species, protected species, habitat, and socioeconomic impacts) are appropriate for the purpose of evaluating cumulative effects of the proposed action based on the environmental components that have been impacted historically by fishing and statutory requirements to complete assessments of these factors under the Magnuson-Stevens Act, Marine Mammal Protection Act, Endangered Species Act, and the Regulatory Flexibility Act. The areas are intentionally broad (e.g., one area is devoted to protected species rather than marine mammals and one is devoted to habitat rather than EFH) to allow for flexibility in assessing all potential environmental factors that are likely to be impacted by the action.

The discussion of the cumulative effects on these five areas will be based on the analysis of direct and indirect impacts in the Environmental Consequences section of this EA (sections 7.1 through 7.3) as well as on the discussion in this section of events outside of this action affecting the five areas.

7.5.2 Targeted Fishery Resources

First and foremost with these three species, the Council has met the obligations of National Standard 1 by adopting and implementing conservation and management measures that have prevented overfishing, while achieving, on a continuing basis, the optimum yield for the three species and the United States fishing industry. Summer flounder was considered overfished prior to implementation of management measures, and the status of this fishery has subsequently improved. For example, the summer flounder stock is at record levels, and the resource is no longer overfished, but overfishing is occurring relative to the biological reference points detailed in Amendment 12. The fishing mortality rate estimated for 2005 is 0.41, which is a significant decline from the 1.32 estimated for 1994 but above the threshold F of 0.28. Scup is considered overfished, but measures to rebuild the scup stock are being developed, and it is anticipated that the status of this fishery will subsequently improve. The scup relative exploitation rates have, however, declined from the 1995 value of 135.5 to single digit values in recent years. This relative index decreased to 9.0 in 2005. Finally, the black sea bass stock is considered overfished and overfishing was not thought to be occurring based on the last accepted peer-reviewed stock assessment.

Those past, present, and reasonably foreseeable future actions, whose effects may impact the summer flounder, scup, and black sea bass stocks have been positive overall. Past and present non-fishing actions which have the potential to have indirectly negative impacts on the habitat for these three species (such as offshore disposal of dredged materials, beach nourishment, marine transportation, etc.) are typically localized in nearshore areas and marine project areas where they occur. Therefore, the magnitude of those impacts on the summer flounder, scup, and black sea bass is expected to be limited. Non-fishing actions such as 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 resource is unquantifiable. 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 and present fishery management actions taken through the FMP and annual specification process have had a positive cumulative effect on the managed resource (see Section 4.1 and 7.5.1). It is anticipated that the future management actions, such as the proposed specifications in this document, will result in additional positive effects on the managed resources. The recreational management measures proposed for 2007 for each species are the status quo under the preferred alternatives. The proposed action provides continuity for the overall rebuilding schemes for each of the stocks, and should have indirectly positive impacts overall. Additional positive future actions include the implementation of a rebuilding plan for scup under Amendment 14, which would support the long-term sustainability of the scup stock and be consistent with the objectives of the FMP under the guidance of the MSFMCA. While issues to be addressed in Amendment 15 are speculative, it is likely these actions will directly or indirectly improve the status

of these three stocks. Actions taken through the FMP in the future which reduce and monitor bycatch, protect habitat, and protect ecosystem services on which summer flounder, scup, and black sea bass productivity depends could result in additional positive impacts. These impacts could be broad in scope. Overall, the past, present, and reasonably foreseeable future actions that are truly meaningful to the managed resources have had a positive cumulative effect.

Therefore, none of the proposed actions in this document would have any significant effect on the managed resources individually, or in conjunction with other anthropogenic activities.

7.5.3 Non-Target Species or Bycatch

There are significant recreational fisheries for summer flounder, scup, and black sea bass. A large portion of the summer flounder, scup, and black sea bass that are caught are released after capture. It is estimated that 10%, 15%, and 25% of the summer flounder, scup, and black sea bass, respectively, that are caught and released by anglers die after release, i.e., the majority of the fish are released alive and are expected to survive after release. The fish that survive are not defined as bycatch under the SFA. The Council and Commission believe that information and education programs relative to proper catch and release techniques for summer flounder, scup, black sea bass and other species caught by recreational fishermen should help to maximize the number of these species released alive.

Current recreational management measures could affect the discards of summer flounder, scup, and black sea bass. These measures include a possession limit, size limit, and season. The effects of the possession limit would be greatest at small limits and be progressively less at higher limits. The size limit would have similar effects, but the level of discarding will be dependent upon the levels of incoming recruitment and subsequent abundance of small fish. Seasonal effects would differ depending on the length of the season and the amount of summer flounder, scup, and black sea bass caught while targeting other species.

Minimum size limits, bag limits and seasons have proven to be effective management tools in controlling fishing mortality in the recreational fishery. A notable example of success using these measures for management is the Atlantic coast striped bass fishery. The recreational striped bass fishery is managed principally through the use of minimum size limits, bag limits and seasons. When these measures were first implemented, release rates in the recreational striped bass fishery exceeded 90%. However, the quick and sustained recovery of the striped bass stock after implementation of these measures provides evidence of their effectiveness in controlling fishing mortality in recreational fisheries.

The Council and Commission can currently implement annual changes in commercial and recreational management measures in response to changes in fishermen behavior or an increased level of discards through the annual specifications process. The framework

adjustment procedure implemented in Amendment 12 can be used to allow the Council and Commission to respond quickly to changes in the fishery through the implementation of new management measures or the modification of existing measures.

Those past, present, and reasonably foreseeable future actions, whose effects may impact non-target species have been positive overall. Past and present non-fishing actions which have the potential to have indirectly negative impacts on non-target species and their habitat (such as offshore disposal of dredged materials, beach nourishment, marine transportation, etc.) are typically localized in nearshore areas and marine project areas where they occur. 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. 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 (see Section 4.1 and 7.5.1). While the issues to be addressed in the upcoming development of Amendment 15 are unknown, these 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 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 proposed action is not expected to jeopardize the sustainability of any non-target species. All of the alternatives that are being considered are designed to constrain recreational landings to the recreational harvest limit specified through the FMP for the 2007 fishing year. The alternatives contain only changes to existing recreational management measures for summer flounder, scup, and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Bycatch of non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial. Furthermore, the preferred alternatives for summer flounder, scup, and black sea bass are the status quo measures. Therefore, none of the proposed management measures would have significant cumulative effects on non-target species by themselves or in conjunction with other anthropogenic activities.

7.5.4 Protected Species

There are numerous species which inhabit the environment within the management unit of this FMP that are afforded protection under the ESA of 1973 (i.e., for those designated as threatened or endangered) and/or the MMPA of 1972. Sixteen are classified as endangered or threatened under the ESA, while the remainders are protected by provisions of the MMPA. The Council examined the list (section 6.3 of the EA) of species protected by the ESA, the MMPA, or the Migratory Bird Act of 1918 that may be found in the environment utilized by the summer flounder, scup, and black sea bass fisheries.

The impacts of the summer flounder, scup, and black sea bass recreational fisheries upon endangered and threatened species and marine mammal populations are also described in detail in Amendment 13. As described in section 7.0 of the EA, in general, recreational fisheries have very limited interactions with marine mammals and endangered or threatened species. However, recreational fishermen do contribute to difficulties for endangered and threatened marine species in that it is estimated that recreational fishermen discard over 227 million lb (103 million kg) of litter each year (O'Hara et al. 1988). More than nine million recreational vessels are registered in the United States. The greatest concentrations of recreational vessels in the United States are found in the waters off New York, New Jersey, the Chesapeake Bay, and Florida (O'Hara et al. 1988). Recreational fishermen are also a major source of debris in the form of monofilament fishing line. The amount of fishing line lost or discarded by the 17 million U.S. fishermen during an estimated 72 million fishing trips in 1986 is not known, but if the average angler snares or cuts loose only one yard of line per trip, the potential amount of deadly monofilament line is enough to stretch around the world (O'Hara et al. 1988).

Changes in overall fishing effort as a result of changes in recreational harvest limits, possession and size limits, and seasons are unknown. However, because the alternatives discussed in this document are not expected to cause large changes in fishing effort, it is concluded that they will not affect endangered and threatened species in any manner not considered in prior consultations. None of the proposed quotas or other management measures would have significant cumulative effects on protected resources by themselves or in conjunction with other anthropogenic activities.

7.5.5 Habitat (Including EFH Assessment)

The environment in which these fisheries are prosecuted was described in Amendment 13, section 3.2.4. The fishery management unit for summer flounder is from Maine to the southern border of North Carolina and from Maine to Cape Hatteras, North Carolina for scup and black sea bass. A brief description of the physical environment is presented in section 6.2 of the EA.

The principal gears used in the recreational fishery for summer flounder, scup, and black sea bass are rod and reel and handline.. The potential adverse impacts of these gears on EFH for any of the federally-managed species in the region are minimal (see section 6.2).

The measures in this specifications document do not contain major changes to existing management measures and are not expected to result in changes in fishing effort. None of the proposed quotas or other management measures would have significant cumulative effects on habitat by themselves or in conjunction with other anthropogenic activities.

7.5.6 Socioeconomic

National Standard 8 requires that management measures take into account the fishing communities. The ports and communities that are dependent on summer flounder, scup, and black sea bass are fully described in Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP (section 3.4.2). The top commercial landings ports for summer flounder, scup, and black sea bass by pounds landed and related data for the recreational fisheries are described in section 6.5 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. However, due to the nature of the recreational database (MRFSS), it is inappropriate to desegregate to less than state levels. Thus, port-level recreational data are not shown.

The ports and communities involved in these fisheries will positively benefit from the proposed management measures presented in this document. With regard to the specific recommendations proposed in this document (i.e., size limits, possession limits, and seasons), impact to the affected biological and physical and socioeconomic environment are described in section 7.0. Given that no negative impacts are anticipated to result from the preferred alternatives, the synergistic interaction of improvements in the efficiency of the fishery is expected to generate positive impacts overall. These impacts will be felt most strongly in the social and economic dimension of the environment. Direct economic and social benefit from improved fishery efficiency is most likely to affect participants in the summer flounder, scup, and black sea bass fisheries.

Socioeconomic Impacts

Although the management measures established by the Council for summer flounder, scup, and black sea bass are implemented on a species-by-species basis to examine the overall impacts of the proposed actions, the measures must be considered simultaneously. Thus, an evaluation of the potential combinations of alternatives across species is provided in this section. This evaluation contains an assessment of the total number of projected recreational fishing trips by mode that would be affected from implementation of all combinations of proposed management measures. In addition, the potential short-run reduction in reduced angler expenditures and associated regional losses (sales, income, and employment) to businesses that supply goods and services to saltwater fishermen was explored for all potential management combinations of alternatives.

It is important to note that the analysis presented below was based on a recreational harvest limit for summer flounder in 2007 of 5.19 million lb (2.35 million kg) as established under 71 FR 75134 (December 14, 2006). However, as indicated in section 5.1, an emergency rule effective as of January 19, 2007 (72 FR 2458; January 19, 2007), increased the recreational harvest limit to 6.85 million lb (3.11 million kg). At the time

the preparation of this specifications package began, the emergency rule was not yet in place such that analysis of impacts was conducted on the lower quota as published on December 14, 2006. Therefore, in the sections below, any impacts anticipated for summer flounder under the emergency rule recreational harvest limit (effective January 19, 2007) would be less than described below.

Projected data from MRFSS indicate that 36,979,228 fishing trips were taken in the Northeast Region (Maine-North Carolina) in 2006. It is estimated that the number of trips by fishing mode was 1,898,485 party/charter boat trips, 18,689,616 private/rental boat trips, and 16,391,127 shore trips (Table 32).

Affected Effort

Assuming angler effort in 2007 will be the same as that estimated for 2006, fishing impacts were examined by estimating the number of recreational fishing trips in 2006 that would have been affected by the 2007 management measures proposed for all three species. All 2006 fishing trips that would have been constrained by the proposed 2007 measures in the Northeast Region were considered to be “affected” trips. To date, the first five waves of MRFSS effort data are available for 2006 (January - October). Wave six effort estimates for 2005 (November - December) were used as a proxy for wave six 2006 effort.

Of the potential 18 combinations of alternatives across species that could be analyzed, the measures proposed under the summer flounder precautionary default, scup alternative 1, and black sea bass alternative 2 (when considered together), are predicted to affect the fewest number of party/charter boat trips in the Northeast Region in 2007 (118,476; Table 45). The same combinations of alternatives are also estimated to have the lowest overall effect on private/rental boat fishing effort and shore fishing effort in 2007. However, there are other combinations of alternatives for both private/rental fishing and shore fishing that result in the same estimate of affected trips.

It is worth noting that since the management measures under summer flounder alternative 1 (i.e., conservation equivalency) have yet to be adopted the effort effects of this alternative could not be analyzed in conjunction with the alternatives proposed for scup and black sea bass. Since conservation equivalency allows each state to tailor specific recreational fishing measures to the needs of their state, while still achieving conservation goals, it is likely that the measures developed under summer flounder alternative 1 when considered in combination with the measures proposed for scup and black sea bass would have lower, overall adverse effects on fishing effort in 2007 than any of the combinations that could be analyzed.

The percent of total party/charter boat trips in the Northeast Region that are estimated to be affected by the proposed actions ranges from a low of 6.24% for the combination of measures proposed under the summer flounder precautionary default, scup alternative 1, and black sea bass alternative 2 to 7.30% for the measures proposed under summer flounder alternative 2 combined with scup alternative 2 and black sea bass alternative 3

(Table 45). Affected private/rental effort ranges from a low of 6.25% of total private/rental trips (under 6 different combinations of alternatives) to 6.52% of total private/rental effort (under 3 different combinations of alternatives). The number of affected shore fishing trips under the 18 different combinations of alternatives analyzed in this analysis are virtually identical. Estimated affected shore fishing trips ranges from a low of 0.60% of total shore trips (under 12 different combinations of alternatives) to 0.62% (under the remaining 6 combinations of alternatives).

Unfortunately, no empirical information is available to determine how sensitive the affected anglers might be to the proposed regulations. Will the affected angler trip taking behavior remain unchanged or will the harvest restrictions result in anglers taking fewer fishing trips - or no recreational trips at all if suitable alternative target species are unavailable? Although the potential changes in trip-taking behavior cannot be quantified, it is not likely that the new measures will have a significant negative effect on the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Although some of the affected anglers may reduce their overall fishing effort in response to the 2007 regulations, it is expected that most anglers will continue to fish as they did in 2006. The proposed regulations will likely result in changes to the number and size of the fish that can be landed, but they will not prohibit anglers from keeping at least some of the fish they catch or from engaging in catch and release fishing. Many of the anglers that choose to reduce their summer flounder, scup, or black sea bass effort in 2007, in response to the new regulations, are likely to transfer this effort to alternative species resulting in very little change in overall fishing effort. However, recreational harvest restrictions for many 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. Nevertheless, if there is a net reduction in fishing trips in 2007, economic losses may accrue to businesses that support marine recreational activities. The next section describes the procedures used to estimate the potential losses to these supporting businesses.

Short-term regional economic impacts

An input-output model was employed to assess the potential economic losses (sales, income, and employment) associated with implementation of all combinations of the proposed management alternatives to businesses that support marine recreational fishing activities in the Northeast Region. Reductions in sales, income, and employment could occur in the Northeast Region if the affected anglers reduce fishing effort, and hence, expenditures, in response to the new regulations. Since it is unknown how anglers' trip taking behavior will change upon implementation of the proposed regulations, economic losses were estimated for two hypothetical scenarios: (1) a 25% reduction in the number of fishing trips that are predicted to be affected by implementation of the management measures in the Northeast Region; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region.

Reductions in anglers' trip-related purchases will have a direct effect on the sales, income, and employment of businesses that supply goods and services to saltwater fishermen. Businesses providing these goods and services must also purchase goods and services and hire employees, which in turn, will affect the sales, income, and employment of many additional businesses.

Three levels of economic impacts result from purchases by saltwater fishermen: (1) direct, (2) indirect, and (3) induced. Direct effects occur when anglers spend money at retail and service-oriented fishing businesses (e.g., purchases of ice at convenience stores or access fees paid to owners of for-hire vessels). Indirect effects occur as the retail and service sectors purchase fishing supplies from wholesale trade businesses and manufacturers and pay operating expenditures (e.g., the retailer must purchase fishing rods from the manufacturer or wholesaler and pay electric bills). These secondary industries must then, in turn, purchase additional supplies and this cycle of industry to industry purchasing continues until the amount remaining within the region of interest is negligible. Finally, induced effects result when employees of the direct and indirect sectors make purchases from retailers and service establishments in the normal course of household consumption (e.g., convenience store employees spend money on groceries and pay federal and state taxes). The summation of direct, indirect, and induced effects are total effects.

Data and Methods

Input-output (I/O) analysis is the most common approach available for determining the direct, indirect, and induced effects associated with an overall change in economic activity in a particular region. For the analysis presented here, a ready-made regional I/O modeling system called IMPLAN Pro (Impact Analysis for Planning) was used to determine the economic losses associated with the hypothetical reductions in fishing trips under all 18 potential combinations of alternatives. The IMPLAN Pro system is a widely used, nationally recognized tool that provides detailed purchasing information for 509 industrial sectors and a user-friendly media for customizing input-output models to specific applications (Minnesota IMPLAN Group, Inc. 2001).

Angler expenditures in the Northeast Region by state and mode for marine fishing were obtained from Steinback and Gentner (2001). These expenditure data were produced from extensive surveys of marine recreational fishermen in the Northeast Region in 1998 (Table 46). The surveys were conducted as part of the MRFSS. Average fishing trip expenditures were provided for each state and mode of fishing (i.e., private boat, party/charter, and shore) in the Northeast region in 1998. Trip-related expenditure categories shown in the report included food, lodging, travel costs, boat fuel, party/charter fees, access or boat launching fees, equipment rental, bait, and ice. In addition to trip-related expenditures, Steinback and Gentner (2001) also estimated anglers' expenditures for semi-durable items (e.g., rods, reels, lines, clothing, etc.) and durable goods (e.g., motor boats, vehicles, etc.). However, expenditures for these items are not likely to change after implementation of the proposed regulations since semi-durable and durable items can be used for many fishing trips. Thus, in the analysis

presented here, it is assumed that the proposed management measures will only affect anglers' trip-related expenditures.

The economic losses associated with reductions in angler expenditures were estimated by applying the product of the estimated number of affected trips and the average trip expenditure estimates from Steinback and Gentner (2001) to the appropriate IMPLAN sector multipliers in each state. The multipliers measure the direct, indirect, and induced relationships between industries and households. Input-output models require all values to be in producer prices (manufacturer prices) so each of the angler expenditure categories was associated with its corresponding IMPLAN producing sector. In IMPLAN, margins are used to convert the retail-level prices paid by anglers into the appropriate producer values. Margins ensure that the correct value is assigned to products as they move from producers, to wholesalers, through the transportation sectors, and finally on to retail establishments.

Potential economic losses are estimated for sales, income, and employment. Sales reflect the aggregate reductions in total dollar sales generated from expenditures by anglers in the Northeast Region. Income represents the aggregate reductions in wages, salaries, benefits, and proprietary income generated from angler expenditures across the coastal states in the Northeast Region. Employment includes both full-time and part-time workers and is expressed as aggregate reductions in total jobs across states.

Results

The projected regional economic losses associated with the hypothetical reductions in affected marine recreational fishing trips are shown in Tables 47 (assumes a 25% reduction in affected trips) and 48 (assumes a 50% reduction in affected trips). In total, the projected sales, income, and employment losses to the Northeast Region vary little across combinations of alternatives. For a 25% reduction in affected fishing trips, total losses to the Northeast region range from \$31.411 million to \$33.217 million in sales, \$11.463 million to \$12.123 in income, and between 308 and 325 jobs (Table 47). The estimated losses are approximately twice as high if a 50% reduction in affected trips is assumed to occur (Table 48).

Across all combinations of alternatives, approximately 82% of the total sales, income, and employment losses is projected to be generated by anglers fishing from private/rental boats. Losses associated with reductions in party/charter effort comprise approximately 13% of potential region-wide reductions, while the remaining 5% is associated with shore mode effort changes. This large disparity in losses across modes is generally due to the fact that the measures proposed under all combinations of alternatives are projected to affect substantially more private/rental boat trips than party/charter and shore trips.

Summary

The measures proposed under all combinations of alternatives will affect a portion of the recreational fishing trips that catch summer flounder, scup, and black sea bass.

Unfortunately, although we can generally predict how many trips will be affected by the proposed measures, it is unknown how anglers' trip taking behavior will change in response to the additional restrictions. If the measures result in an overall reduction in angler effort, expenditures associated with these trips will be foregone, and reductions in sales, income, and employment will occur for businesses that supply goods and services to saltwater fishermen. In addition, the sales, income, and employment of many businesses that supply the directly affected businesses could also decline. On the other hand, if the proposed measures do not induce a change in overall angler effort, total angler expenditures would remain unchanged, and there would be no effect on supporting businesses.

Given the uncertainty surrounding how anglers will respond to the proposed measures, total potential reductions in sales, income, and employment to businesses in the coastal states of the Northeast Region are estimated for two hypothetical scenarios: (1) a 25% reduction in the number of fishing trips that are predicted to be affected by implementation of the management measures; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected. Losses are estimated for all 18 combinations of alternatives that could be analyzed. The measures proposed under summer flounder alternative 1 could not be analyzed in combination with the measures proposed for scup and black sea bass because this alternative would implement conservation equivalent measures that are yet to be determined.

The projected economic losses shown in this assessment do not capture losses borne by individual anglers. The input-output approach followed in this analysis projects the change in goods and services produced by different businesses that are linked to purchases by marine anglers, but it does not provide estimates of angler welfare losses. These welfare losses are generally defined as the additional value above opportunity costs (usually taken to be expenditures of time and money) that anglers would be willing to pay in order to fish.

Long-term Cumulative Effects

Long-term effects of each of these management alternatives are clear: stocks of summer flounder, scup, and black sea bass will rebuild as a result of the accumulated effects of these measures applied over time. Although the long-term effects of these alternatives are less clear or quantifiable from a social and economic perspective, rebuilt stocks would presumably provide anglers with the ability to increase catch and possibly keep rates resulting in higher overall welfare benefits to anglers and the Nation as a whole.

Impacts Associated with Future Management Actions

While the measures to achieve rebuilding are expected to result in positive economic benefits to anglers and to businesses that support marine recreational activities in the long-term, some effects of short-term declines in revenues, jobs, and income may be irreversible, prohibiting economic growth during later years when the resources have been rebuilt. For instance, if party/charter boat anglers reduce their trip taking behavior

as the industry is further restricted to meet rebuilding requirements; gentrification could begin to replace segments of the party/charter boat industry and the related land-based infrastructure. The process of gentrification transforms working harbors into upscale areas primed for recreation and tourism, replacing infrastructure that supports the party/charter industry and shore and private boat anglers (i.e., bait and tackle shops) with waterfront housing, entertainment, and dining establishments or other facilities. Among the businesses and industry support structures that may be eliminated are party/charter operations, bait and tackle suppliers, provisioners of food, ice, fuel, and boat rental businesses, etc. As shoreline property prices rise, the economic viability of these industries is becoming increasingly strained. If fishing regulations result in lower angler participation, the possibility exists that this infrastructure may be permanently replaced by new entities with alternative functions. Hall-Arber et al. (2001) noted that “if the facilities as well as the stocks are not protected, once the biophysical capital rebounds, communities that are dependent on [these] facilities...will not be able to take advantage of the improved stock conditions to generate fisheries capital for the region and nation.” These structural changes to the economy and physical composition of fishing communities are accompanied by delocalization, or the loss of localized community character and culture (Hall-Arber et al. 2001). Long-standing traditions and close-knit alliances that unite fishing communities and families may cease to exist.

The management alternatives proposed for 2007 do not introduce measures that specifically seek to mitigate these problems of infrastructure loss and the changing culture of fishing communities. However, if the mortality targets established in the FMP continue to be achieved over the long-term, it is not expected that recreational fishing opportunities for summer flounder, black sea bass, and scup will be significantly impacted. If recreational landings are estimated to exceed the annual targets, management measures are adjusted to reduce the harvest in the following year to the specified level. Thus, the annual specification process provides frequent checks and balances to maintain rebuilding goals which reduces the likelihood of wide-sweeping management changes and therein the loss of recreational fishing infrastructure.

Reasonably foreseeable future federal actions include additional or revised fishing regulations, both for the summer flounder, scup, and black sea bass fisheries and for other species that marine recreational fishermen target. For example, future regulations implemented under the Northeast Multispecies FMP may induce party/charter boat operators to switch from targeting Atlantic cod and haddock on some of their trips to targeting summer flounder, scup, or black sea bass. This may have a negative effect on rebuilding goals and cause increased competition within party/charter fishing communities dependent on summer flounder, scup, and black sea bass. Additional Federal actions could also have indirect impacts on recreational fishing communities reliant on these species. Federal decisions on offshore petroleum access and the placement of inshore/offshore wind farms, for example, could have either a positive or negative effect on landings and access to summer flounder, scup, and black sea bass stocks.

Historical Account of Overages

Although the measures proposed in this EA are only for the year 2007 fisheries, these measures have the potential to result in cumulative impacts on the environment. 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.

The management schemes established by the Council for summer flounder, scup, and black sea bass in the FMP, as previously analyzed in each species' respective EIS, recognize that management measures and fishery specifications established in one fishing year have implications for the measures that follow in subsequent years. In order to end overfishing and remedy the overfished status of these stocks, the Council developed rebuilding programs that have stock biomass targets. To achieve rebuilding, the Council recommends annual specifications that are intended to have a reasonable likelihood of not exceeding the specified target F_s for the coming fishing year. Because of the nature of the fisheries (e.g., the landing of these species over in a large number of coastal states) and the inherent time lags encountered in collecting landings that are necessary to make final determinations of actual landings, there is always the possibility that some harvest quotas may be unintentionally exceeded before the information to close that portion of the fishery is available. On the other hand, in a given year the recreational harvest limit may not be achieved. A detail account of the commercial and recreational overages was presented in section 7.5.6 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications.

As previously indicated, overages in the recreational fishery are addressed by way of changes in management measures to reduce the harvest in the following year to the specified level. Thus, the FMP and the annual specifications anticipate the possibility that landings may exceed targets in any given year and provide a remedy that at least partially compensates for such occurrences in terms of maintaining the conservation goals of the FMP and the rebuilding programs, thus mitigating the impacts of those overages. The annual nature of the management measures is intended to provide the opportunity for the Council and NMFS to assess regularly the status of the fisheries 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 rebuilding programs under the FMP began in 1993, 1997, and 1998 for summer flounder, scup, and black sea bass, respectively. Because each year's measures build upon the previous year's measures, the cumulative effects of the management program on the health of the stocks and the fishery are assessed from year to year. Projected recreational landings in a given year are used by the Council in recommending recreational management measures for each species in the following year. The Council and NMFS consider angler effort and success, stock availability and the target harvest limits in establishing recreational measures for the upcoming year, including size limits, seasons, and bag limits. The recreational fisheries have target harvest levels, which do

not require the fishery to be closed when attained, as compared to the commercial fishing quotas, which do require the fishery to be closed when the quota is attained. Recreational harvest limits, total landings, and total overages for each of the three recreational fisheries have been as follows (weight in million lb):

Summer Flounder

| <u>Year</u> | <u>Harvest Limit</u> | <u>Landings</u> | <u>Overages (+)/Underages (-)</u> |
|-------------|----------------------|--------------------|-----------------------------------|
| 1995 | 7.76 | 5.42 | -2.34 |
| 1996 | 7.41 | 9.82 | +2.41 |
| 1997 | 7.41 | 11.87 | +4.46 |
| 1998 | 7.41 | 12.48 | +5.07 |
| 1999 | 7.41 | 8.37 | +0.96 |
| 2000 | 7.41 | 16.47 | +9.06 |
| 2001 | 7.16 | 11.64 | +4.48 |
| 2002 | 9.72 | 8.01 | -1.71 |
| 2003 | 9.28 | 11.64 | +2.36 |
| 2004 | 11.21 | 10.99 | -0.22 |
| 2005 | 11.98 | 11.17 | -0.81 |
| 2006 | 9.29 | 12.26 ^a | +2.97 ^a |

^a Projected

Scup

| <u>Year</u> | <u>Harvest Limit</u> | <u>Landings</u> | <u>Overages (+)/Underages (-)</u> |
|-------------|----------------------|-------------------|-----------------------------------|
| 1997 | 1.95 | 1.20 | -0.75 |
| 1998 | 1.55 | 0.88 | -0.67 |
| 1999 | 1.24 | 1.89 | +0.65 |
| 2000 | 1.24 | 5.44 | +4.22 |
| 2001 | 1.77 | 4.26 | +2.49 |
| 2002 | 2.71 | 3.62 | +0.91 |
| 2003 | 4.01 | 8.48 | +4.47 |
| 2004 | 3.99 | 4.41 | +0.42 |
| 2005 | 3.96 | 2.67 | -1.29 |
| 2006 | 3.99 | 4.29 ^a | +0.30 ^a |

^a Projected

Black Sea Bass

| <u>Year</u> | <u>Harvest Limit</u> | <u>Landings</u> | <u>Overages (+)/Underages (-)</u> |
|-------------|----------------------|-------------------|-----------------------------------|
| 1997 | N/A | 4.27 | N/A |
| 1998 | 3.15 | 1.15 | -2.00 |
| 1999 | 3.15 | 1.70 | -1.45 |
| 2000 | 3.15 | 3.99 | +0.84 |
| 2001 | 3.15 | 3.42 | +0.27 |
| 2002 | 3.43 | 4.35 | +0.92 |
| 2003 | 3.43 | 3.29 | -0.14 |
| 2004 | 4.01 | 1.67 | -2.34 |
| 2005 | 4.13 | 2.01 | -2.12 |
| 2006 | 3.99 | 1.70 ^a | -2.29 ^a |

^a Projected

Even though the recreational overage cannot be deducted from the TAL, the total overage factors into the cumulative impact on the stocks. Recreational overages in a given year or period have two expected impacts. First, overages result in lower harvest levels in the following year or period for that portion of the fishery than would otherwise have been allowed. In the recreational fisheries, overages in one year may result in lower bag limits, larger minimum size limits, and/or shorter seasons than would otherwise have been allowed had the overages not occurred. Increased harvests in one year are thus “paid back” by decreased harvest opportunities the next year. Recreational fishing opportunities for those fishermen not desiring to keep their catch of these species would be affected little, if any, by such occurrences.

The second possible result of recreational overages is the potential that the annual F targets of the FMP will not be met and/or that the rebuilding schedule will be delayed. The significance of any such delays depends on the magnitude of the overages and their resultant impact on the stock size and age structure. While it is not possible to quantify those effects precisely, the fact that the FMP’s management regime takes into account the overages and the current status of the stocks in setting the specifications for the next year mitigates any such impacts.

Projected estimates of recreational landings indicate that there will be overages in the summer flounder (2.97 million lb) and scup (0.30 million lb) fisheries in 2006. No overages are expected in the black sea bass fishery for 2006. In 2005, none of these fisheries experienced any recreational overages. The Council and NMFS recognize that overages in any of the fisheries would have additional negative impacts on the rate of rebuilding. Given the history of the summer flounder, scup, and black sea bass fisheries, the mitigating influence of annual overage adjustments, and the fact that the stocks have shown continued improvement during the rebuilding period despite the overages that have occurred, the cumulative impacts of overages are not considered to be significant. Likewise, the impacts of any overages that might occur in 2007 as a result of these fishery specifications are also not considered to be significant.

7.5.7 Conclusions

None of the proposed management measures will have significant cumulative effects on the target species or non-target species individually or in conjunction with other anthropogenic activities. The proposed actions, together with past, present, and future actions, are expected to result in positive cumulative impacts on the biological, physical, and human components of the environment. As long as management continues to prevent overfishing and continue the rebuilding process, the fisheries and their associated communities will prosper.

This action builds on actions taken in the original FMP, subsequent amendments, and the annual specification process for the 2007 fishing year. Based on the information and analyses presented in these documents and this document, there are no significant cumulative effects associated with the proposed summer flounder, scup, and black sea bass recreational specifications.

8.0 ESSENTIAL FISH HABITAT ASSESSMENT

Summer flounder, scup and black sea bass have EFH designated in many of the same bottom habitats that have been designated as EFH for most of the MAFMC managed species of surfclams/ocean quahogs, squid/mackerel/butterfish, bluefish, and dogfish, as well as the New England Fishery Management Council species of groundfish within the Northeast Multispecies FMP, including: Atlantic cod, haddock, monkfish, ocean pout, American plaice, pollock, redfish, white hake, windowpane flounder, winter flounder, witch flounder, yellowtail flounder, Atlantic halibut, and Atlantic sea scallops. Numerous species within the NMFS Highly Migratory Species Division and the South Atlantic Fishery Management Council have EFH identified in areas also identified as EFH for summer flounder, scup and black sea bass. Broadly, EFH is designated as the pelagic and demersal waters along the continental shelf from off southern New England through the south Atlantic to Cape Canaveral, Florida. The specific identification and description of summer flounder, scup, and black sea bass habitat is detailed in section 3.2.4 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP.

Summer flounder, scup, and black sea bass are demersal species that have associations with substrates, submerged aquatic vegetation, and structured habitat (Packer and Griesbach 1999, Steimle et al. 1999 a-b). Specific habitats that are important to these species and are designated as EFH are as follows:

Summer Flounder: pelagic waters, demersal waters, saltmarsh creeks, sea grass beds, mudflats, open bay areas

Scup: demersal waters, sands, mud, mussel and eelgrass beds

Black Sea Bass: pelagic waters, structured habitat (e.g., sponge beds), rough bottom shellfish, sand and shell

The EFH Final Rule (50 CFR Part 600.920) requires that “for any Federal action that may adversely affect EFH, Federal agencies must provide NMFS with a written assessment of the effects of that action on EFH.” The following assessment fulfills this requirement. Under the EFH Final Rule, “Councils must act to prevent, mitigate, or minimize any adverse effect from fishing, to the extent practicable, if there is evidence that a fishing activity adversely affects EFH in a manner that is more than minimal and not temporary in nature...”. “Adverse effect” means any impact that reduces the quality or quantity of EFH.

The principal gear types used in the recreational fishery for summer flounder, scup, and black sea bass are rod and reel and handline. According to information presented in section 6.2 of the EA, the potential adverse impacts of these two gear types on EFH for any federally-managed species in the Northeast region are minimal. Although quantification of specific gear types on various bottom habitats is poorly understood, rod and reel and handlines are generally not associated with adverse EFH impacts because the gear does not alter bottom structure.

The proposed 2007 summer flounder, scup, and black sea bass recreational management measures are similar to those specified for 2006. However, a change in quota is not necessarily directly proportional to a change in fishing effort (MAFMC 2005). As discussed in the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications document (section 6.1.3), the overall quotas for 2007 were determined to produce minimal to no increased habitat impacts. The recreational measures in this document do not contain major changes to existing management measures. Changes in overall fishing effort as a result of changes in recreational measures (i.e., via a reduced possession limit, larger minimum fish size, or closed season) are unknown. Because the proposed alternatives in this document are not expected to cause large changes in fishing effort, and because the principal gears used in the recreational fishery for these three species only minimally impact EFH, it is concluded that the proposed action will not have any adverse impact on EFH affect critical habitat in any manner not considered in prior consultations. Since the proposed recreational management measures for each species are a balance of meeting the FMP objectives of improving yield while ensuring that overfishing does not occur and due to the lack of direct evidence to suggest that fishing effort on bottom habitats will actually increase due to this action, It is therefore expected that this action will continue to minimize the adverse effects of this fishery on EFH to the extent practicable, pursuant to section 305(a)(7) of the Magnuson-Stevens Fishery Conservation and Management Act.

9.0 OTHER APPLICABLE LAWS

9.1 NEPA

Finding of No Significant Impact

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 CFR 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?

The proposed action is not expected to jeopardize the sustainability of any target species that may be affected by the action, as described in section 7.0 of the EA. As specified in the FMP, this proposed action is intended to maintain recreational landings to achieve the $F = 0.276$ target for summer flounder, a 21% target exploitation rate for scup, and a 25% target exploitation rate for black sea bass.

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

The proposed action is not expected to jeopardize the sustainability of any non-target species. All of the alternatives that are being considered are designed to constrain recreational landings to the recreational harvest limit specified through the FMP for the 2007 fishing year. The alternatives contain only changes to existing recreational management measures for summer flounder, scup, and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Bycatch of non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial. Furthermore, the preferred alternatives for summer flounder, scup, and black sea bass are the status quo measures.

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. The area affected by the proposed action in the summer flounder, scup, and black sea bass fisheries has been identified as EFH for species managed by the Northeast Multispecies; Atlantic Sea Scallop; Spiny Dogfish; Atlantic Mackerel, Squid, and Butterfish; Atlantic Surfclam and Ocean Quahog; Bluefish; Atlantic Billfish; Spiny Dogfish; Monkfish; Atlantic Tunas, Swordfish and Sharks; Calico Scallop; Wreckfish; King and Spanish Mackerel; Atlantic Coast Red Drum; Shrimp; Stone Crab; Snapper-Grouper of the South Atlantic; Coral and Coral Reefs of the Gulf of Mexico and the South Atlantic; and Coastal Migratory Pelagic Resources of the Gulf of Mexico and the South Atlantic FMPs. The primary gear utilized in the recreational harvest of summer flounder, scup, and black sea bass is rod and reel or handline. Although quantification of specific gear types on various bottom habitats is

poorly understood, rod and reel and handlines are generally not associated with adverse impacts because the gear does not alter bottom structure. Finally, because each of the alternatives does not contain major changes to existing management measures, it is concluded that the alternatives will not result in significant impacts to the environment (section 6.2 of the EA).

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

The proposed action is not expected to have a substantial adverse impact on public health or safety. Each of the alternatives contains only changes to existing management measures (i.e., recreational minimum fish size, recreational possession limit and recreational seasons). Management alternatives will be selected to achieve the recreational harvest limits and to provide a reasonable balance among size limits, seasons and possession limits, so as not to compromise public health or safety.

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

The proposed action is not reasonably expected to have an adverse impact on endangered or threatened species, marine mammals, or critical habitat for these species. The interaction between protected species and the gear used in the recreational summer flounder, scup, and black sea bass fisheries is minimal. As stated in section 6.3 of the EA, the activities to be conducted under the proposed annual recreational specifications are within the scope of the FMP and do not change the basis for the determinations made in previous consultations.

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. As specified in the FMP, this proposed action is intended to reduce recreational landings to achieve the $F = 0.276$ target for summer flounder, a 21% target exploitation rate for scup, and a 25% target exploitation rate for black sea bass. The alternatives contain only changes to existing recreational management measures for summer flounder, scup, and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Bycatch of non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial. Furthermore, the preferred alternatives for summer flounder, scup, and black sea bass are the status quo measures. The proposed action will likely ensure biodiversity and ecosystem stability over the long-term as the species continue to rebuild.

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

As discussed in section 7.0 of the EA, the proposed action is not expected to result in significant social or economic impacts, or in significant natural or physical environmental effects. Therefore, there are no significant social or economic impacts interrelated with significant natural or physical environmental impacts.

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

Measures contained in this EA are not expected to be controversial. The proposed action would implement measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. The proposed action is based on measures contained in the FMP, which have been in place for many years.

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 proposed annual management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. These recreational 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 management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. The measures contained in this action are not expected to have highly uncertain, 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 7.5, 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 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 management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. These summer flounder, scup, and black sea bass recreational 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 annual management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. There is no evidence or indication that these fisheries have ever resulted in the introduction or spread of nonindigenous species. None of the specifications are expected to alter fishing methods or activities in the recreational fishery. Therefore, it is highly unlikely that the proposed specifications 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 annual management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. None of the specifications are expected to alter fishing methods or activities in the recreational fishery. The proposed action is based on measures contained in the FMP, which have been in place for many years. None of these specifications result in significant effects or 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 annual management measures for the upcoming fishing year to achieve the recreational harvest limits for summer flounder, scup, and black sea bass in 2007, as specified through the FMP. None of the specifications are 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 9.2 - 9.9 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 proposed action is not expected to result in cumulative adverse effects that could have a substantial effect on target or non-target species. All of the alternatives that are being considered are designed to achieve the recreational harvest limit specified through the FMP for the 2007 fishing year. The alternatives contain only changes to existing recreational management measures for summer flounder, scup, and black sea bass, including the minimum recreational fish size, recreational possession limit and recreational season for each of the species. Furthermore, bycatch of target and non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial. Therefore, the proposed action is not expected to result in any cumulative adverse effects to target or non-target species.

DETERMINATION

In view of the information presented in this document and the analysis contained in the supporting Environmental Assessment prepared for the 2007 Summer Flounder, Scup, and Black Sea Bass Recreational 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 supporting 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.

Assistant Administrator for Fisheries, NOAA

Date

9.2 Endangered Species Act

Sections 6.3 and 7.5.4 of the EA 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.

9.3 Marine Mammal Protection Act

Sections 6.3 and 7.5.4 of the EA 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.

9.4 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 must determine whether the FMP will affect a state's coastal zone. If it will, the FMP must be evaluated relative to the state's approved CZM program to determine whether it is consistent to the maximum extent practicable. The states have 60 days in which to agree or disagree with the Council's evaluation. If a state fails to respond within 60 days, the state's agreement may be presumed. If a state disagrees, the issue may be resolved through negotiation or, if that fails, by the Secretary. The Council determined that the action in this specifications package is consistent to the maximum extent practicable with the enforceable provisions of the approved coastal management programs as understood by the Council. This determination was submitted for review by the responsible state agencies on February 6, 2007, under section 307 of the Coastal Zone Management Act. Letters were sent to each of the following states within the management unit reviewing the consistency of the proposed action relative to each state's Coastal Zone Management Program: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. To request a copy of the letter or a list of the CZM contacts within each state, contact Daniel T. Furlong at the Mid-Atlantic Fishery Management Council, Room 2115 Federal Building, 300 South New Street, Dover, Delaware 19904-6790, Telephone: (302) 674-2331, Fax: (302) 674-5399.

9.5 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 an 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 a fishery management plan 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 proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2007 Summer Flounder, Scup, and Black Sea Bass Specifications) 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 18, 2006, and during the MAFMC Council meetings held on August 2-4, 2006, and December 12-14, 2006. In addition, the public will have further opportunity to comment on this specifications package once NMFS publishes a request for comments notice in the Federal Register.

9.6 Section 515 (Data Quality Act)

Utility of Information Product

The proposed document includes: A description of the proposed 2007 summer flounder, scup, and black sea bass recreational management measures and a description of the alternatives considered, and the reasons for selecting the proposed management measures. This proposed specifications document implements the FMPs conservation and management goals consistent with the Magnuson-Stevens Act as well as all other existing applicable laws.

This proposed specifications document was developed as a result of a multi-stage process that involved review of the source document (2007 Summer Flounder, Scup, and Black Sea Bass Specifications) 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 18, 2006, and during the MAFMC Council meetings held on August 2-4, 2006, and December 12-14, 2006.

The Federal Register notice that announces the proposed rule and the implementing regulations will be made available in printed publication and on the website for the Northeast Regional Office. The notice provides metric conversions for all measurements.

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 Magnuson-Stevens Fishery Conservation and Management Act; 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 for this product is “Natural Resource Plans.”

In preparing the Specifications document, the Council must comply with the requirements of the Magnuson-Stevens Act, the Regulatory Flexibility Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Data Quality Act, and Executive Orders 13132 (Federalism), 12866 (Regulatory Planning), and other applicable laws.

This specifications document has been developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMPs conservation and management measures shall be based upon the best scientific information available. Despite current data limitations, the conservation and management measures proposed to be implemented under this specifications document are based upon the best scientific information available. This information includes NMFS VTR and MRFSS data for various years which was used to characterize the fisheries and assess potential impacts of the management proposals. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the summer flounder, scup, and black sea bass fisheries.

The policy choices (i.e., management measures) proposed to be implemented by this specifications document are supported by the available scientific information and, in cases where information was unavailable, proxy reference points are based on observed trends in survey data. The management measures contained in the specifications document are designed to meet the conservation goals and objectives of the FMP, and prevent overfishing and rebuild overfished resources, while maintaining sustainable levels of fishing effort to ensure a minimal impact on fishing communities.

The supporting materials and analyses used to develop the measures in the proposed rule are contained in the specifications document and to some degree on previous specifications and/or FMP as specified in this document.

The review process for this specifications package involves the Council, the NEFSC, the Northeast Regional Office, and NOAA Fisheries headquarters. The NEFSC's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, demersal resources, population biology, and the social sciences. The Council review process involves public meetings at which affected stakeholders have opportunity to provide comments on the specifications document. Review by staff at the Regional Office is conducted by those with expertise in fisheries management and policy, habitat conservation, protected species, 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.

9.7 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 Paperwork Reduction Act.

9.8 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.

9.9 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. Because the proposed action represents no change relative to the current level of participation in these fisheries, no negative economic or social effects are anticipated as a result (section 7.0). Therefore, the proposed action under the preferred alternatives is not expected to cause disproportionately high and adverse human health, environmental or economic effects on minority populations, low-income populations, or Indian tribes.

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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 NMFS by MAFMC. This specifications package was prepared by the following members of the MAFMC staff: Jessica Coakley and Dr. José L. Montañez, and Dr. Scott Steinback (NEFSC) assisted in documenting the analysis of permit data and the socioeconomic analyses.

12.0 LIST OF AGENCIES AND PERSONS CONSULTED

In preparing this specifications document, the Council consulted with 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. In addition, states that are members within the management unit were consulted through the Coastal Zone Management Program consistency process. Letters were sent to each of the following states within the management unit to review the consistency of the proposed action relative to each state's Coastal Zone Management Program: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, and North Carolina. To request a copy of the letter or a list of the CZM contacts within each state, contact Daniel T. Furlong at the Mid-Atlantic Fishery Management Council, Room 2115 Federal Building, 300 South New Street, Dover, Delaware 19904-6790, Telephone: (302) 674-2331, Fax: (302) 674-5399.

In order to ensure compliance with NMFS formatting requirements, the advice of NMFS Northeast Region personnel, including Michael Ruccio, Sarah Thompson, and Michael Pentony was relied upon during document preparation.

REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS

1.0 Introduction

The National Marine Fisheries Service (NMFS) requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new Fishery Management Plan (FMP) or significantly amend an existing plan. This RIR is part of the process of preparing and reviewing FMPs and provides a comprehensive review of the changes in net economic benefits to society associated with proposed regulatory actions. This analysis also provides a review of the problems and policy objectives prompting the regulatory proposals and an evaluation of the major alternatives that could be used to solve the problems. The purpose of this analysis is to ensure that the regulatory agency systematically and comprehensively considers all available alternatives so that the public welfare can be enhanced in the most efficient and cost-effective way. This RIR addresses many items in the regulatory philosophy and principles of Executive Order (EO) 12866.

Also included is an Initial Regulatory Flexibility Analysis (IRFA) to evaluate the economic impacts of the alternatives on small business entities. This analysis is undertaken in support of a complete analysis for the 2007 recreational specifications for summer flounder, scup, and black sea bass.

2.0 Evaluation of EO 12866 Significance

2.1 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 of the EA. This action is taken under the authority of the Magnuson-Stevens Act and regulations at 50 CFR part 648.

2.2 Description of the Fishery

A description of the summer flounder, scup, and black sea bass fisheries is presented in section 6.0 of the EA. A description of ports and communities is found in Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP. An analysis of permit data is found in section 4.2 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. Additional characterization of these fisheries is presented in sections 6.0 of the EA.

2.3 A Statement of the Problem

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

2.4 A Description of Each Alternative

A full description of the three sets of alternatives analyzed in this section is presented in section 5.0 of the EA. A full description of the TAL derivation process is presented in sections 4.3 and 5.0 of the 2007 Summer Flounder, Scup, and Black Sea Bass Specifications. A brief description of each alternative is presented below for reference purposes.

2.5 RIR Impacts

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 measures considered in this regulatory action will not affect gross revenues or indirect and induced effects generated by the party/charter, private/rental, or other sectors offering goods and services to anglers engaged in the summer flounder, scup, and black sea bass fisheries to the extent that an annual \$100 million economic impact will occur in any of these fisheries individually or combined.

Projected data from Marine Recreational Fisheries Statistics Survey (MRFSS) indicate that 36,979,228 fishing trips were taken in the Northeast Region (Maine-North Carolina) in 2006. It is estimated that the number of trips by fishing mode was 1,898,485 party/charter boat trips, 18,689,616 private/rental boat trips, and 16,391,127 shore trips (Table 32).

Assuming angler effort in 2007 will be the same as that estimated for 2006, fishing impacts were first examined by estimating the number of recreational fishing trips in 2006 that would have been “affected” by the proposed 2007 management measures. Section 7.5.6 of the EA (i.e., socioeconomic discussion) delineates the procedures and data bases used to determine the number of affected trips. Next, an input-output model was employed to address potential direct, indirect, and induced short-term economic losses in sales, income, and employment in the Northeast Region. If the proposed measures result in an overall reduction in angler effort, expenditures associated with these trips will be foregone, and reductions in sales, income, and employment will occur for businesses that supply goods and services to saltwater fishermen. In addition, the sales, income, and employment of many businesses that supply the directly affected businesses could also decline.

All of the potential 18 combinations of alternatives that could be analyzed for summer flounder, scup, and black sea bass were included in the assessment.²

Since no empirical information is available to determine how anglers’ trip taking behavior will change upon implementation of the proposed regulations, economic losses were estimated under two hypothetical scenarios: (1) a 25% reduction in the number of fishing trips that are predicted to be affected by implementation of the management measures in the Northeast Region in 2007; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2007. These analyses are described in detail in section 7.5.6 of the EA (i.e., socioeconomic discussion).

The projected regional economic losses associated with the hypothetical reductions in affected marine recreational fishing trips are shown in Table’s 47 (assumes a 25% reduction in affected trips) and 48 (assumes a 50% reduction in affected trips). In total, the projected sales, income, and employment losses to the Northeast Region vary little across combinations of alternatives. For a 25% reduction in affected fishing trips total losses to the Northeast region range from \$31.411 million to \$33.217 million in sales, \$11.463 million to \$12.123 in income, and between 308 and 325 jobs (Table 47). The estimated losses are approximately twice as high if a 50% reduction in affected trips is assumed to occur (Table 48).

Across all combinations of alternatives, approximately 82% of the total sales, income, and employment losses are projected to be generated by anglers fishing from private/rental boats. Losses associated with reductions in party/charter effort comprise approximately 13% of potential region-wide reductions, while the remaining 5% is associated with shore mode effort changes. This large disparity in losses across modes is

² However, since the management measures under fluke alternative 1 (i.e., conservation equivalency) have yet to be adopted so the potential losses under this alternative could not be analyzed in conjunction with the alternatives proposed for scup and black sea bass. Since conservation equivalency allows each state to tailor specific recreational fishing measures to the needs of their state, while still achieving conservation goals, it is likely that the measures developed under fluke alternative 1 when considered in combination with the measures proposed for scup and black sea bass would have lower overall adverse effects than any of the combinations that were analyzed.

generally due to the fact that the measures proposed under all combinations of alternatives are projected to affect substantially more private/rental boat trips than party/charter and shore trips.

Long-term biological effects of each of these management alternatives are clear: stocks of summer flounder, scup, and black sea bass will rebuild as a result of the accumulated effects of these measures applied over time. Although the long-term effects of these alternatives are less clear or quantifiable from a social and economic perspective, rebuilt stocks would presumably provide anglers with the ability to increase catch and possibly keep rates resulting in higher overall welfare benefits to anglers and the Nation as a whole. Therefore, this action should not adversely affect, in the long-term, competition, jobs, the environment, public health or safety, or state, local, or tribal government communities. Second, this action should 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. However, future regulations implemented under the Northeast Multispecies FMP may induce party/charter boat operators to switch from targeting Atlantic cod and haddock on some of their trips to targeting summer flounder, scup, or black sea bass. Although this switching behavior is not predicted to be significant, this may have a negative effect on rebuilding goals and cause increased competition within party/charter fishing communities dependent on summer flounder, scup, and black sea bass. Third, this action will not materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of their participants. And, fourth, the proposed action does not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in EO 12866. Based on the results of the RIR, this action is not significant under EO 12866.

3.0 Paperwork Reduction Act of 1995

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 business, state and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government.

The Council is not proposing measures under this regulatory action that require review under PRA. There are no changes to existing reporting requirements previously approved under OMB Control Nos. 0648-0202 (Vessel permits), 0648-0229 (Dealer reporting) and 0648-0212 (Vessel logbooks).

4.0 Initial Regulatory Flexibility Analysis

4.1 Impacts on Small Entities

The Regulatory Flexibility Act (RFA) requires the Federal rule maker 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: (A) certify that the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities; or (B) prepare an IRFA. 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.

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

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 of the EA. 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.

Estimate of the Number of Small Entities

This rule would apply to the following small entities: summer flounder, scup or black sea bass party/charter permit holders, as well as those actively participating in the recreational fisheries in state waters. While permit holders represent the universe of entities whose normal activities might be directly affected by these regulations, not all permit holders choose to fish in a given year. Those who actively participate, i.e., land fish, would be the group of permit holders that are directly impacted by the regulations. Latent fishing power (in the form of unfished permits) represents a real and considerable force to alter the impacts on a fishery, but vessels actively participating in the fishery are dependent upon a particular species. It is impossible to predict how many - or who - will or will not participate in these fisheries in 2007.

Data from the Northeast permit application database indicates that in 2005 there were 920 vessels permitted to take part in the summer flounder, scup, and/or black sea bass fisheries in the EEZ. The Northeast landings database (VTR Data) indicates that a total of 331 party/charter vessels participated in the summer flounder, scup, and/or black sea bass fisheries in the Northeast in 2005 (Table 49).

Recordkeeping and Reporting

As stated in section 3.0 of the RIR/IRFA, this proposed action does not propose new reporting or recordkeeping measures. There are no changes to existing reporting requirements. Currently, all summer flounder, scup or black sea bass federally-permitted dealers must submit weekly reports of fish purchases. The owner or operator of any vessel issued a moratorium vessel permit for summer flounder, scup or black sea bass, must maintain on board the vessel, and submit, an accurate daily fishing log report for all

fishing trips, regardless of species fished for or taken. The owner of any party or charter boat issued a summer flounder, scup or black sea bass permit other than a moratorium permit and carrying passengers for hire must submit an accurate daily fishing log report for each charter or party fishing trip that lands summer flounder, scup, or black sea bass, unless such a vessel is also issued another permit that requires regular reporting, in which case a fishing log report is required for each trip regardless of species retained.

Conflict with Other Federal Rules

This proposed action will not duplicate, overlap, or conflict with any other Federal rules.

4.2 Significant Alternatives to the Proposed Rule

There is no need to further mitigate economic impacts on small entities because the Council selected the alternatives determined to result in the least severe impacts without compromising the biological health of the stocks.

The analysis conducted did not include the specific state measures under conservation equivalency for summer flounder because the states have not yet been adopted specific management measures. Nevertheless, it is expected that the since conservation equivalent recreational management measures would allow each state to develop specific summer flounder recreational measures that allow the fishery to operate in each state during critical fishing periods while still achieving conservation goals while mitigating potential adverse economic effects in specific states. Therefore, it is likely that the measures developed under summer flounder alternative 1 when considered in combination with the measures proposed for scup and black sea bass would have lower overall adverse effects in 2007 than any of the other combinations that were analyzed. Specifications of recreational fish size limits, possession limits, and open fishing seasons is constrained by the conservation objectives of the FMP, and implemented at 50 CFR part 648 under the authority of the Magnuson-Stevens Act. The Council did not consider alternatives that would compromise the biological health of the stocks.

4.3 General Fishing Trends

A detailed description of the fishery for summer flounder, scup, and black sea bass is presented in section 6.0 of the EA. The information presented below is intended to further characterize recent fishing trends for the summer flounder, scup, and black sea bass fisheries.

Summer Flounder

Summer flounder recreational data indicate that for the 1993 to 2001 period recreational landings were less than the recreational harvest limits only two years (1994 and 1995). In 1994 and 1995, summer flounder landings were below the recreational harvest limit by approximately 20 percent for both years combined (Table 50). From 1996 to 2001, recreational landings have been above the recreational harvest limit ranging from 0.96

million lb in 1999 to 9.11 million lb in 2000. Over the last five years (2002 to 2006), the recreational landings were below the recreational harvest limits in 2002, 2004, and 2005, and above the recreational harvest limits in 2003 and 2005. In 2005, recreational landings were 7 percent (0.81 million lb) below the recreational harvest limit for that year. For 2006, recreational landings are projected to be above (2.45 million lb) the recreational harvest limit of 9.29 million lb. The total number of recreational trips from Maine through North Carolina has fluctuated throughout the 1993 to 2006 period from 4.2 million trips in 1999 to 6.1 million trips in 2001. Overall, fishing trips have remained relatively stable for the 1993 to 2006 period (Table 50).

The proposed recreational harvest limit for 2007 is 5.19 million lb (see discussion in section 5.1). This recreational harvest limit is approximately 44% lower than the recreational harvest limit implemented in 2006 (9.29 million lb) and 56% below the projected recreational landings for 2006 (11.74 million lb; Table 50). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2007.

Scup

Scup recreational landings have declined over 89% for the period 1991 through 1998 (Table 51). The number of fishing trips has also declined over 73% for the same time period. This decrease in the recreational fishery has occurred both with and without any recreational measures being in place, and is perhaps a result of the stock being over-exploited and at a low biomass level. 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.

Recreational harvest limits in the scup fishery were first implemented in 1997. Recreational landings in 1997 and 1998 were below the recreational harvest limit for those years. However, for the 1999-2004 period, recreational landings were above the recreational harvest limit for those years. In 2006, scup landings are projected to be 2.80 million lb (30%) below the recreational harvest limit for that year (Table 51).

The recreational harvest limit for 2007 is 2.74 million lb. This limit is approximately 31% below the recreational harvest limit implemented in 2006 (3.99 million lb) and near identical to the projected recreational landings in 2006 (2.80 million lb; Table 51). Since there is no mechanism to deduct overages directly from the recreational harvest limit, any overages to the recreational harvest limit must be addressed by the way of adjustments to the management measures (fish size, bag limit and/or season). The scup recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2007.

Black Sea Bass

Black sea bass recreational fishing trips have shown a slight upward trend from the early to Mid-1990's (Table 52). Black sea bass recreational landings have also shown a slight

upward trend from 1991 to 1997. However, landings decreased considerably from 1995-1996 to 1998-1999, but then substantially increased in 2000 to 3.99 million lb. In 2001, 2002, and 2003 recreational landings were 3.42, 4.35, and 3.30 million lb, respectively. In 2004 and 2005, recreational landings were 58% (2.34 million lb) and 51% (2.12 million lb), respectively, below the recreational harvest limits implemented those years. For 2006, recreational landings are projected to be 2.00 million lb (50%) below the recreational harvest limit of 3.99 million lb.

The proposed recreational harvest limit for 2007 is about 38% lower than the limit established in 2006, and 29% more than the projected recreational landings in 2006 (1.91 million lb; Table 52). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2006.

Expenditures for Recreational Fishing

During 1998, social and economic data from marine recreational fishermen in the Northeast Region were gathered through an economic add-on to NMFS' MRFSS (Steinback and Gentner 2001). As part of this survey, anglers were asked to delineate trip expenditures and purchases of durable equipment used primarily for saltwater recreational fishing. Results of the survey were used to project the potential losses associated with the proposed 2007 regulations.

Survey results indicate that the average trip expenditure in the Northeast Region in 1998 was \$47.42 for anglers fishing from a private/rental boat, \$32.48 for shore anglers, and \$67.12 for anglers that fished from a party/charter boat (Table 46). Trip expenditures included the following consumable items: (1) travel; (2) food, drink, and refreshments; (3) lodging at motels, cabins, lodges, or campgrounds; (4) public transportation or car rental; (5) boat fuel; (6) guide or package fees; (7) access and/or boat launching fees; (8) equipment rental such as boat, fishing or camping equipment; (9) bait; and (10) ice. Expenditures on durable items such as rods, reels, tackle, special fishing clothing, etc., were also estimated in the Steinback and Gentner report but are not included in the subsequent analysis. Although expenditures on durable items may also be affected by the proposed regulations, the extent of the impact would be difficult to quantify since these items could be used for many trips.

5.0 Analysis of Impacts of Proposed Measures

This analysis will present information relative to the impacts of this proposed action on small entities. Specifically, assessments of potential changes in gross revenues for all 18 combinations of alternatives proposed in this action were conducted for federally permitted party/charter vessels in each state in the Northeast.³ Estimates of the impacts

³ The management measures proposed under summer flounder alternative 1 (i.e., conservation equivalency) have yet to be adopted so the potential losses under this alternative could not be analyzed in conjunction with the alternatives proposed for scup and black sea bass. Since conservation equivalency allows each state to tailor specific recreational fishing measures to the needs of their state, while still achieving conservation goals, it is likely that the measures developed under summer flounder alternative 1 when

upon profitability are not provided because data on costs and revenues for party/charter vessels are not available at this time. As such, potential changes in gross revenues for party/charter vessels participating in these fisheries were estimated by employing various assumptions which are described below. The effects of these actions were analyzed by employing quantitative approaches to the extent possible. Where quantitative data were not available, qualitative analyses were conducted. The MAFMC invites public comment on this IRFA, and the qualitative and quantitative aspects of it in particular.

Impacts were examined by first estimating the number of angler trips aboard party/charter vessels in each state in 2006 that would have been affected by the proposed 2007 management measures. All 2006 party/charter fishing trips that would have been constrained by the proposed 2007 measures in each Northeast state were considered to be “affected” trips. To date, the first five waves of MRFSS effort data are available for 2006. Wave six effort estimates for 2005 (November - December) were used as a proxy for wave six 2006 effort. Therefore, wave six effort estimates for 2006 were assumed to be the same as in 2005.

Unfortunately, no empirical information is available to determine how sensitive the “affected” anglers might be to the proposed management changes. If the proposed measures discourage trip-taking behavior among some of the affected anglers, economic losses may accrue to the party/charter boat industry in the form of reduced access fees. On the other hand, if the proposed measures do not have a negative impact on the value or satisfaction the affected anglers derive from their fishing trips then party/charter revenues would remain unaffected by this action. In an attempt to bound the potential changes in gross revenues to the party/charter boat industry in each state, economic losses were estimated under two hypothetical scenarios: (1) a 25% reduction in the number of fishing trips that are predicted to be affected by implementation of the management measures in the Northeast Region in 2007; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2007.

Total economic losses to party/charter vessels were then estimated by multiplying the number of potentially affected trips in each state in 2007, under the two hypothetical scenarios, by the estimated average access fee paid by party/charter anglers in the Northeast region in 2006 (\$41.07).⁴ The recreational fishing expenditure data used in this analysis was presented in detail in section 7.5.6 of the EA (i.e., socioeconomic discussion). Finally, total economic losses were divided by the number of federally permitted party/charter vessels that participated in the summer flounder, scup, and/or, black sea bass fisheries in 2005 in each state (according to homeport state in the Northeast logbook database) to obtain an estimate of the average projected gross revenue loss per party/charter vessel in 2007.

considered in combination with the measures proposed for scup and black sea bass would have lower overall adverse effects than any of the other combinations that were analyzed.

⁴ The 1998 party/charter average expenditure estimate (\$32.48; Table 46) was adjusted to its 2006 equivalent using the Bureau of Labor’s Consumer Price Index.

Results

All 18 potential combinations of management alternatives proposed for summer flounder, scup, and black sea bass are predicted to affect party/charter boat revenues to some extent in all of the northeast coastal states except for Maine and New Hampshire (Tables 53 through 70). The estimated average party/charter losses are similar across the 18 potential combinations of alternatives, but they vary considerably across states. For instance, in New Jersey, the maximum difference in average estimated losses per vessel across the 18 combinations of alternatives is only a \$401 in 2007. However, across states average gross revenue losses range from a low of \$292 per vessel in Delaware to \$17,716 in North Carolina. Average gross revenue losses per vessel under each of the 18 combinations of alternatives were generally highest in North Carolina followed by Massachusetts, New York, New Jersey, Rhode Island, Virginia, Connecticut, Maryland and then Delaware.

Actual losses will likely be even lower than described above for several reasons. First, since the management measures proposed under summer flounder alternative 1 (i.e., conservation equivalency) have yet to be adopted, the potential losses under this alternative could not be analyzed in conjunction with the alternatives proposed for scup and black sea bass. Since conservation equivalency allows each state to tailor specific recreational fishing measures to the needs of their state, while still achieving conservation goals, it is likely that the measures developed under summer flounder alternative 1 when considered in combination with the measures proposed for scup and black sea bass would have lower overall adverse effects in 2007 than any of the other combinations that were analyzed.

Secondly, the universe of party/charter vessels that participates in the summer flounder, scup, and black sea bass fisheries is likely to be even larger than presented in this analysis. Party/charter vessels that do not possess a Federal summer flounder, scup, or black sea bass permit because they only fish in state waters are not represented in this assessment. Considering that 82% and 98% of the landings of summer flounder and scup in 2005, respectively, were caught in state waters (Table 31) it is probable that some party/charter vessels fish only in state waters and, thus, do not hold Federal permits for these species. Therefore, the party/charter losses shown in this assessment would be spread over a greater number of vessels resulting in lower estimated losses per vessel.

Lastly, economic losses are estimated under two hypothetical scenarios: (1) a 25% reduction in the number of fishing trips that are predicted to be affected by implementation of the management measures in the Northeast Region in 2007; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2007. Reductions in fishing effort of this magnitude in 2007 are not likely to occur given the fact that the proposed measures do not prohibit anglers from keeping at least some of the fish they catch or the fact that there are alternative species to harvest. While keeping fish is moderately important to anglers in the Mid-Atlantic, over 42% of anglers in New England in 1994, indicated catching fish to eat was not an important reason for marine fishing (Steinback and O'Neil 1998). Although these anglers

are not likely to be the ones constrained by the regulations, findings of this study generally concur with previous studies that found non-catch reasons for participating in marine recreational fishing were rated much higher than keeping fish for food. In combination with alternative target species available to anglers, the findings of the Steinback and O'Neil (1998) study suggest that at least some of the potentially affected anglers would not reduce their effort when faced with the proposed landings restrictions.

TABLES

Table 1. Summer flounder landings (number in thousands) by state for 1998, the 2007 target (number in thousands), and the 2006 projected landings. The percent reduction necessary to achieve the 2007 recreational harvest limit relative to 2006 landings is also presented.

| State | 1998 | 2007 Target ¹ | 2006 ² | % Reduction |
|-----------|-------|--------------------------|-------------------|-------------|
| MA | 383 | 134 | 207 | 35.3 |
| RI | 395 | 138 | 261 | 47.2 |
| CT | 261 | 91 | 106 | 13.7 |
| NY | 1,230 | 430 | 837 | 49.0 |
| NJ | 2,728 | 954 | 1,578 | 39.5 |
| DE | 219 | 77 | 108 | 29.3 |
| MD | 206 | 72 | 58 | +24.0 |
| VA | 1,165 | 407 | 867 | 53.0 |
| NC | 391 | 137 | 149 | 8.1 |

¹Based on a 65.0% reduction in 1998 landings.

²Projected using 2005 landings proportions by wave and 2006 waves 1-5 data.

Table 2. Procedures for establishing summer flounder recreational management measures, modified to include voluntary multi-state conservation equivalency (changes underlined).

| | |
|--|---|
| August | |
| Council/Commissions's Board recommend recreational harvest limit. | |
| October | |
| MRFSS data available for current year through wave 4. | |
| November | |
| Monitoring Committee meeting to develop recommendations to Council: Overall % reduction required. Use of coastwide measures or state conservation equivalency. **Precautionary default measures. **Coastwide measures. | |
| December | |
| Council/Board meeting to make recommendation to NMFS State Conservation Equivalency or Coastwide measures. | |
| <i>State Conservation Equivalency Measures</i> | <i>Coastwide Measures</i> |
| Late December | Early January |
| Commission staff summarizes and distributes <u>state-specific and multi-state conservation equivalency</u> guidelines to states. | Council staff submits recreational measure package to NMFS. Package includes: -Overall % reduction required. -Coastwide measures. |
| Early January | February 15 |
| Council staff submits recreational measure package to NMFS. Package includes: - Overall % reduction required. - Recommendation to implement conservation equivalency and precautionary default measures (Preferred Alternative). -Coastwide measures (Non-preferred Alternative). States submit conservation equivalency proposals to ASMFC. | NMFS publishes proposed rule for recreational measures announcing the overall % reduction required and Coastwide measures. |
| January 15 | April |
| ASMFC distributes <u>state-specific or multi-state conservation equivalency proposals</u> to Technical Committee. | NMFS publishes final rule announcing overall % reduction required and Coastwide measures. **Precautionary default measures - measures to achieve at least the % required reduction in each state, e.g., one fish possession limit and 15.5 inch bag limit would have achieved at least a 41% reduction in landings for each state in 1999. **Coastwide measures - measure to achieve % reduction coastwide. |
| Late January | |
| ASMFC Technical Committee meeting: -Evaluation of proposals. -ASMFC staff summarizes Technical Committee recommendations and distributes to Board. | |
| February | |
| Board meeting to approve/disapprove proposals and submits to NMFS within two weeks, but no later than end of February. | |
| March 1 (on or around) | |
| NMFS publishes proposed rule for recreational measures announcing the overall % reduction required, <u>state-specific or multi-state conservation equivalency</u> measures and precautionary default measures (as the preferred alternative), and coastwide measures as the non-preferred alternative. | |
| March 15 | |
| During comment period, Board submits comment to inform whether conservation equivalency proposals are approved. | |
| April | |
| NMFS publishes final rule announcing overall % reduction required and one of the following scenarios: - <u>State-specific or multi-state conservation equivalency</u> measures with precautionary default measures, or -Coastwide measures. | |

Table 3. The effect of various size and possession limits on 2006 scup recreational landings. The tables contain the proportional reduction in number of scup landed assuming regulations are 100% effective (a) and adjusting for the effectiveness of the 2006 management measures (b).

a. - 100% Effective

| Bag | Size (TL in) | | | | | |
|-----|--------------|-------|-------|-------|-------|-------|
| | 9 | 10 | 10.5 | 11 | 11.5 | 12 |
| 1 | 0.878 | 0.879 | 0.884 | 0.892 | 0.905 | 0.913 |
| 2 | 0.790 | 0.792 | 0.803 | 0.815 | 0.840 | 0.854 |
| 3 | 0.715 | 0.717 | 0.734 | 0.751 | 0.785 | 0.804 |
| 4 | 0.650 | 0.653 | 0.675 | 0.698 | 0.737 | 0.762 |
| 5 | 0.599 | 0.602 | 0.627 | 0.652 | 0.699 | 0.727 |
| 6 | 0.554 | 0.557 | 0.586 | 0.617 | 0.667 | 0.697 |
| 7 | 0.512 | 0.515 | 0.548 | 0.584 | 0.637 | 0.669 |
| 8 | 0.474 | 0.477 | 0.516 | 0.555 | 0.610 | 0.645 |
| 9 | 0.439 | 0.443 | 0.486 | 0.527 | 0.585 | 0.628 |
| 10 | 0.407 | 0.411 | 0.457 | 0.501 | 0.564 | 0.614 |
| 15 | 0.290 | 0.295 | 0.357 | 0.412 | 0.492 | 0.571 |
| 20 | 0.222 | 0.238 | 0.303 | 0.366 | 0.459 | 0.544 |
| 25 | 0.172 | 0.198 | 0.265 | 0.328 | 0.435 | 0.525 |
| 30 | 0.140 | 0.166 | 0.236 | 0.304 | 0.414 | 0.507 |
| 35 | 0.117 | 0.143 | 0.215 | 0.283 | 0.396 | 0.490 |
| 40 | 0.096 | 0.122 | 0.194 | 0.265 | 0.377 | 0.475 |
| 45 | 0.077 | 0.104 | 0.176 | 0.247 | 0.360 | 0.460 |
| 50 | 0.059 | 0.085 | 0.158 | 0.228 | 0.344 | 0.448 |

b. - Adjusted

| Bag | Size (TL in) | | | | | |
|-----|--------------|-------|-------|-------|-------|-------|
| | 9 | 10 | 10.5 | 11 | 11.5 | 12 |
| 1 | 0.869 | 0.870 | 0.874 | 0.883 | 0.897 | 0.906 |
| 2 | 0.778 | 0.779 | 0.786 | 0.800 | 0.827 | 0.843 |
| 3 | 0.699 | 0.701 | 0.712 | 0.731 | 0.769 | 0.790 |
| 4 | 0.632 | 0.634 | 0.649 | 0.675 | 0.719 | 0.744 |
| 5 | 0.579 | 0.581 | 0.599 | 0.627 | 0.677 | 0.704 |
| 6 | 0.533 | 0.535 | 0.556 | 0.588 | 0.641 | 0.671 |
| 7 | 0.491 | 0.493 | 0.517 | 0.551 | 0.607 | 0.639 |
| 8 | 0.454 | 0.455 | 0.481 | 0.518 | 0.577 | 0.613 |
| 9 | 0.419 | 0.422 | 0.448 | 0.488 | 0.550 | 0.594 |
| 10 | 0.387 | 0.389 | 0.416 | 0.459 | 0.526 | 0.578 |
| 15 | 0.274 | 0.276 | 0.303 | 0.360 | 0.446 | 0.531 |
| 20 | 0.214 | 0.217 | 0.244 | 0.308 | 0.409 | 0.500 |
| 25 | 0.172 | 0.174 | 0.202 | 0.266 | 0.382 | 0.480 |
| 30 | 0.139 | 0.142 | 0.169 | 0.239 | 0.359 | 0.460 |
| 35 | 0.116 | 0.118 | 0.146 | 0.216 | 0.338 | 0.441 |
| 40 | 0.093 | 0.096 | 0.123 | 0.196 | 0.318 | 0.423 |
| 45 | 0.073 | 0.075 | 0.103 | 0.175 | 0.298 | 0.407 |
| 50 | 0.052 | 0.055 | 0.082 | 0.155 | 0.281 | 0.394 |

Table 4. a) Average percent of scup landed (in number) by wave, based on 1996-2000 MRFSS landings data and b) projected reduction in scup landings (in number) associated with closing one day per wave, based on 1996-2000 MRFSS landings data.

a.

| State | Wave 1 | Wave 2 | Wave 3 | Wave 4 | Wave 5 | Wave 6 |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MA | 0.0 | 0.0 | 37.4 | 31.5 | 31.1 | 0.0 |
| RI | 0.0 | 0.0 | 4.9 | 48.1 | 45.7 | 1.3 |
| CT | 0.0 | 0.0 | 8.2 | 49.6 | 42.2 | 0.0 |
| NY | 0.0 | 0.0 | 22.0 | 27.7 | 48.8 | 1.5 |
| NJ | 0.0 | 0.3 | 0.0 | 3.0 | 78.6 | 18.1 |
| DE | 0.0 | 0.0 | 0.0 | 9.0 | 89.9 | 1.1 |
| MD | 0.0 | 0.0 | 0.0 | 46.2 | 0.0 | 53.8 |
| VA | 0.0 | 0.0 | 0.0 | 0.0 | 87.8 | 12.2 |
| NC | 0.0 | 3.3 | 40.9 | 31.3 | 24.5 | 0.0 |
| Coast | 0.0 | 0.4 | 12.6 | 27.4 | 49.8 | 9.8 |

b.

| State | Wave 1 | Wave 2 | Wave 3 | Wave 4 | Wave 5 | Wave 6 |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MA | 0.0 | 0.0 | 0.61 | 0.51 | 0.51 | 0.0 |
| RI | 0.0 | 0.0 | 0.08 | 0.78 | 0.75 | 0.02 |
| CT | 0.0 | 0.0 | 0.13 | 0.80 | 0.69 | 0.00 |
| NY | 0.0 | 0.0 | 0.36 | 0.45 | 0.80 | 0.02 |
| NJ | 0.0 | 0.01 | 0.0 | 0.05 | 1.29 | 0.30 |
| DE | 0.0 | 0.0 | 0.0 | 0.15 | 1.47 | 0.02 |
| MD | 0.0 | 0.0 | 0.0 | 0.74 | 0.0 | 0.88 |
| VA | 0.0 | 0.0 | 0.0 | 0.0 | 1.44 | 0.20 |
| NC | 0.0 | 0.05 | 0.67 | 0.50 | 0.40 | 0.0 |
| Coast | 0.0 | 0.01 | 0.21 | 0.44 | 0.82 | 0.16 |

Table 5. a) Average percent of black sea bass landed (in number) by wave, 1996-2000, based on 1996-2000 MRFSS landings data and b) projected reduction in black sea bass landings (in number) associated with closing one day per wave, based on 1996-2000 MRFSS landings data.

a.

| State | Wave 1 | Wave 2 | Wave 3 | Wave 4 | Wave 5 | Wave 6 |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MA | 0.0000 | 0.0000 | 23.4694 | 24.6675 | 51.6401 | 0.2230 |
| RI | 0.0000 | 0.0029 | 1.8545 | 20.2479 | 64.9094 | 12.9853 |
| CT | 0.0000 | 0.0000 | 6.5206 | 62.5768 | 30.9027 | 0.0000 |
| NY | 0.0000 | 0.0000 | 9.6851 | 38.9277 | 47.8741 | 3.5131 |
| NJ | 0.0000 | 1.7127 | 26.9043 | 15.4321 | 52.4008 | 3.5500 |
| DE | 0.0000 | 0.7649 | 36.8219 | 29.6058 | 24.1154 | 8.6920 |
| MD | 0.0000 | 3.3434 | 34.1283 | 13.5413 | 16.8959 | 32.0911 |
| VA | 0.0000 | 3.5027 | 29.7212 | 17.9100 | 25.5224 | 23.3438 |
| NC | 0.0000 | 8.5527 | 26.8782 | 30.8952 | 15.9682 | 17.7056 |
| Coast | 0.0000 | 2.1402 | 27.0501 | 17.6799 | 42.1276 | 11.0022 |

b.

| State | Wave 1 | Wave 2 | Wave 3 | Wave 4 | Wave 5 | Wave 6 |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| MA | 0.0000 | 0.0000 | 0.3847 | 0.3979 | 0.8466 | 0.0037 |
| RI | 0.0000 | 0.0000 | 0.0304 | 0.3266 | 1.0641 | 0.2129 |
| CT | 0.0000 | 0.0000 | 0.1069 | 1.0093 | 0.5066 | 0.0000 |
| NY | 0.0000 | 0.0000 | 0.1588 | 0.6279 | 0.7848 | 0.0576 |
| NJ | 0.0000 | 0.0281 | 0.4411 | 0.2489 | 0.8590 | 0.0582 |
| DE | 0.0000 | 0.0125 | 0.6036 | 0.4775 | 0.3953 | 0.1425 |
| MD | 0.0000 | 0.0548 | 0.5595 | 0.2184 | 0.2770 | 0.5261 |
| VA | 0.0000 | 0.0574 | 0.4872 | 0.2889 | 0.4184 | 0.3827 |
| NC | 0.0000 | 0.1402 | 0.4406 | 0.4983 | 0.2618 | 0.2903 |
| Coast | 0.0000 | 0.0351 | 0.4434 | 0.2852 | 0.6906 | 0.1804 |

Table 6. The effect of various size and possession limits on 2006 black sea bass recreational landings. The tables contain the proportional reduction in number of black sea bass landed assuming the regulations were 100% effective in 2006 (a) and adjusting for the effectiveness of 2006 management measures (b).

a. - 100% Effective

| | Size (TL) | | | | |
|------------|------------------|-------------|-----------|-------------|-----------|
| Bag | 12 | 12.5 | 13 | 13.5 | 14 |
| 1 | 0.719 | 0.750 | 0.778 | 0.808 | 0.843 |
| 2 | 0.576 | 0.630 | 0.667 | 0.712 | 0.764 |
| 3 | 0.471 | 0.539 | 0.589 | 0.649 | 0.718 |
| 4 | 0.404 | 0.476 | 0.542 | 0.613 | 0.690 |
| 5 | 0.352 | 0.432 | 0.510 | 0.585 | 0.674 |
| 6 | 0.313 | 0.399 | 0.482 | 0.566 | 0.661 |
| 7 | 0.289 | 0.378 | 0.463 | 0.551 | 0.648 |
| 8 | 0.271 | 0.362 | 0.451 | 0.543 | 0.642 |
| 9 | 0.257 | 0.351 | 0.441 | 0.538 | 0.638 |
| 10 | 0.245 | 0.344 | 0.435 | 0.533 | 0.638 |
| 15 | 0.224 | 0.332 | 0.427 | 0.532 | 0.638 |
| 20 | 0.219 | 0.332 | 0.427 | 0.532 | 0.638 |
| 25 | 0.219 | 0.332 | 0.427 | 0.532 | 0.638 |

b. - Adjusted

| | Size (TL) | | | | |
|------------|------------------|-------------|-----------|-------------|-----------|
| Bag | 12 | 12.5 | 13 | 13.5 | 14 |
| 1 | 0.641 | 0.680 | 0.716 | 0.754 | 0.799 |
| 2 | 0.458 | 0.526 | 0.574 | 0.631 | 0.698 |
| 3 | 0.322 | 0.409 | 0.473 | 0.550 | 0.639 |
| 4 | 0.237 | 0.328 | 0.414 | 0.504 | 0.604 |
| 5 | 0.170 | 0.273 | 0.372 | 0.469 | 0.583 |
| 6 | 0.120 | 0.230 | 0.337 | 0.445 | 0.565 |
| 7 | 0.090 | 0.204 | 0.313 | 0.425 | 0.549 |
| 8 | 0.066 | 0.183 | 0.297 | 0.415 | 0.541 |
| 9 | 0.049 | 0.169 | 0.285 | 0.408 | 0.537 |
| 10 | 0.034 | 0.159 | 0.276 | 0.402 | 0.536 |
| 15 | 0.007 | 0.145 | 0.266 | 0.401 | 0.536 |
| 20 | 0.000 | 0.144 | 0.266 | 0.401 | 0.536 |
| 25 | 0.000 | 0.144 | 0.266 | 0.401 | 0.536 |

Table 7. Summary of federal management measures for the summer flounder recreational fishery, 1993-2006.

| Measure | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|-----------------------------|-------------|--------------|-------------|-------------|-------------|-------------|--------------------|
| Harvest Limit (m lb) | 8.38 | 10.67 | 7.76 | 7.41 | 7.41 | 7.41 | 7.41 |
| Landings (m lb) | 8.84 | 9.33 | 5.42 | 9.82 | 11.87 | 12.52 | 8.37 |
| Possession Limit | 6 | 8 | 6/8 | 10 | 8 | 8 | 8 |
| Size Limit (TL in) | 14 | 14 | 14 | 14 | 14.5 | 15 | 15 |
| Open Season | 5/15 - 9/30 | 4/15 - 10/15 | 1/1 - 12/31 | 1/1 - 12/31 | 1/1 - 12/31 | 1/1 - 12/31 | 5/29 - 9/11 |
| Measure | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
| Harvest Limit (m lb) | 7.41 | 7.16 | 9.72 | 9.28 | 11.21 | 11.98 | 9.29 |
| Landings (m lb) | 16.52 | 11.66 | 8.03 | 11.66 | 10.99 | 11.17 | 11.74 ^a |
| Possession Limit | 8 | 3 | b | b | b | b | b |
| Size Limit (TL in) | 15.5 | 15.5 | b | b | b | b | b |
| Open Season | 5/10 - 10/2 | 4/15 - 10/15 | b | b | b | b | b |

^aProjected using 2005 landings proportions by wave and 2006 waves 1-5 data.

^bState-specific conservation equivalency measures.

Table 8. Summer flounder recreational management measures by state, 2004.

| State | Minimum Size (inches) | Possession Limit | Open Season |
|---|----------------------------------|-----------------------------|------------------------|
| Massachusetts | 16.5 | 7 | All Year |
| Rhode Island | 17.5 | 7 | April 1 - Dec. 31 |
| Connecticut | 17 | 6 | All Year |
| New York | 17 ¹ | 3 | May 15 - Sept. 6 |
| New Jersey | 16.5 | 8 | May 8 - Oct. 11 |
| Delaware | 17.5 | 4 | All Year |
| Maryland | 16 | 3 | All Year |
| Potomac River Fisheries Commission | 16 | 3 | All Year |
| Virginia | 17 | 6 | March 29 - Dec. 31 |
| North Carolina | 14 | 8 | All Year |

¹New York raised its minimum size to 18 inches on July 30, 2004, and maintained the same season and possession limit.

Table 9. Summer flounder recreational management measures by state, 2005.

| State | Minimum Size (inches) | Possession Limit | Open Season |
|--|----------------------------------|-----------------------------|------------------------|
| Massachusetts | 17 | 7 | All Year |
| Rhode Island | 17.5 | 7 | April 1- Dec. 31 |
| Connecticut | 17.5 | 6 | April 30 - Dec. 31 |
| New York | 17.5 | 5 | April 29 - Oct. 31 |
| New Jersey | 16.5 | 8 | May 7 - Oct. 10 |
| Delaware | 17.5 | 4 | All Year |
| Maryland: Atlantic & Coastal Bay / Chesapeake Bay | 15.5 / 15.0 | 4 / 2 | All Year / All Year |
| Potomac River Fisheries Commission | 15 | 2 | All Year |
| Virginia | 16.5 | 6 | All Year |
| North Carolina | 14 | 8 | All Year |

Table 10. Summer flounder recreational management measures by state, 2006.

| State | Minimum Size (inches) | Possession Limit | Open Season |
|------------------------------------|----------------------------------|-----------------------------|------------------------|
| Massachusetts | 17.5 | 7 fish | All Year |
| Rhode Island | 17.5 | 7 fish | April 1-Dec. 31 |
| Connecticut | 18 | 6 fish | April 30-Dec.31 |
| New York | 18 | 4 fish | May 6-Sept. 12 |
| New Jersey | 16.5 | 8 fish | May 6 –Oct. 9 |
| Delaware | 17 | 4 fish | All Year |
| Maryland: | | | |
| Atlantic & Coastal Bays | 15.5 | 4 fish | All Year |
| Chesapeake Bay | 15.0 | 2 fish | All Year |
| PRFC | 15.0 | 2 fish | All year |
| Virginia | 16.5 | 6 fish | All year |
| North Carolina | 14 | 8 fish | All Year |

Table 11. Projected summer flounder recreational landings (in number of fish) relative to targets, by state for 2006.

| State | 2006 Target | 2006 Landings¹ | Overage (+%)/Underage (-%) |
|--------------|--------------------|----------------------------------|-----------------------------------|
| MA | 203,000 | 206,927 | +2 |
| RI | 209,000 | 261,459 | +25 |
| CT | 138,000 | 105,763 | -23 |
| NY | 650,000 | 837,457 | +29 |
| NJ | 1,443,000 | 1,578,349 | +9 |
| DE | 116,000 | 108,280 | -7 |
| MD | 109,000 | 58,102 | -47 |
| VA | 616,000 | 866,610 | +41 |
| NC | 207,000 | 148,886 | -28 |

¹ Projected using 2005 landings proportions by wave and 2006 waves 1-5 data.

Table 12. Summary of management measures for the scup recreational fishery, 1997-2006.

| Measure | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|------------------------|------------------------|-------------------------|-------------------------|
| Harvest Limit (m lb) | 1.95 | 1.55 | 1.24 | 1.24 | 1.76 | 2.71 | 4.01 | 3.99 | 3.96 | 3.99 |
| Landings (m lb) | 1.20 | 0.88 | 1.89 | 5.44 | 4.26 | 3.62 | 8.48 | 4.41 | 2.67 | 2.80 ^a |
| Possession Limit | - | - | - | - | 50 | 20 | 50 | 50 | 50 | 50 |
| Size Limit (in TL)^b | 7 | 7 | 7 | - | 9 | 10 | 10 | 10 | 10 | 10 |
| Open Season | 1/1-12/31 | 1/1-12/31 | 1/1-12/31 | 1/1-12/31 | 8/15-10/31 | 7/1-10/2 | 1/1-2/28 and 7/1-11/30 | 1/1-2/28 and 9/7-11/30 | 1/1-2/28 and 9/18-11/30 | 1/1-2/28 and 9/18-11/30 |

^a Projected using 2005 landings proportions by wave and 2006 waves 1-5 data.

^b Coastwide minimum size limit, some states have larger minimum size limits.

^c The Board developed a conservation equivalency program for scup in 2002-2006.

Table 13. Scup recreational management measures by state, 2004.

| State | Minimum Size | Possession Limit | Open Season |
|-----------------------|---------------------|--|---|
| Massachusetts | 10" | 100 fish for anglers on party/charter boats from May 1-June 30 and 40 fish from July 1-Oct.7, and 40 fish limit for private boats with 1 angler and 80 fish limit for boats with two or more anglers | Jan. 1-Oct. 6 |
| Rhode Island | 10.5" | 50 fish | Jan. 1-July 25 and Aug. 4-Dec. 31 |
| Connecticut | 10.5" | 20 fish | Open season from July 23-Oct. 12 and Nov. 1-Dec.31, all dates inclusive. Closed Jan.1-July 22 and Oct.13-31 |
| New York | 11" | 20 fish | June 16-Oct. 17 and Nov. 1-30 |
| New Jersey | 10" | 50 fish | Jan. 1-Feb. 28 and July 1-Dec. 31 |
| Delaware | 8" | 50 fish | All year |
| Maryland | 8" | 50 fish | All year |
| Virginia | 8" | 50 fish | All year |
| North Carolina | 8" | 50 fish | All year |

Table 14. Scup recreational management measures by state, 2005.

| State | Minimum Size | Possession Limit | Open Season |
|-----------------------|---------------------|---|-----------------------------------|
| Massachusetts | 10.5" | 25 fish; 50 per private vessel with 2 or more anglers; party and charter may possess up to 60 fish from May 1-June 30 (all other times party/charter may possess up to 25 fish) | May 1-Aug. 31 |
| Rhode Island | 10.5" | 25 fish; party/charter may possess up to 60 fish from Sept. 1-Oct. 31 (all other times party/charter may possess up to 25 fish) | July 1- Oct. 31 |
| Connecticut | 10.5" | 25 fish; party/charter may possess up to 60 fish from Sept. 1-Oct. 31 (all other times party/charter may possess up to 25 fish) | July 1- Oct. 31 |
| New York | 10.5" | 25 fish; party/charter may possess up to 60 fish from Sept. 1-Oct. 31 (all other times party/charter may possess up to 25 fish) | July 1- Oct. 31 |
| New Jersey | 9" | 50 fish | Jan. 1-Feb. 28 and July 1-Dec. 31 |
| Delaware | 8" | 50 fish | All Year |
| Maryland | 8" | 50 fish | All Year |
| Virginia | 8" | 50 fish | All Year |
| North Carolina | 8" | 50 fish | All Year |

Table 15. Scup recreational management measures by state, 2006.

| State | Minimum Size | Possession Limit | Open Season |
|-----------------------|---------------------|---|-------------------------------------|
| Massachusetts | 10.5" | 25 fish (50 max private vessel); party /charter may possess up to 60 fish from May 1- June 30 (all other times PC bag is 25 fish) | May 1- Sept. 30 |
| Rhode Island | 10.5" | 25 fish; party / charter may possess up to 60 fish from Sept. 1- Oct. 31 (all other times PC bag is 25 fish) | June 1- Oct. 31 |
| Connecticut | 10.5" | 25 fish; party /charter may possess up to 60 fish from Sept. 1- Oct. 31 (all other times PC bag is 25 fish) | June 1- Oct. 31 |
| New York | 10.5" | 25 fish; party /charter may possess up to 60 fish from Sept. 1- Oct. 31 (all other times PC bag is 25 fish) | June 1- Oct. 31 |
| New Jersey | 9" | 50 fish | Jan. 1-Feb. 28 and July 1 – Dec. 31 |
| Delaware | 8" | 50 fish | All year |
| Maryland | 8" | 50 fish | All year |
| Virginia | 8" | 50 fish | All year |
| North Carolina | 8" | 50 fish | All year |

Table 16. Summary of management measures for the black sea bass recreational fishery, 1996-2006.

| <u>Measure</u> | <u>1996</u> | <u>1997</u> | <u>1998</u> | <u>1999</u> | <u>2000</u> | <u>2001</u> | <u>2002</u> | <u>2003</u> | <u>2004</u> | <u>2005</u> | <u>2006</u> |
|-------------------------------|--------------------|--------------------|-------------------------|--------------------|--------------------|-------------------------|--------------------|------------------------|------------------------|--------------------|--------------------|
| Harvest Limit (m lb) | - | - | 3.15 | 3.15 | 3.15 | 3.15 | 3.43 | 3.43 | 4.01 | 4.13 | 3.99 |
| Landings (m lb) | 4.0 | 4.3 | 1.2 | 1.7 | 4.0 | 3.4 | 4.3 | 3.3 | 1.67 | 2.01 | 1.91 ^b |
| Possession Limit | - | - | - ^a | - ^a | - ^a | 25 | 25 | 25 | 25 | 25 | 25 |
| Size Limit (TL inches) | 9 | 9 | 10 | 10 | 10 | 11 | 11.5 | 12 | 12 | 12 | 12 |
| Open Season | 1/1 - 12/31 | 1/1- 12/31 | 1/1-7/30 and 8/16-12/31 | 1/1- 12/31 | 1/1- 12/31 | 1/1-2/28 and 5/10-12/31 | 1/1- 12/31 | 1/1-9/1 and 9/16-11/30 | 1/1-9/7 and 9/22-11/30 | 1/1- 12/31 | 1/1- 12/31 |

^a There was no federal possession limit but some states implemented a 20 fish possession limit in these years

^b Projected using 2005 landings proportions by wave and 2006 waves 1-5 data.

Table 17. Black sea bass recreational management measures by state, 2004.

| State | Minimum Size | Possession Limit | Open Season |
|--|---------------------|-------------------------|-----------------------------------|
| Massachusetts | 12" | 20 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| Rhode Island | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| Connecticut | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| New York | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| New Jersey | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| Delaware | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| Maryland | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| PRFC | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| Virginia | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |
| North Carolina (North of Cape Hatteras) | 12" | 25 | Jan. 1-Sept.7 and Sept. 22-Nov.30 |

Table 18. Black sea bass recreational management measures by state, 2005.

| State | Minimum Size | Possession Limit | Open Season |
|---|---------------------|-------------------------|--------------------|
| Massachusetts | 12" | 20 | All Year |
| Rhode Island | 12" | 25 | All Year |
| Connecticut | 12" | 25 | All Year |
| New York | 12" | 25 | Jan. 1-Nov. 30 |
| New Jersey | 12" | 25 | All Year |
| Delaware | 12" | 25 | All Year |
| Maryland | 12" | 25 | All Year |
| PRFC | 12" | 25 | All Year |
| Virginia | 12" | 25 | All Year |
| North Carolina (North of Cape Hatteras) | 12" | 25 | All Year |

Table 19. Black sea bass recreational management measures by state, 2006.

| State | Minimum Size (inches) | Possession Limit | Open Season |
|---|----------------------------------|-----------------------------|------------------------|
| Massachusetts | 12" | 20 | All Year |
| Rhode Island | 12" | 25 | All Year |
| Connecticut | 12" | 25 | All Year |
| New York | 12" | 25 | All Year |
| New Jersey | 12" | 25 | All Year |
| Delaware | 12" | 25 | All Year |
| Maryland | 12" | 25 | All Year |
| PRFC | 12" | 25 | All Year |
| Virginia | 12" | 25 | All Year |
| North Carolina (North of Cape Hatteras) | 12" | 25 | All Year |

Table 20. The number of summer flounder landed from Maine through North Carolina by mode, 1981-2005.

| Year | Mode | | |
|------------|-----------|---------------|----------------|
| | Shore | Party/Charter | Private/Rental |
| 1981 | 3,145,682 | 1,362,254 | 5,058,639 |
| 1982 | 1,120,522 | 5,936,007 | 8,416,174 |
| 1983 | 3,963,676 | 3,574,230 | 13,458,398 |
| 1984 | 1,355,596 | 2,495,734 | 13,623,841 |
| 1985 | 786,183 | 1,152,248 | 9,127,759 |
| 1986 | 1,237,031 | 1,608,908 | 8,774,922 |
| 1987 | 406,095 | 1,150,096 | 6,308,570 |
| 1988 | 945,864 | 1,134,353 | 7,879,442 |
| 1989 | 180,269 | 141,321 | 1,395,176 |
| 1990 | 261,897 | 413,242 | 3,118,447 |
| 1991 | 565,403 | 597,608 | 4,904,636 |
| 1992 | 275,472 | 375,246 | 4,351,389 |
| 1993 | 342,226 | 1,013,464 | 5,138,354 |
| 1994 | 447,184 | 836,363 | 5,419,146 |
| 1995 | 241,904 | 267,349 | 2,816,462 |
| 1996 | 206,929 | 659,878 | 6,130,181 |
| 1997 | 255,066 | 930,636 | 5,981,122 |
| 1998 | 316,314 | 360,776 | 6,302,006 |
| 1999 | 213,446 | 300,807 | 3,592,740 |
| 2000 | 569,614 | 648,755 | 6,582,707 |
| 2001 | 226,995 | 329,703 | 4,736,909 |
| 2002 | 154,957 | 261,551 | 2,845,647 |
| 2003 | 203,719 | 389,141 | 3,965,812 |
| 2004 | 205,879 | 419,718 | 3,841,453 |
| 2005 | 145,778 | 488,037 | 3,493,712 |
| % of Total | 9 | 14 | 77 |

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

Table 21. The number of scup landed from Maine through North Carolina by mode, 1981-2005.

| Year | Mode | | |
|------------|-----------|---------------|----------------|
| | Shore | Party/Charter | Private/Rental |
| 1981 | 772,162 | 1,054,556 | 7,256,991 |
| 1982 | 833,429 | 1,393,724 | 4,226,957 |
| 1983 | 2,227,112 | 2,996,661 | 3,612,789 |
| 1984 | 1,299,565 | 227,735 | 4,530,009 |
| 1985 | 1,121,593 | 325,846 | 9,362,605 |
| 1986 | 1,898,859 | 3,228,151 | 19,696,033 |
| 1987 | 522,310 | 583,977 | 8,809,698 |
| 1988 | 698,340 | 1,137,624 | 4,226,347 |
| 1989 | 882,603 | 1,033,319 | 7,260,512 |
| 1990 | 434,740 | 1,302,788 | 6,305,463 |
| 1991 | 1,625,127 | 2,250,042 | 9,403,917 |
| 1992 | 1,003,649 | 1,017,368 | 5,743,164 |
| 1993 | 284,525 | 1,762,459 | 3,616,036 |
| 1994 | 229,924 | 918,217 | 3,122,101 |
| 1995 | 222,397 | 837,390 | 1,359,241 |
| 1996 | 120,596 | 451,614 | 2,399,997 |
| 1997 | 141,367 | 453,066 | 1,322,000 |
| 1998 | 117,056 | 164,932 | 929,148 |
| 1999 | 197,876 | 821,995 | 2,230,780 |
| 2000 | 550,951 | 1,140,133 | 5,552,866 |
| 2001 | 766,084 | 768,893 | 3,563,841 |
| 2002 | 505,079 | 1,309,168 | 1,832,594 |
| 2003 | 858,699 | 1,329,584 | 7,264,026 |
| 2004 | 460,311 | 918,991 | 3,538,690 |
| 2005 | 284,316 | 192,636 | 1,966,488 |
| % of Total | 10 | 16 | 74 |

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

Table 22. The number of black sea bass landed from Maine through North Carolina by mode, 1981-2005.

| Year | Mode | | |
|------------|-----------|---------------|----------------|
| | Shore | Party/Charter | Private/Rental |
| 1981 | 452,101 | 1,440,172 | 841,479 |
| 1982 | 81,445 | 8,104,205 | 2,063,333 |
| 1983 | 222,011 | 4,005,708 | 1,403,509 |
| 1984 | 98,228 | 1,128,295 | 1,264,894 |
| 1985 | 163,447 | 2,393,046 | 1,659,701 |
| 1986 | 1,021,523 | 16,695,386 | 4,187,088 |
| 1987 | 71,956 | 1,157,244 | 2,238,164 |
| 1988 | 140,755 | 1,691,300 | 2,227,902 |
| 1989 | 237,967 | 1,991,670 | 2,419,648 |
| 1990 | 289,379 | 2,268,913 | 1,710,455 |
| 1991 | 250,678 | 2,586,147 | 2,621,274 |
| 1992 | 45,368 | 2,043,188 | 1,780,225 |
| 1993 | 54,675 | 4,579,665 | 1,562,230 |
| 1994 | 243,347 | 2,005,888 | 1,321,626 |
| 1995 | 275,981 | 5,197,229 | 1,413,573 |
| 1996 | 70,522 | 2,631,734 | 1,062,026 |
| 1997 | 8,337 | 3,950,334 | 908,839 |
| 1998 | 7,073 | 777,873 | 474,072 |
| 1999 | 19,231 | 621,354 | 771,258 |
| 2000 | 177,489 | 1,797,696 | 1,780,238 |
| 2001 | 14,035 | 1,826,850 | 1,164,977 |
| 2002 | 16,618 | 2,066,233 | 1,338,447 |
| 2003 | 10,760 | 2,073,130 | 1,308,494 |
| 2004 | 4,862 | 920,672 | 974,277 |
| 2005 | 21,808 | 569,464 | 919,932 |
| % of Total | 3 | 63 | 34 |

Source: Personal communication from the National Marine Fisheries Service, Fisheries Statistics and Economics Division.

Table 23. State contribution (as a percentage) to total recreational landings of summer flounder, scup, and black sea bass (MRFSS Type A+B1 in number of fish), from Maine through North Carolina, 2005.

| State | Summer Flounder | Scup | Black Sea Bass |
|-----------------------|------------------------|-------------|-----------------------|
| Maine | 0.00 | 0.00 | 0.00 |
| New Hampshire | 0.00 | 0.00 | 0.00 |
| Massachusetts | 5.04 | 16.78 | 8.60 |
| Rhode Island | 4.56 | 17.86 | 3.65 |
| Connecticut | 5.51 | 31.17 | 0.01 |
| New York | 28.99 | 28.50 | 11.98 |
| New Jersey | 34.49 | 5.14 | 45.05 |
| Delaware | 2.23 | 0.14 | 4.30 |
| Maryland | 2.06 | 0.07 | 5.39 |
| Virginia | 13.98 | 0.19 | 4.90 |
| North Carolina | 3.12 | 0.14 | 16.12 |
| Total | 100% | 100% | 100% |

Table 24. The percentage (%) contribution of summer flounder to the total catch of all species from party/charter vessels by state, 1996-2005.

| <i>Summer Flounder</i> | | | | | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| State | Year | | | | | | | | | |
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| CT | 1.2 | 1.0 | 1.7 | 2.3 | 2.2 | 1.4 | 4.6 | 4.5 | 2.9 | 2.6 |
| DE | 38.9 | 9.2 | 5.8 | 6.4 | 18.9 | 8.4 | 2.8 | 1.0 | 1.9 | 6.9 |
| MA | 0.2 | 1.4 | 0.7 | 0.4 | 0.3 | 0.4 | 0.2 | 0.3 | 0.3 | 0.2 |
| MD | 2.2 | 1.8 | 0.5 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.9 |
| ME | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NC | 6.2 | 1.3 | 0.7 | 0.9 | 1.0 | 0.0 | 0.0 | 0.8 | 0.0 | 0.0 |
| NH | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NJ | 12.1 | 10.5 | 15.4 | 15.0 | 11.4 | 9.2 | 8.6 | 9.1 | 9.4 | 11.6 |
| NY | 35.4 | 33.8 | 39.1 | 27.3 | 13.2 | 14.3 | 13.9 | 20.4 | 24.1 | 4.8 |
| RI | 3.6 | 5.0 | 4.4 | 16.0 | 26.2 | 7.3 | 15.1 | 16.5 | 19.3 | 24.6 |
| VA | 0.0 | 0.1 | 2.5 | 2.2 | 2.6 | 3.7 | 4.3 | 1.8 | 5.5 | 1.9 |

Note: Percentages cannot be summed across columns or rows. They only represent the percentage of respective species landings to total landings in that state for given year.

Table 25. The percentage (%) contribution of scup to the total catch of all species from party/charter vessels by state, 1996 - 2005.

| <i>Scup</i> State | Year | | | | | | | | | |
|----------------------|------|------|------|------|------|------|------|------|------|------|
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| CT | 0.2 | 0.0 | 0.9 | 0.4 | 15.1 | 13.5 | 8.3 | 14.6 | 7.4 | 5.3 |
| DE | 0.2 | 0.9 | 0.0 | 0.0 | 0.1 | 0.0 | 0.5 | 0.9 | 0.8 | 0.1 |
| MA | 22.5 | 19.3 | 17.9 | 27.1 | 32.2 | 24.3 | 28.7 | 24.4 | 36.9 | 10.7 |
| MD | 0.0 | 2.8 | 0.1 | 1.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.1 |
| ME | 0.0 | 0.0 | 1.8 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NC | 0.0 | 0.0 | 1.6 | 1.3 | 1.3 | 0.0 | 1.1 | 0.2 | 0.0 | 0.0 |
| NH | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NJ | 4.2 | 3.5 | 8.4 | 8.8 | 9.5 | 10.6 | 7.0 | 12.7 | 4.1 | 5.8 |
| NY | 8.8 | 8.3 | 25.7 | 16.6 | 30.0 | 48.5 | 36.4 | 49.2 | 28.4 | 27.1 |
| RI | 26.7 | 12.1 | 5.7 | 14.1 | 17.6 | 32.4 | 29.3 | 25.4 | 18.6 | 9.2 |
| VA | 0.0 | 0.0 | 0.2 | 0.1 | 0.0 | 0.2 | 0.7 | 0.0 | 0.0 | 0.0 |

Note: Percentages cannot be summed across columns or rows. They only represent the percentage of respective species landings to total landings in that state for given year.

Table 26. The percentage (%) contribution of black sea bass to the total catch of all species from party/charter vessels by state, 1996 - 2005.

| <i>State</i> | <i>Year</i> | | | | | | | | | |
|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 |
| CT | 0.1 | 0.1 | 0.0 | 0.2 | 1.0 | 0.8 | 1.6 | 1.1 | 0.4 | 0.1 |
| DE | 25.1 | 18.4 | 11.7 | 24.9 | 18.9 | 61.5 | 85.1 | 87.5 | 77.6 | 35.1 |
| MA | 1.5 | 1.3 | 1.5 | 2.9 | 5.5 | 4.0 | 4.0 | 4.1 | 2.6 | 0.9 |
| MD | 17.6 | 57.9 | 59.1 | 39.0 | 66.4 | 84.9 | 95.3 | 94.1 | 87.2 | 85.6 |
| ME | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NC | 2.6 | 14.6 | 43.1 | 40.0 | 37.3 | 52.5 | 64.0 | 36.2 | 28.2 | 13.2 |
| NH | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| NJ | 50.0 | 26.5 | 23.7 | 27.7 | 37.0 | 41.4 | 44.7 | 52.4 | 40.5 | 27.7 |
| NY | 26.5 | 12.6 | 14.8 | 16.6 | 19.4 | 20.6 | 23.7 | 17.6 | 16.8 | 12.0 |
| RI | 1.3 | 3.1 | 0.6 | 3.9 | 8.5 | 13.3 | 15.8 | 12.5 | 10.6 | 6.4 |
| VA | 100.0 | 82.4 | 36.1 | 42.8 | 20.7 | 29.9 | 49.6 | 54.3 | 30.9 | 16.5 |

Note: Percentages cannot be summed across columns or rows. They only represent the percentage of respective species landings to total landings in that state for given year.

Table 27. Recreational anglers' ratings (mean) of reasons for marine fishing, by subregion.

| Statement | New England | | | Mid-Atlantic | | |
|--|---------------|--------------------|----------------|---------------|--------------------|----------------|
| | Not Important | Somewhat Important | Very Important | Not Important | Somewhat Important | Very Important |
| To Spend Quality Time with Friends and Family | 4.4% | 14.3% | 81.3% | 3.0% | 12.0% | 85.0% |
| To Enjoy Nature and the Outdoors | 1.4% | 10.1% | 88.5% | 1.1% | 11.6% | 87.3% |
| To Catch Fish to Eat | 42.2% | 37.4% | 20.4% | 29.3% | 40.1% | 30.6% |
| To Experience the Excitement or Challenge of Sport Fishing | 6.2% | 24.9% | 68.8% | 8.4% | 26.0% | 65.6% |
| To be Alone | 55.0% | 27.9% | 17.1% | 57.7% | 25.8% | 16.4% |
| To Relax and Escape from my Daily Routine | 3.4% | 13.3% | 83.3% | 2.6% | 11.9% | 85.5% |
| To Fish in a Tournament or when Citations are Available | 78.6% | 14.0% | 7.4% | 73.4% | 17.1% | 9.5% |

Source: Steinback et al., 1999.

Table 28. Recreational anglers' ratings (mean) of fishing regulation methods, by subregion.

| Type of Regulation | New England | | Mid-Atlantic | |
|--|-------------|--------|--------------|--------|
| | Support | Oppose | Support | Oppose |
| Limits on the Minimum Size of Fish You Can Keep | 92.5% | 7.5% | 93.2% | 6.8% |
| Limits on the Number of Fish You Can Keep | 91.1% | 8.9% | 88.3% | 11.7% |
| Limits on the Times of the Year When You Can Keep the Fish You Catch | 78.8% | 21.2% | 77.1% | 22.9% |
| Limits on the Areas You Can Fish | 67.9% | 32.1% | 66.0% | 34.0% |

Source: Steinback et al., 1999.

Table 29. Recreational anglers' ratings (mean) of fishing regulation methods, by mode.

| Type of Regulation | Party/Charter | | Private/Rental | | Shore | |
|--|---------------|--------|----------------|--------|---------|--------|
| | Support | Oppose | Support | Oppose | Support | Oppose |
| Limits on the Minimum Size of Fish You Can Keep | 92.1% | 7.9% | 94.4% | 5.6% | 90.1% | 9.9% |
| Limits on the Number of Fish You Can Keep | 87.9% | 12.1% | 90.0% | 10.0% | 87.7% | 12.3% |
| Limits on the Times of the Year When You Can Keep the Fish You Catch | 79.2% | 20.8% | 78.3% | 21.7% | 75.0% | 25.0% |
| Limits on the Areas You Can Fish | 74.4% | 25.6% | 65.9% | 34.1% | 63.6% | 36.4% |

Source: Steinback et al., 1999.

Table 30. Party and charter vessel trip report (VTR) data for summer flounder, scup, and black sea bass, 1996-2005.

Summer Flounder

| Year | Number of Vessels | | Number of Trips | | Mean Number of Anglers | | Numbers of Fish Caught | | Mean Effort (catch per angler) | |
|------|-------------------|---------|-----------------|---------|------------------------|---------|------------------------|---------|-----------------------------------|---------|
| | Party | Charter | Party | Charter | Party | Charter | Party | Charter | Party | Charter |
| 1996 | 138 | 242 | 5,642 | 2,105 | 27.60 | 12.58 | 623,030 | 99,827 | 4.00 | 3.77 |
| 1997 | 117 | 241 | 5,998 | 2,387 | 29.41 | 13.76 | 551,602 | 117,772 | 3.13 | 3.59 |
| 1998 | 124 | 254 | 6,504 | 2,878 | 29.27 | 12.61 | 573,733 | 133,255 | 3.01 | 3.67 |
| 1999 | 126 | 248 | 6,324 | 2,763 | 29.29 | 13.40 | 741,982 | 156,826 | 4.01 | 4.24 |
| 2000 | 137 | 269 | 5,824 | 3,278 | 30.26 | 11.48 | 557,952 | 162,262 | 3.17 | 4.31 |
| 2001 | 118 | 241 | 4,072 | 2,160 | 29.88 | 11.20 | 314,579 | 126,141 | 2.59 | 5.21 |
| 2002 | 108 | 264 | 3,605 | 2,281 | 32.08 | 10.44 | 308,409 | 98,650 | 2.67 | 4.14 |
| 2003 | 99 | 201 | 4,092 | 2,319 | 28.99 | 11.30 | 313,446 | 107,385 | 2.64 | 4.10 |
| 2004 | 91 | 237 | 3,496 | 1,978 | 27.54 | 10.89 | 258,422 | 80,344 | 2.68 | 3.73 |
| 2005 | 84 | 252 | 2,973 | 1,965 | 29.58 | 11.00 | 233,474 | 99,429 | 2.65 | 4.60 |

Scup

| Year | Number of Vessels | | Number of Trips | | Mean Number of Anglers | | Numbers of Fish Caught | | Mean Effort (catch per angler) | |
|------|-------------------|---------|-----------------|---------|------------------------|---------|------------------------|---------|-----------------------------------|---------|
| | Party | Charter | Party | Charter | Party | Charter | Party | Charter | Party | Charter |
| 1996 | 66 | 88 | 1,379 | 365 | 25.55 | 8.62 | 323,731 | 41,722 | 9.19 | 13.26 |
| 1997 | 57 | 59 | 1,177 | 298 | 26.14 | 6.96 | 256,280 | 38,801 | 8.33 | 18.71 |
| 1998 | 61 | 79 | 1,550 | 357 | 25.67 | 6.81 | 554,004 | 48,489 | 13.92 | 19.94 |
| 1999 | 62 | 84 | 1,540 | 488 | 26.41 | 6.80 | 509,529 | 80,382 | 12.53 | 24.22 |
| 2000 | 79 | 113 | 1,660 | 754 | 27.83 | 8.49 | 709,285 | 127,768 | 15.35 | 19.96 |
| 2001 | 67 | 120 | 1,780 | 673 | 28.97 | 7.39 | 1,027,083 | 123,188 | 19.92 | 24.77 |
| 2002 | 78 | 137 | 1,432 | 568 | 27.74 | 8.95 | 638,984 | 95,485 | 16.09 | 18.78 |
| 2003 | 60 | 117 | 1,822 | 826 | 27.28 | 8.58 | 910,537 | 143,386 | 18.32 | 20.23 |
| 2004 | 63 | 126 | 1,027 | 547 | 26.04 | 7.80 | 430,843 | 45,962 | 16.11 | 10.77 |
| 2005 | 46 | 108 | 700 | 457 | 26.20 | 7.02 | 222,801 | 34,532 | 12.15 | 10.76 |

Black Sea Bass

| Year | Number of Vessels | | Number of Trips | | Mean Number of Anglers | | Numbers of Fish Caught | | Mean Effort (catch per angler) | |
|------|-------------------|---------|-----------------|---------|------------------------|---------|------------------------|---------|-----------------------------------|---------|
| | Party | Charter | Party | Charter | Party | Charter | Party | Charter | Party | Charter |
| 1996 | 111 | 189 | 3,854 | 1,311 | 25.76 | 10.24 | 1,260,728 | 113,326 | 12.70 | 8.44 |
| 1997 | 108 | 184 | 3,955 | 1,178 | 27.28 | 11.93 | 876,936 | 131,990 | 8.13 | 9.39 |
| 1998 | 107 | 185 | 4,044 | 1,153 | 26.27 | 9.55 | 870,949 | 65,669 | 8.20 | 5.96 |
| 1999 | 119 | 193 | 4,053 | 1,434 | 27.76 | 10.23 | 1,172,532 | 131,956 | 10.42 | 9.00 |
| 2000 | 133 | 225 | 4,639 | 2,058 | 29.06 | 10.78 | 1,385,645 | 219,462 | 10.28 | 9.89 |
| 2001 | 115 | 225 | 3,997 | 1,744 | 29.75 | 9.18 | 1,531,504 | 225,869 | 12.88 | 14.11 |
| 2002 | 106 | 234 | 3,906 | 1,835 | 30.16 | 10.18 | 1,643,444 | 268,104 | 13.95 | 14.35 |
| 2003 | 90 | 178 | 3,795 | 2,006 | 27.96 | 9.78 | 1,475,212 | 315,529 | 13.90 | 16.08 |
| 2004 | 89 | 214 | 2,970 | 1,405 | 26.92 | 8.89 | 906,107 | 158,382 | 11.33 | 12.68 |
| 2005 | 71 | 219 | 2,139 | 1,334 | 28.22 | 9.09 | 557,305 | 107,932 | 9.23 | 8.90 |

Note: Trips with zero anglers or catch were deleted from all fields.

Table 31. Percentage of summer flounder, scup, and black sea bass recreational landings (MRFSS Type A+B1 in number of fish) by year and area, Maine through North Carolina.

| Year | Summer Flounder | | Scup | | Black Sea Bass | |
|------|------------------|---------------|------------------|---------------|------------------|---------------|
| | State <= 3 mi | EEZ > 3 mi | State <= 3 mi | EEZ > 3 mi | State <= 3 mi | EEZ > 3 mi |
| 1996 | 94.26 | 5.74 | 93.29 | 6.71 | 23.95 | 76.05 |
| 1997 | 90.83 | 9.17 | 91.18 | 8.82 | 14.07 | 85.93 |
| 1998 | 93.87 | 6.13 | 89.12 | 10.88 | 16.13 | 83.87 |
| 1999 | 88.30 | 11.70 | 91.38 | 8.62 | 27.36 | 72.64 |
| 2000 | 88.76 | 11.24 | 91.70 | 8.30 | 33.86 | 66.14 |
| 2001 | 92.33 | 7.67 | 93.51 | 6.49 | 19.44 | 80.56 |
| 2002 | 89.40 | 10.60 | 91.57 | 8.43 | 21.49 | 78.51 |
| 2003 | 91.66 | 8.34 | 95.21 | 4.79 | 22.15 | 77.85 |
| 2004 | 91.11 | 8.89 | 92.38 | 7.62 | 23.59 | 76.41 |
| 2005 | 81.77 | 18.23 | 97.64 | 2.36 | 30.02 | 69.98 |
| Avg. | 90.23 | 9.77 | 92.70 | 7.30 | 23.20 | 76.80 |

Table 32. Projected¹ total estimated angler effort (fishing trips) by state, in 2006.

| State | Party/Charter | Private/Rental | Shore |
|--------------|----------------------|-----------------------|-------------------|
| ME | 50,656 | 803,003 | 539,190 |
| NH | 29,766 | 657,308 | 456,175 |
| MA | 203,113 | 2,428,623 | 2,062,707 |
| RI | 191,128 | 1,932,661 | 1,291,275 |
| CT | 30,226 | 510,419 | 642,246 |
| NY | 308,820 | 2,612,485 | 4,125,270 |
| NJ | 66,101 | 189,884 | 258,844 |
| DE | 510,128 | 3,498,957 | 2,647,505 |
| MD | 429,606 | 2,845,913 | 2,035,986 |
| VA | 33,580 | 701,494 | 927,510 |
| NC | 45,361 | 2,508,871 | 1,404,418 |
| Total | 1,898,485 | 18,689,616 | 16,391,127 |

¹ Values were projected using MRFSS data.
Source: Scott Steinback, NMFS/NER/NEFSC.

Table 33. Projected 2007 effort effects of individual management measures in isolation, by mode (2006 catch and effort estimates were used to project 2007 effects).

| | Party/Charter | | | Private/Rental | | | Shore | | |
|---|----------------|-------------|------------------|----------------|-------------|------------------|----------------|-------------|------------------|
| | Affected Trips | Total Trips | % of Total Trips | Affected Trips | Total Trips | % of Total Trips | Affected Trips | Total Trips | % of Total Trips |
| Fluke Alternative 1 (status quo) | | | | | | | | | |
| Conservation Equivalency | ? | 1,898,485 | ? | ? | 18,689,616 | ? | ? | 16,391,127 | ? |
| Fluke precautionary default measures | 77,074 | 1,898,485 | 4.06% | 961,298 | 18,689,616 | 5.14% | 12,986 | 16,391,127 | <0.1% |
| Fluke Alternative 2 | 78,338 | 1,898,485 | 4.13% | 966,379 | 18,689,616 | 5.17% | 13,209 | 16,391,127 | <0.1% |
| Scup Alternative 1 (status quo) | 35,280 | 1,898,485 | 1.86% | 207,050 | 18,689,616 | 1.11% | 85,306 | 16,391,127 | 0.52% |
| Scup Alternative 2 | 51,536 | 1,898,485 | 2.71% | 251,571 | 18,689,616 | 1.35% | 88,067 | 16,391,127 | 0.54% |
| Scup Alternative 3 | 35,296 | 1,898,485 | 1.87% | 207,050 | 18,689,616 | 1.11% | 85,306 | 16,391,127 | 0.52% |
| BSB Alternative 1 (status quo) | 6,936 | 1,898,485 | 0.37% | 334 | 18,689,616 | <0.1% | 21 | 16,391,127 | <0.1% |
| BSB Alternative 2 | 6,122 | 1,898,485 | 0.32% | 199 | 18,689,616 | <0.1% | 21 | 16,391,127 | <0.1% |
| BSB Alternative 3 | 8,768 | 1,898,485 | 0.46% | 726 | 18,689,616 | <0.1% | 21 | 16,391,127 | <0.1% |

Source: Scott Steinback, NMFS/NER/NEFSC.

Table 34. The percent of successful anglers landing 1 to 12 summer flounder (MRFSS Type A fish) per trip, waves 1-4, 2006.

| Catch per Angler/Trip | Frequency | Percent | Cumulative Frequency | Cumulative Percent |
|--------------------------|-----------|---------|-------------------------|-----------------------|
| 1 | 1101 | 61.82 | 1101 | 61.82 |
| 2 | 441 | 24.76 | 1542 | 86.58 |
| 3 | 139 | 7.80 | 1681 | 94.39 |
| 4 | 53 | 2.98 | 1734 | 97.36 |
| 5 | 23 | 1.29 | 1757 | 98.65 |
| 6 | 14 | 0.79 | 1771 | 99.44 |
| 7 | 3 | 0.17 | 1774 | 99.61 |
| 8 | 6 | 0.34 | 1780 | 99.94 |
| 12 | 1 | 0.06 | 1781 | 100.00 |

Table 35. The percent of successful anglers landing 1 to 30 summer flounder (MRFSS Type A fish) per trip, 1992.

| <u>Catch per Angler/Trip</u> | <u>Frequency</u> | <u>Percent</u> | <u>Cumulative Frequency</u> | <u>Cumulative Percent</u> |
|----------------------------------|------------------|----------------|---------------------------------|-------------------------------|
| 1 | 1622 | 51.9 | 1622 | 51.9 |
| 2 | 652 | 20.9 | 2274 | 72.8 |
| 3 | 395 | 12.6 | 2669 | 85.4 |
| 4 | 186 | 6.0 | 2855 | 91.4 |
| 5 | 120 | 3.8 | 2975 | 95.2 |
| 6 | 57 | 1.8 | 3032 | 97.0 |
| 7 | 20 | 0.6 | 3052 | 97.7 |
| 8 | 28 | 0.9 | 3080 | 98.6 |
| 9 | 3 | 0.1 | 3083 | 98.7 |
| 10 | 17 | 0.5 | 3100 | 99.2 |
| 11 | 1 | 0.0 | 3101 | 99.2 |
| 12 | 10 | 0.3 | 3111 | 99.6 |
| 13 | 3 | 0.1 | 3114 | 99.6 |
| 14 | 1 | 0.0 | 3115 | 99.7 |
| 15 | 7 | 0.2 | 3122 | 99.9 |
| 16 | 1 | 0.0 | 3123 | 99.9 |
| 21 | 1 | 0.0 | 3124 | 100.0 |
| 30 | 1 | 0.0 | 3125 | 100.0 |

Table 36. The percent of measured summer flounder (MRFSS Type A fish) less than 15" TL (1999), 15.5" TL (2000), and state specific size limits (2001 through 2006). The number in parentheses is sample size (N).

| State | 1999 | | 2000 | | 2001 | | | 2002 | | | 2003 | | |
|-------|--------------------|-----------------|--------------------|-----------------|--------------------|-----------------|------------|--------------------|-----------------|------------|--------------------|-----------------|------------|
| | % Below Size Limit | Number Measured | % Below Size Limit | Number Measured | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit |
| ME | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NH | - | - | 0 | (1) | - | - | - | - | - | - | - | - | - |
| MA | 25 | (24) | 23.3 | (43) | 3.9 | (26) | 16.5 | 20.8 | (53) | 16.5 | 15.6 | (45) | 16.5 |
| RI | 11.9 | (160) | 18.1 | (282) | 14.8 | (196) | 17.5 | 11.8 | (228) | 18.0 | 8.4 | (250) | 17.5 |
| CT | 15.5 | (258) | 2.9 | (379) | 3.1 | (129) | 17.5 | 5.8 | (69) | 17.0 | 7.8 | (179) | 17.0 |
| NY | 5.9 | (272) | 5.5 | (325) | 5.8 | (274) | 17.0 | 6.9 | (246) | 17.0 | 6.2 | (482) | 17.0 |
| NJ | 4.1 | (635) | 9.8 | (705) | 14.7 | (1169) | 16.0 | 6.1 | (540) | 16.5 | 6.4 | (934) | 16.5 |
| DE | 19 | (216) | 5.2 | (249) | 9.2 | (325) | 17.5 | 7.5 | (267) | 17.5 | 10.9 | (266) | 17.5 |
| MD | 3.8 | (263) | 9.1 | (243) | 4.0 | (101) | 17.0 | 5.2 | (77) | 17.0 | 5.0 | (20) | 17.0 |
| VA | 0.5 | (183) | 4.4 | (386) | 3.9 | (1094) | 15.5 | 24.6 | (884) | 17.5 | 14.6 | (513) | 17.5 |
| NC | 59.4 | (544) | 56.0 | (703) | 66.6 | (915) | 15.5 | 75.7 | (474) | 15.5 | 57.5 | (73) | 15.0 |
| Coast | 18.9 | (2555) | 17.1 | (3316) | 17.2 | (4229) | 15.5 | - | (2838) | - | 13.2 | (2763) | 17.0 |

| State | 2004 | | | 2005 | | | 2006 | | |
|-------|--------------------|-----------------|------------|--------------------|-----------------|----------------------------|--------------------|-----------------|----------------------------|
| | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit |
| ME | - | - | - | - | - | - | - | - | - |
| NH | - | - | - | - | - | - | - | (1) | - |
| MA | 6.7 | (30) | 16.5 | 15.2 | (46) | 17.0 | 8.9 | (101) | 17.5 |
| RI | 7.0 | (503) | 17.5 | 6.2 | (401) | 17.5 | 8.9 | (349) | 17.5 |
| CT | 5.8 | (174) | 17.0 | 2.8 | (104) | 17.5 | 11.6 | (69) | 18.0 |
| NY | 3.4 | (381) | 17.0 | 4.8 | (581) | 17.5 | 13.9 | (396) | 18.0 |
| NJ | 2.5 | (756) | 16.5 | 2.8 | (645) | 16.5 | 1.3 | (393) | 16.5 |
| DE | 12.4 | (193) | 17.5 | 9.8 | (367) | 17.5 | 9.6 | (199) | 17.0 |
| MD | 9.1 | (55) | 16.0 | 1.9 | (104) | 15.5/ 15.0 ^a | 0.0 | (30) | 15.5/ 15.0 ^a |
| VA | 8.1 | (334) | 17.0 | 7.1 | (294) | 16.5 | 4.4 | (251) | 16.5 |
| NC | 1.6 | (186) | 14.0 | 5.4 | (205) | 14 | 4.1 | (171) | 14.0 |
| Coast | 15.0 | (2612) | 17.0 | 15.4 | (2747) | 17 | 17.8 | (1960) | 17.0 |

^a15.5" in Atlantic and Coastal Bay; 15.0" in Chesapeake Bay

Table 37. Percent of summer flounder landings for each wave, 1994-1998.

| State | Wave | | | | | |
|--------------|----------------|----------------|-----------------|-----------------|-----------------|----------------|
| | 1 (Jan-Feb) | 2 (Mar-Apr) | 3 (May-June) | 4 (July-Aug) | 5 (Sept-Oct) | 6 (Nov-Dec) |
| NH | 0% | 0% | 0% | 0% | 100% | 0% |
| MA | 0% | 0% | 25% | 71% | 4% | 0% |
| RI | 0% | 0% | 26% | 70% | 3% | 0% |
| CT | 0% | 0% | 17% | 76% | 7% | 0% |
| NY | 0% | 0% | 28% | 59% | 13% | 0% |
| NJ | 0% | 0% | 25% | 47% | 28% | 0% |
| DE | 0% | 0% | 25% | 64% | 10% | 0% |
| MD | 0% | 3% | 27% | 61% | 9% | 0% |
| VA | 0% | 3% | 41% | 38% | 16% | 0% |
| NC | 0% | 6% | 26% | 32% | 30% | 7% |
| Coast | 0% | 0.9% | 28% | 51% | 19% | 0% |

Table 38. The percent of measured scup (MRFSS Type A fish) relative to state specific and coastal size limits from 2001 through 2006. The number in parentheses is sample size.

| | 2001 | | | 2002 | | | 2003 | | |
|--------------|--------------------|-----------------|------------|--------------------|-----------------|------------|--------------------|-----------------|------------|
| State | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit |
| ME | - | - | - | - | - | - | - | - | - |
| NH | - | - | - | - | - | - | - | - | - |
| MA | 0 | (73) | 9.0 | 0.8 | (279) | 9.0 | 1.0 | (715) | 9.0 |
| RI | 25.0 | (523) | 10.0 | 9.0 | (435) | 10.0 | 2.2 | (313) | 10.0 |
| CT | 1.0 | (328) | 9.0 | 1.3 | (152) | 10.0 | 1.1 | (362) | 10.0 |
| NY | 4.1 | (49) | 9.0 | 7.5 | (94) | 10.0 | 0 | (969) | 10.0 |
| NJ | 0 | (56) | 9.0 | 4.6 | (44) | 10.0 | 6.9 | (29) | 10.0 |
| DE | 0 | (5) | 8.0 | 0 | (1) | 8.0 | 33.3 | (6) | 8.0 |
| MD | 0 | (0) | 7.0 | 0 | (1) | 8.0 | 0 | (0) | 8.0 |
| VA | 0 | (0) | 8.0 | 0 | (0) | 8.0 | 0 | (3) | 8.0 |
| NC | 0 | (3) | 8.0 | 0 | (0) | 8.0 | 0 | (0) | 8.0 |
| Coast | 2.6 | (1037) | 9.0 | 6.1 | (1006) | 10.0 | 7.0 | (2397) | 10.0 |

| | 2004 | | | 2005 | | | 2006 | | |
|--------------|--------------------|-----------------|------------|--------------------|-----------------|------------|--------------------|-----------------|------------|
| State | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit | % Below Size Limit | Number Measured | Size Limit |
| ME | - | - | - | - | - | - | - | - | - |
| NH | - | - | - | - | - | - | - | - | - |
| MA | 2.1 | (579) | 10.0 | 32.4 | (657) | 10.5 | 38.3 | (616) | 10.5 |
| RI | 5.4 | (138) | 10.5 | 32.0 | (442) | 10.5 | 29.9 | (67) | 10.5 |
| CT | 12.3 | (96) | 10.5 | 18.8 | (80) | 10.5 | 17.5 | (63) | 10.5 |
| NY | 0 | (220) | 11.0 | 11.4 | (562) | 10.5 | 40.5 | (79) | 10.5 |
| NJ | 20.0 | (5) | 10.0 | 11.1 | (27) | 9 | 92.7 | (55) | 9 |
| DE | 0 | (0) | 8.0 | 25.0 | (4) | 8 | 100.0 | (1) | 8 |
| MD | 0 | (0) | 8.0 | 0 | (0) | 8 | 0 | (0) | 8 |
| VA | 0 | (0) | 8.0 | 0 | (2) | 8 | 0 | (0) | 8 |
| NC | 0 | (3) | 8.0 | 56.2 | (73) | 8 | 2.3 | (89) | 8 |
| Coast | 6.44 | (1041) | 10.0 | 15.4 | (1847) | 10.0 | 25.4 | (970) | 10.0 |

Table 39. The effect of various size and possession limits on 2006 scup recreational landings. The tables contain the proportional reduction in number of scup landed assuming regulations are 100% effective (Table A) and adjusting for the effectiveness of the 2006 management measures (Table B).

Table A - 100% Effective

| Bag | Size (TL in) | | | | | |
|-----|--------------|-------|-------|-------|-------|-------|
| | 9 | 10 | 10.5 | 11 | 11.5 | 12 |
| 1 | 0.878 | 0.879 | 0.884 | 0.892 | 0.905 | 0.913 |
| 2 | 0.790 | 0.792 | 0.803 | 0.815 | 0.840 | 0.854 |
| 3 | 0.715 | 0.717 | 0.734 | 0.751 | 0.785 | 0.804 |
| 4 | 0.650 | 0.653 | 0.675 | 0.698 | 0.737 | 0.762 |
| 5 | 0.599 | 0.602 | 0.627 | 0.652 | 0.699 | 0.727 |
| 6 | 0.554 | 0.557 | 0.586 | 0.617 | 0.667 | 0.697 |
| 7 | 0.512 | 0.515 | 0.548 | 0.584 | 0.637 | 0.669 |
| 8 | 0.474 | 0.477 | 0.516 | 0.555 | 0.610 | 0.645 |
| 9 | 0.439 | 0.443 | 0.486 | 0.527 | 0.585 | 0.628 |
| 10 | 0.407 | 0.411 | 0.457 | 0.501 | 0.564 | 0.614 |
| 15 | 0.290 | 0.295 | 0.357 | 0.412 | 0.492 | 0.571 |
| 20 | 0.222 | 0.238 | 0.303 | 0.366 | 0.459 | 0.544 |
| 25 | 0.172 | 0.198 | 0.265 | 0.328 | 0.435 | 0.525 |
| 30 | 0.140 | 0.166 | 0.236 | 0.304 | 0.414 | 0.507 |
| 35 | 0.117 | 0.143 | 0.215 | 0.283 | 0.396 | 0.490 |
| 40 | 0.096 | 0.122 | 0.194 | 0.265 | 0.377 | 0.475 |
| 45 | 0.077 | 0.104 | 0.176 | 0.247 | 0.360 | 0.460 |
| 50 | 0.059 | 0.085 | 0.158 | 0.228 | 0.344 | 0.448 |

Table B - Adjusted

| Bag | Size (TL in) | | | | | |
|-----|--------------|-------|-------|-------|-------|-------|
| | 9 | 10 | 10.5 | 11 | 11.5 | 12 |
| 1 | 0.869 | 0.870 | 0.874 | 0.883 | 0.897 | 0.906 |
| 2 | 0.778 | 0.779 | 0.786 | 0.800 | 0.827 | 0.843 |
| 3 | 0.699 | 0.701 | 0.712 | 0.731 | 0.769 | 0.790 |
| 4 | 0.632 | 0.634 | 0.649 | 0.675 | 0.719 | 0.744 |
| 5 | 0.579 | 0.581 | 0.599 | 0.627 | 0.677 | 0.704 |
| 6 | 0.533 | 0.535 | 0.556 | 0.588 | 0.641 | 0.671 |
| 7 | 0.491 | 0.493 | 0.517 | 0.551 | 0.607 | 0.639 |
| 8 | 0.454 | 0.455 | 0.481 | 0.518 | 0.577 | 0.613 |
| 9 | 0.419 | 0.422 | 0.448 | 0.488 | 0.550 | 0.594 |
| 10 | 0.387 | 0.389 | 0.416 | 0.459 | 0.526 | 0.578 |
| 15 | 0.274 | 0.276 | 0.303 | 0.360 | 0.446 | 0.531 |
| 20 | 0.214 | 0.217 | 0.244 | 0.308 | 0.409 | 0.500 |
| 25 | 0.172 | 0.174 | 0.202 | 0.266 | 0.382 | 0.480 |
| 30 | 0.139 | 0.142 | 0.169 | 0.239 | 0.359 | 0.460 |
| 35 | 0.116 | 0.118 | 0.146 | 0.216 | 0.338 | 0.441 |
| 40 | 0.093 | 0.096 | 0.123 | 0.196 | 0.318 | 0.423 |
| 45 | 0.073 | 0.075 | 0.103 | 0.175 | 0.298 | 0.407 |
| 50 | 0.052 | 0.055 | 0.082 | 0.155 | 0.281 | 0.394 |

Table 40. The percent of successful anglers landing 1 to 75 scup (MRFSS Type A fish) per trip, waves 1-4, 2006.

| <u>Catch per Angler/Trip</u> | <u>Frequency</u> | <u>Percent</u> | <u>Cumulative Frequency</u> | <u>Cumulative Percent</u> |
|----------------------------------|------------------|----------------|---------------------------------|-------------------------------|
| 1 | 102 | 34.34 | 102 | 34.34 |
| 2 | 34 | 11.45 | 136 | 45.79 |
| 3 | 24 | 8.08 | 160 | 53.87 |
| 4 | 27 | 9.09 | 187 | 62.96 |
| 5 | 11 | 3.70 | 198 | 66.67 |
| 6 | 13 | 4.38 | 211 | 71.04 |
| 7 | 8 | 2.69 | 219 | 73.74 |
| 8 | 10 | 3.37 | 229 | 77.10 |
| 9 | 7 | 2.36 | 236 | 79.46 |
| 10 | 8 | 2.69 | 244 | 82.15 |
| 11 | 3 | 1.01 | 247 | 83.16 |
| 12 | 3 | 1.01 | 250 | 84.18 |
| 13 | 5 | 1.68 | 255 | 85.86 |
| 14 | 4 | 1.35 | 259 | 87.21 |
| 15 | 8 | 2.69 | 267 | 89.90 |
| 16 | 1 | 0.34 | 268 | 90.24 |
| 17 | 1 | 0.34 | 269 | 90.57 |
| 19 | 4 | 1.35 | 273 | 91.92 |
| 24 | 1 | 0.34 | 274 | 92.26 |
| 25 | 4 | 1.35 | 278 | 93.60 |
| 30 | 6 | 2.02 | 284 | 95.62 |
| 34 | 1 | 0.34 | 285 | 95.96 |
| 41 | 1 | 0.34 | 286 | 96.30 |
| 45 | 1 | 0.34 | 287 | 96.63 |
| 47 | 1 | 0.34 | 288 | 96.97 |
| 51 | 3 | 1.01 | 291 | 97.98 |
| 60 | 2 | 0.67 | 293 | 98.65 |
| 62 | 1 | 0.34 | 294 | 98.99 |
| 75 | 3 | 1.01 | 297 | 100.00 |

Table 41. The percent of successful anglers landing 1 to 74 scup (MRFSS Type A fish) per trip, waves 1-4, 2005.

| <u>Catch per Angler/Trip</u> | <u>Frequency</u> | <u>Percent</u> | <u>Cumulative Frequency</u> | <u>Cumulative Percent</u> |
|------------------------------|------------------|----------------|-----------------------------|---------------------------|
| 1 | 84 | 29.79 | 84 | 29.79 |
| 2 | 40 | 14.18 | 124 | 43.97 |
| 3 | 26 | 9.22 | 150 | 53.19 |
| 4 | 31 | 10.99 | 181 | 64.18 |
| 5 | 21 | 7.45 | 202 | 71.63 |
| 6 | 8 | 2.84 | 210 | 74.47 |
| 7 | 3 | 1.06 | 213 | 75.53 |
| 8 | 12 | 4.26 | 225 | 79.79 |
| 9 | 1 | 0.35 | 226 | 80.14 |
| 10 | 6 | 2.13 | 232 | 82.27 |
| 11 | 1 | 0.35 | 233 | 82.62 |
| 12 | 2 | 0.71 | 235 | 83.33 |
| 13 | 1 | 0.35 | 236 | 83.69 |
| 14 | 5 | 1.77 | 241 | 85.46 |
| 15 | 8 | 2.84 | 249 | 88.30 |
| 16 | 5 | 1.77 | 254 | 90.07 |
| 17 | 1 | 0.35 | 255 | 90.43 |
| 24 | 3 | 1.06 | 258 | 91.49 |
| 26 | 2 | 0.71 | 260 | 92.20 |
| 28 | 1 | 0.35 | 261 | 92.55 |
| 30 | 2 | 0.71 | 263 | 93.26 |
| 32 | 5 | 1.77 | 268 | 95.04 |
| 35 | 1 | 0.35 | 269 | 95.39 |
| 37 | 1 | 0.35 | 270 | 95.74 |
| 45 | 2 | 0.71 | 272 | 96.45 |
| 46 | 3 | 1.06 | 275 | 97.52 |
| 54 | 1 | 0.35 | 276 | 97.87 |
| 58 | 1 | 0.35 | 277 | 98.23 |
| 59 | 1 | 0.35 | 278 | 98.58 |
| 60 | 3 | 1.06 | 281 | 99.65 |
| 74 | 1 | 0.35 | 282 | 100.00 |

Table 42. The percent of successful anglers landing 1 to 31 black sea bass (MRFSS Type A fish) per trip, waves 1-4, 2006.

| <u>Catch per Angler/Trip</u> | <u>Frequency</u> | <u>Percent</u> | <u>Cumulative Frequency</u> | <u>Cumulative Percent</u> |
|----------------------------------|------------------|----------------|---------------------------------|-------------------------------|
| 1 | 454 | 46.85 | 454 | 46.85 |
| 2 | 173 | 17.85 | 627 | 64.71 |
| 3 | 111 | 11.46 | 738 | 76.16 |
| 4 | 45 | 4.64 | 783 | 80.80 |
| 5 | 40 | 4.13 | 823 | 84.93 |
| 6 | 49 | 5.06 | 872 | 89.99 |
| 7 | 14 | 1.44 | 886 | 91.43 |
| 8 | 18 | 1.86 | 904 | 93.29 |
| 9 | 13 | 1.34 | 917 | 94.63 |
| 10 | 7 | 0.72 | 924 | 95.36 |
| 11 | 23 | 2.37 | 947 | 97.73 |
| 12 | 3 | 0.31 | 950 | 98.04 |
| 13 | 2 | 0.21 | 952 | 98.25 |
| 14 | 3 | 0.31 | 955 | 98.56 |
| 15 | 3 | 0.31 | 958 | 98.86 |
| 16 | 4 | 0.41 | 962 | 99.28 |
| 17 | 4 | 0.41 | 966 | 99.69 |
| 20 | 2 | 0.21 | 968 | 99.90 |
| 31 | 1 | 0.10 | 969 | 100.00 |

Table 43. The percent of successful anglers landing 1 to 26 black sea bass (MRFSS Type A fish) per trip, waves 1-4, 2005.

| <u>Catch per Angler/Trip</u> | <u>Frequency</u> | <u>Percent</u> | <u>Cumulative Frequency</u> | <u>Cumulative Percent</u> |
|----------------------------------|------------------|----------------|---------------------------------|-------------------------------|
| 1 | 583 | 40.35 | 583 | 40.35 |
| 2 | 274 | 18.96 | 857 | 59.31 |
| 3 | 163 | 11.28 | 1020 | 70.59 |
| 4 | 130 | 9.00 | 1150 | 79.58 |
| 5 | 90 | 6.23 | 1240 | 85.81 |
| 6 | 52 | 3.60 | 1292 | 89.41 |
| 7 | 34 | 2.35 | 1326 | 91.76 |
| 8 | 23 | 1.59 | 1349 | 93.36 |
| 9 | 12 | 0.83 | 1361 | 94.19 |
| 10 | 18 | 1.25 | 1379 | 95.43 |
| 11 | 9 | 0.62 | 1388 | 96.06 |
| 12 | 11 | 0.76 | 1399 | 96.82 |
| 13 | 17 | 1.18 | 1416 | 97.99 |
| 14 | 7 | 0.48 | 1423 | 98.48 |
| 15 | 4 | 0.28 | 1427 | 98.75 |
| 16 | 5 | 0.35 | 1432 | 99.10 |
| 17 | 2 | 0.14 | 1434 | 99.24 |
| 18 | 3 | 0.21 | 1437 | 99.45 |
| 19 | 1 | 0.07 | 1438 | 99.52 |
| 20 | 2 | 0.14 | 1440 | 99.65 |
| 21 | 2 | 0.14 | 1442 | 99.79 |
| 24 | 1 | 0.07 | 1443 | 99.86 |
| 25 | 1 | 0.07 | 1444 | 99.93 |
| 26 | 1 | 0.07 | 1445 | 100.00 |

Table 44. Measured black sea bass (MRFSS Type A fish) less than 10" TL (1992-1999), 11" (2000-2001), 11.5" (2002), and 12" (2003-2006) by state and year.

| State | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|-----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| ME | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| NH | - | - | - | - | - | - | - | 0 | 7.1 | 0 | | - | - | - |
| MA | 0 | 0 | 0 | 0 | 0 | 0 | - | 44.4 | 0 | 0 | 4.6 | 1.7 | 2.5 | 14.3 |
| RI | 2.3 | 5.3 | 32.2 | 10.0 | 28.6 | 15.6 | 2.9 | 17.4 | 2.7 | 9.8 | 1.8 | 2.3 | 1.3 | 9.1 |
| CT | 55.6 | - | 44.4 | 0 | 0 | 0 | 0 | 0 | 0 | 9.1 | 9.1 | 12.5 | 0 | 0 |
| NY | 45.5 | 70.3 | 60.9 | 25.0 | 55.2 | 0 | 37.9 | 42.2 | 4.4 | 4.8 | 11.3 | 4.8 | 9.7 | 10.0 |
| NJ | 38.1 | 35.0 | 60.2 | 37.0 | 36.2 | 8.4 | 3.1 | 47.0 | 2.5 | 2.6 | 2.7 | 0.3 | 0.9 | 4.2 |
| DE | 51.1 | 56.5 | 55.4 | 36.7 | 24.0 | 8.5 | 4.8 | 26.1 | 9.8 | 13.8 | 9.4 | 11.2 | 17.1 | 5.7 |
| MD | 21.2 | 29.2 | 34.7 | 0 | 15.0 | 10.0 | 3.0 | 37.2 | 6.4 | 1.8 | 3.5 | 2.2 | 10.1 | 1.9 |
| VA | 42.6 | 47.8 | 50.5 | 52.7 | 20.1 | 18.9 | 15.3 | 9.3 | 6.3 | 8.0 | 9.8 | 11.2 | 33.1 | 14.3 |
| NC¹ | 37.1 | 29.8 | 39.9 | 26.5 | 26.3 | 33.5 | 17.4 | 31.7 | 22.5 | 12.1 | 46.0 | 59.0 | 62.4 | 56.5 |
| | | | | | | | | | | | | | | |
| Coast | 40.7 | 44.3 | 48.6 | 42.3 | 26.5 | 18.4 | 13.1 | 25.6 | 8.2 | 9.0 | 8.1 | 17.5 | 25.3 | 28.9 |

¹All of NC, both North and South of Hatteras.

Table 45. Projected 2007 Effort Effects of Combined Management Measures, by Mode in 2007 (2006 catch and effort estimates were used to project 2007 effects).

| | Party/Charter | | | Private/Rental | | | Shore | | |
|---|---------------|-----------|-------------|----------------|------------|-------------|----------|------------|-------------|
| | Affected | Total | % of | Affected | Total | % of | Affected | Total | % of |
| | Trips | Trips | Total Trips | Trips | Trips | Total Trips | Trips | Trips | Total Trips |
| Fluke precautionary default measures, Scup Alt1, BSB Alt1 | 119,290 | 1,898,485 | 6.29% | 1,168,682 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke precautionary default measures, Scup Alt1, BSB Alt2 | 118,476 | 1,898,485 | 6.24% | 1,168,547 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke precautionary default measures, Scup Alt1, BSB Alt3 | 121,122 | 1,898,485 | 6.38% | 1,169,074 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke precautionary default measures, Scup Alt2, BSB Alt1 | 135,546 | 1,898,485 | 7.14% | 1,213,203 | 18,689,616 | 6.49% | 101,074 | 16,391,127 | 0.62% |
| Fluke precautionary default measures, Scup Alt2, BSB Alt2 | 134,732 | 1,898,485 | 7.09% | 1,213,068 | 18,689,616 | 6.49% | 101,074 | 16,391,127 | 0.62% |
| Fluke precautionary default measures, Scup Alt2, BSB Alt3 | 137,378 | 1,898,485 | 7.23% | 1,213,595 | 18,689,616 | 6.49% | 101,074 | 16,391,127 | 0.62% |
| Fluke precautionary default measures, Scup Alt3, BSB Alt1 | 119,306 | 1,898,485 | 6.30% | 1,168,682 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke precautionary default measures, Scup Alt3, BSB Alt2 | 118,492 | 1,898,485 | 6.25% | 1,168,547 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke precautionary default measures, Scup Alt3, BSB Alt3 | 121,138 | 1,898,485 | 6.39% | 1,169,074 | 18,689,616 | 6.25% | 98,313 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt1, BSB Alt1 | 120,554 | 1,898,485 | 6.36% | 1,173,763 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt1, BSB Alt2 | 119,740 | 1,898,485 | 6.31% | 1,173,628 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt1, BSB Alt3 | 122,386 | 1,898,485 | 6.45% | 1,174,155 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt2, BSB Alt1 | 136,810 | 1,898,485 | 7.21% | 1,218,284 | 18,689,616 | 6.52% | 101,297 | 16,391,127 | 0.62% |
| Fluke Alt2, Scup Alt2, BSB Alt2 | 135,996 | 1,898,485 | 7.16% | 1,218,149 | 18,689,616 | 6.52% | 101,297 | 16,391,127 | 0.62% |
| Fluke Alt2, Scup Alt2, BSB Alt3 | 138,642 | 1,898,485 | 7.30% | 1,218,676 | 18,689,616 | 6.52% | 101,297 | 16,391,127 | 0.62% |
| Fluke Alt2, Scup Alt3, BSB Alt1 | 120,570 | 1,898,485 | 6.37% | 1,173,763 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt3, BSB Alt2 | 119,756 | 1,898,485 | 6.32% | 1,173,628 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |
| Fluke Alt2, Scup Alt3, BSB Alt3 | 122,402 | 1,898,485 | 6.46% | 1,174,155 | 18,689,616 | 6.28% | 98,536 | 16,391,127 | 0.60% |

Source: Scott Steinback, NMFS/NER/NEFSC.

Table 46. Average daily trip expenditures by recreational fishermen in the Northeast region by mode, in 1998.

| Expenditures | \$ | | |
|---|---------------|----------------|--------------|
| | Party/Charter | Private/Rental | Shore |
| Travel | 4.77 | 5.27 | 5.39 |
| Food, drink, refreshments | 16.06 | 13.18 | 13.37 |
| Lodging at motels, cabins, lodges, or campgrounds | 5.53 | 1.51 | 5.28 |
| Public transportation or car rental | 1.46 | 0.48 | 0.87 |
| Boat fuel | 0 | 13.40 | 0 |
| Guide or package fees | 33.22 | 0 | 0 |
| Access and/or boat launching fees | 0.86 | 3.72 | 0.41 |
| Equipment | 1.66 | 0.42 | 0.21 |
| Bait | 2.18 | 6.95 | 5.15 |
| Ice | 1.39 | 2.48 | 1.79 |
| Total | 67.12 | 47.42 | 32.48 |

Table 47. Regional Economic Impacts of Combined Management Measures Assuming a 25% Reduction in the Number of Affected Trips (2007 \$'s).

| | Party/Charter | | | Private/Rental | | | Shore | | | Total | | |
|-----------------------------|-----------------------------|--------|------|-----------------------------|--------|------|-----------------------------|--------|------|-----------------------------|--------|------|
| | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs |
| Combination 1 ^a | 3,779 | 1,379 | 37 | 26,149 | 9,543 | 256 | 1,507 | 550 | 15 | 31,434 | 11,472 | 308 |
| Combination 2 ^b | 3,753 | 1,370 | 37 | 26,151 | 9,544 | 256 | 1,507 | 550 | 15 | 31,411 | 11,463 | 308 |
| Combination 3 ^c | 3,837 | 1,400 | 38 | 26,163 | 9,548 | 256 | 1,507 | 550 | 15 | 31,507 | 11,498 | 308 |
| Combination 4 ^d | 4,294 | 1,567 | 42 | 27,150 | 9,909 | 266 | 1,549 | 565 | 15 | 32,993 | 12,041 | 323 |
| Combination 5 ^e | 4,268 | 1,558 | 42 | 27,147 | 9,908 | 266 | 1,549 | 565 | 15 | 32,965 | 12,030 | 323 |
| Combination 6 ^f | 4,352 | 1,588 | 43 | 27,159 | 9,912 | 266 | 1,549 | 565 | 15 | 33,060 | 12,065 | 324 |
| Combination 7 ^g | 3,779 | 1,379 | 37 | 26,154 | 9,545 | 256 | 1,507 | 550 | 15 | 31,440 | 11,474 | 308 |
| Combination 8 ^h | 3,753 | 1,370 | 37 | 26,151 | 9,544 | 256 | 1,507 | 550 | 15 | 31,411 | 11,464 | 308 |
| Combination 9 ⁱ | 3,837 | 1,400 | 38 | 26,163 | 9,548 | 256 | 1,507 | 550 | 15 | 31,507 | 11,499 | 308 |
| Combination 10 ^j | 3,819 | 1,394 | 37 | 26,268 | 9,586 | 257 | 1,510 | 551 | 15 | 31,597 | 11,531 | 309 |
| Combination 11 ^k | 3,793 | 1,384 | 37 | 26,265 | 9,585 | 257 | 1,510 | 551 | 15 | 31,568 | 11,521 | 309 |
| Combination 12 ^l | 3,877 | 1,415 | 38 | 26,277 | 9,590 | 257 | 1,510 | 551 | 15 | 31,664 | 11,556 | 310 |
| Combination 13 ^m | 4,334 | 1,582 | 42 | 27,264 | 9,950 | 267 | 1,553 | 567 | 15 | 33,151 | 12,098 | 325 |
| Combination 14 ⁿ | 4,308 | 1,572 | 42 | 27,261 | 9,949 | 267 | 1,553 | 567 | 15 | 33,122 | 12,088 | 324 |
| Combination 15 ^o | 4,392 | 1,603 | 43 | 27,273 | 9,953 | 267 | 1,553 | 567 | 15 | 33,217 | 12,123 | 325 |
| Combination 16 ^p | 3,819 | 1,394 | 37 | 26,268 | 9,586 | 257 | 1,510 | 551 | 15 | 31,597 | 11,532 | 309 |
| Combination 17 ^q | 3,793 | 1,384 | 37 | 26,265 | 9,585 | 257 | 1,510 | 551 | 15 | 31,569 | 11,521 | 309 |
| Combination 18 ^r | 3,877 | 1,415 | 38 | 26,277 | 9,590 | 257 | 1,510 | 551 | 15 | 31,664 | 11,556 | 310 |

^aFluke precautionary default measures, Scup alternative 1, BSB alternative 1

^bFluke precautionary default measures, Scup alternative 1, BSB alternative 2

^cFluke precautionary default measures, Scup alternative 1, BSB alternative 3

^dFluke precautionary default measures, Scup alternative 2, BSB alternative 1

^eFluke precautionary default measures, Scup alternative 2, BSB alternative 2

^fFluke precautionary default measures, Scup alternative 2, BSB alternative 3

^gFluke precautionary default measures, Scup alternative 3, BSB alternative 1

^hFluke precautionary default measures, Scup alternative 3, BSB alternative 2

ⁱFluke precautionary default measures, Scup alternative 3, BSB alternative 3

^jFluke alternative 2, Scup alternative 1, BSB alternative 1

^kFluke alternative 2, Scup alternative 1, BSB alternative 2

^lFluke alternative 2, Scup alternative 1, BSB alternative 3

^mFluke alternative 2, Scup alternative 2, BSB alternative 1

ⁿFluke alternative 2, Scup alternative 2, BSB alternative 2

^oFluke alternative 2, Scup alternative 2, BSB alternative 3

^pFluke alternative 2, Scup alternative 3, BSB alternative 1

^qFluke alternative 2, Scup alternative 3, BSB alternative 2

^rFluke alternative 2, Scup alternative 3, BSB alternative 3

Source: Scott Steinback, NMFS/NER/NEFSC.

Table 48. Regional Economic Impacts of Combined Management Measures Assuming a 50% Reduction in the Number of Affected Trips (2007 \$'s).

| | Party/Charter | | | Private/Rental | | | Shore | | | Total | | |
|-----------------------------|-----------------------------|--------|------|-----------------------------|--------|------|-----------------------------|--------|------|-----------------------------|--------|------|
| | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs | Sales (thousand dollars) | Income | Jobs |
| Combination 1 ^a | 7,558 | 2,758 | 74 | 52,298 | 19,086 | 512 | 3,014 | 1,100 | 30 | 62,868 | 22,944 | 616 |
| Combination 2 ^b | 7,506 | 2,740 | 74 | 52,302 | 19,088 | 512 | 3,014 | 1,100 | 30 | 62,822 | 22,926 | 616 |
| Combination 3 ^c | 7,674 | 2,800 | 76 | 52,326 | 19,096 | 512 | 3,014 | 1,100 | 30 | 63,014 | 22,996 | 616 |
| Combination 4 ^d | 8,588 | 3,134 | 84 | 54,300 | 19,818 | 532 | 3,098 | 1,130 | 30 | 65,986 | 24,082 | 646 |
| Combination 5 ^e | 8,536 | 3,116 | 84 | 54,294 | 19,816 | 532 | 3,098 | 1,130 | 30 | 65,930 | 24,060 | 646 |
| Combination 6 ^f | 8,704 | 3,176 | 86 | 54,318 | 19,824 | 532 | 3,098 | 1,130 | 30 | 66,120 | 24,130 | 648 |
| Combination 7 ^g | 7,558 | 2,758 | 74 | 52,308 | 19,090 | 512 | 3,014 | 1,100 | 30 | 62,880 | 22,948 | 616 |
| Combination 8 ^h | 7,506 | 2,740 | 74 | 52,302 | 19,088 | 512 | 3,014 | 1,100 | 30 | 62,822 | 22,928 | 616 |
| Combination 9 ⁱ | 7,674 | 2,800 | 76 | 52,326 | 19,096 | 512 | 3,014 | 1,100 | 30 | 63,014 | 22,998 | 616 |
| Combination 10 ^j | 7,638 | 2,788 | 74 | 52,536 | 19,172 | 514 | 3,020 | 1,102 | 30 | 63,194 | 23,062 | 618 |
| Combination 11 ^k | 7,586 | 2,768 | 74 | 52,530 | 19,170 | 514 | 3,020 | 1,102 | 30 | 63,136 | 23,042 | 618 |
| Combination 12 ^l | 7,754 | 2,830 | 76 | 52,554 | 19,180 | 514 | 3,020 | 1,102 | 30 | 63,328 | 23,112 | 620 |
| Combination 13 ^m | 8,668 | 3,164 | 84 | 54,528 | 19,900 | 534 | 3,106 | 1,134 | 30 | 66,302 | 24,196 | 650 |
| Combination 14 ⁿ | 8,616 | 3,144 | 84 | 54,522 | 19,898 | 534 | 3,106 | 1,134 | 30 | 66,244 | 24,176 | 648 |
| Combination 15 ^o | 8,784 | 3,206 | 86 | 54,546 | 19,906 | 534 | 3,106 | 1,134 | 30 | 66,434 | 24,246 | 650 |
| Combination 16 ^p | 7,638 | 2,788 | 74 | 52,536 | 19,172 | 514 | 3,020 | 1,102 | 30 | 63,194 | 23,064 | 618 |
| Combination 17 ^q | 7,586 | 2,768 | 74 | 52,530 | 19,170 | 514 | 3,020 | 1,102 | 30 | 63,138 | 23,042 | 618 |
| Combination 18 ^r | 7,754 | 2,830 | 76 | 52,554 | 19,180 | 514 | 3,020 | 1,102 | 30 | 63,328 | 23,112 | 620 |

^aFluke precautionary default measures, Scup alternative 1, BSB alternative 1

^bFluke precautionary default measures, Scup alternative 1, BSB alternative 2

^cFluke precautionary default measures, Scup alternative 1, BSB alternative 3

^dFluke precautionary default measures, Scup alternative 2, BSB alternative 1

^eFluke precautionary default measures, Scup alternative 2, BSB alternative 2

^fFluke precautionary default measures, Scup alternative 2, BSB alternative 3

^gFluke precautionary default measures, Scup alternative 3, BSB alternative 1

^hFluke precautionary default measures, Scup alternative 3, BSB alternative 2

ⁱFluke precautionary default measures, Scup alternative 3, BSB alternative 3

^jFluke alternative 2, Scup alternative 1, BSB alternative 1

^kFluke alternative 2, Scup alternative 1, BSB alternative 2

^lFluke alternative 2, Scup alternative 1, BSB alternative 3

^mFluke alternative 2, Scup alternative 2, BSB alternative 1

ⁿFluke alternative 2, Scup alternative 2, BSB alternative 2

^oFluke alternative 2, Scup alternative 2, BSB alternative 3

^pFluke alternative 2, Scup alternative 3, BSB alternative 1

^qFluke alternative 2, Scup alternative 3, BSB alternative 2

^rFluke alternative 2, Scup alternative 3, BSB alternative 3

Source: Scott Steinback, NMFS/NER/NEFSC.

Table 49. Summary of Landings Combinations by Vessels Reporting Party/Charter Trips (Calendar Year 2005 VTR Data).

| State | Landed Fluke, BSB, and Scup | Landed BSB Only | Landed BSB and Scup | Landed BSB and Fluke | Landed Scup Only | Landed Fluke Only | Landed Fluke and Scup | Total |
|--------------|-----------------------------|-----------------|---------------------|----------------------|------------------|-------------------|-----------------------|-------|
| ME | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 |
| NH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| MA | 11 | 4 | 1 | 3 | 2 | 9 | 0 | 30 |
| RI | 11 | 1 | 3 | 4 | 0 | 8 | 0 | 27 |
| CT | 5 | 1 | 1 | 0 | 0 | 3 | 2 | 12 |
| NY | 49 | 6 | 0 | 15 | 0 | 19 | 9 | 98 |
| NJ | 26 | 5 | 1 | 49 | 0 | 18 | 0 | 99 |
| DE | 3 | 4 | 0 | 23 | 0 | 2 | 0 | 32 |
| MD | 1 | 1 | 0 | 3 | 0 | 1 | 0 | 6 |
| VA | 0 | 6 | 0 | 11 | 0 | 4 | 0 | 21 |
| NC | 0 | 3 | 0 | 1 | 0 | 1 | 0 | 5 |
| Total | 106 | 31 | 6 | 109 | 2 | 66 | 11 | 331 |

Source: Scott Steinback, NMFS/NER/NEFSC.

Table 50. Number of summer flounder recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2007.

| 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 | 16.52 |
| 2001 | 6,130,383 | 7.16 | 11.66 |
| 2002 | 4,564,011 | 9.72 | 8.03 |
| 2003 | 5,624,387 | 9.28 ^d | 11.66 |
| 2004 | 5,129,166 | 11.21 ^d | 10.99 |
| 2005 | 5,560,041 | 11.98 ^d | 11.17 |
| 2006 | 5,447,976 | 9.29 ^d | 11.74 ^c |
| 2007 | - | 6.68 ^{d,e} | - |

^aEstimated number of recreational fishing trips (expanded) where the primary target species was summer flounder, Maine through North Carolina. Source: Scott Steinback, NMFS/NER/NEFSC.

^bFrom Maine through North Carolina. Source: MRFSS.

^cProjected landings using waves 1-5.

^dAdjusted for research set-aside.

^eSee discussion in section 5.1.

Table 51. Number of scup recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2007.

| 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 ^d | 3.62 |
| 2003 | 971,770 | 4.01 ^d | 8.48 |
| 2004 | 567,518 | 3.99 ^d | 4.41 |
| 2005 | 478,810 | 3.96 ^d | 2.67 |
| 2006 | 466,977 | 3.99 ^d | 2.80 ^c |
| 2007 | - | 3.74 ^d | - |

^aEstimated number of recreational fishing trips where the primary target species was scup, Maine through North Carolina. Source: Scott Steinback, NMFS/NEFSC.

^bFrom Maine to North Carolina. Source MRFSS.

^cProjected landings using waves 1-5.

^dAdjusted for research set-aside.

Table 52. Number of black sea bass recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2007.

| Year | Number of Fishing Trips^a | Recreational Harvest Limit (million lb) | Recreational Landings of BSB (million lb)^b |
|-------------|--|--|--|
| 1991 | 288,691 | None | 4.19 |
| 1992 | 263,957 | None | 2.71 |
| 1993 | 299,404 | None | 4.84 |
| 1994 | 253,888 | None | 2.95 |
| 1995 | 313,537 | None | 6.21 |
| 1996 | 231,090 | None | 4.00 |
| 1997 | 310,898 | None | 4.27 |
| 1998 | 137,734 | 3.15 | 1.15 |
| 1999 | 136,452 | 3.15 | 1.70 |
| 2000 | 255,789 | 3.15 | 3.99 |
| 2001 | 293,191 | 3.15 | 3.42 |
| 2002 | 283,537 | 3.43 ^d | 4.35 |
| 2003 | 285,861 | 3.43 ^d | 3.30 |
| 2004 | 186,038 | 4.01 ^d | 1.67 |
| 2005 | 163,418 | 4.13 ^d | 2.01 ^c |
| 2006 | 251,945 | 3.99 ^d | 1.91 ^c |
| 2007 | - | 2.47 ^d | |

^aEstimated number of recreational fishing trips (expanded) where the primary target species was black sea bass, Maine through North Carolina. Source: Scott Steinback, NMFS/NEFSC.

^bFrom Maine to Cape Hatteras, North Carolina. Source MRFSS.

^cProjected landings using waves 1-5.

^dAdjusted for research set-aside.

Table 53. Combined effects of summer flounder precautionary default measures, scup alternative 1, and black sea bass alternative 1 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,742 | 30 | \$7,099 | \$14,198 |
| RI | 33,580 | 15.3% | 5,137 | 27 | \$1,954 | \$3,907 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.8% | 46,344 | 98 | \$4,855 | \$9,711 |
| NJ | 510,128 | 6.4% | 32,667 | 99 | \$3,388 | \$6,776 |
| DE | 29,766 | 3.2% | 951 | 32 | \$305 | \$610 |
| MD | 191,128 | 0.2% | 395 | 6 | \$676 | \$1,352 |
| VA | 45,361 | 7.4% | 3,377 | 21 | \$1,651 | \$3,302 |
| NC | 308,820 | 2.6% | 8,134 | 5 | \$16,703 | \$33,406 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 54. Combined effects of summer flounder precautionary default measures, scup alternative 1, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,699 | 30 | \$7,084 | \$14,168 |
| RI | 33,580 | 15.3% | 5,122 | 27 | \$1,948 | \$3,895 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.7% | 46,136 | 98 | \$4,834 | \$9,667 |
| NJ | 510,128 | 6.4% | 32,454 | 99 | \$3,366 | \$6,732 |
| DE | 29,766 | 3.1% | 911 | 32 | \$292 | \$585 |
| MD | 191,128 | 0.2% | 301 | 6 | \$515 | \$1,029 |
| VA | 45,361 | 7.4% | 3,376 | 21 | \$1,651 | \$3,301 |
| NC | 308,820 | 2.6% | 7,936 | 5 | \$16,296 | \$32,592 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 55. Combined effects of summer flounder precautionary default measures, scup alternative 1, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,945 | 30 | \$7,168 | \$14,337 |
| RI | 33,580 | 15.4% | 5,156 | 27 | \$1,961 | \$3,921 |
| CT | 50,656 | 3.0% | 1,542 | 12 | \$1,320 | \$2,639 |
| NY | 429,606 | 10.9% | 46,876 | 98 | \$4,911 | \$9,822 |
| NJ | 510,128 | 6.6% | 33,420 | 99 | \$3,466 | \$6,932 |
| DE | 29,766 | 3.4% | 1,011 | 32 | \$324 | \$649 |
| MD | 191,128 | 0.3% | 520 | 6 | \$890 | \$1,781 |
| VA | 45,361 | 7.4% | 3,379 | 21 | \$1,652 | \$3,304 |
| NC | 308,820 | 2.7% | 8,273 | 5 | \$16,988 | \$33,975 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC

Table 56. Combined effects of summer flounder precautionary default measures, scup alternative 2, and black sea bass alternative 1 management measures - affected party/charter effort and the estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|-------|--|--|---|--|--|--|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,742 | 30 | \$7,099 | \$14,198 |
| RI | 33,580 | 18.3% | 6,140 | 27 | \$2,335 | \$4,670 |
| CT | 50,656 | 6.1% | 3,069 | 12 | \$2,626 | \$5,251 |
| NY | 429,606 | 13.3% | 57,008 | 98 | \$5,973 | \$11,945 |
| NJ | 510,128 | 6.9% | 35,353 | 99 | \$3,667 | \$7,333 |
| DE | 29,766 | 3.2% | 951 | 32 | \$305 | \$610 |
| MD | 191,128 | 0.2% | 417 | 6 | \$714 | \$1,429 |
| VA | 45,361 | 7.4% | 3,378 | 21 | \$1,652 | \$3,303 |
| NC | 308,820 | 2.7% | 8,486 | 5 | \$17,425 | \$34,851 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 57. Combined effects of summer flounder precautionary default measures, scup alternative 2, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,699 | 30 | \$7,084 | \$14,168 |
| RI | 33,580 | 18.2% | 6,125 | 27 | \$2,329 | \$4,658 |
| CT | 50,656 | 6.1% | 3,069 | 12 | \$2,626 | \$5,251 |
| NY | 429,606 | 13.2% | 56,800 | 98 | \$5,951 | \$11,902 |
| NJ | 510,128 | 6.9% | 35,140 | 99 | \$3,644 | \$7,289 |
| DE | 29,766 | 3.1% | 911 | 32 | \$292 | \$585 |
| MD | 191,128 | 0.2% | 323 | 6 | \$553 | \$1,106 |
| VA | 45,361 | 7.4% | 3,377 | 21 | \$1,651 | \$3,302 |
| NC | 308,820 | 2.7% | 8,287 | 5 | \$17,018 | \$34,036 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC

Table 58. Combined effects of summer flounder precautionary default measures, scup alternative 2, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,945 | 30 | \$7,168 | \$14,337 |
| RI | 33,580 | 18.3% | 6,159 | 27 | \$2,342 | \$4,684 |
| CT | 50,656 | 6.1% | 3,070 | 12 | \$2,627 | \$5,253 |
| NY | 429,606 | 13.4% | 57,540 | 98 | \$6,028 | \$12,057 |
| NJ | 510,128 | 7.1% | 36,106 | 99 | \$3,745 | \$7,489 |
| DE | 29,766 | 3.4% | 1,011 | 32 | \$324 | \$649 |
| MD | 191,128 | 0.3% | 543 | 6 | \$929 | \$1,858 |
| VA | 45,361 | 7.5% | 3,380 | 21 | \$1,653 | \$3,305 |
| NC | 308,820 | 2.8% | 8,624 | 5 | \$17,710 | \$35,420 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC

Table 59. Combined effects of summer flounder precautionary default measures, scup alternative 3, and black sea bass alternative 1 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|-------|--|--|---|--|--|--|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,742 | 30 | \$7,099 | \$14,198 |
| RI | 33,580 | 15.3% | 5,137 | 27 | \$1,954 | \$3,907 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.8% | 46,344 | 98 | \$4,855 | \$9,711 |
| NJ | 510,128 | 6.4% | 32,667 | 99 | \$3,388 | \$6,776 |
| DE | 29,766 | 3.2% | 951 | 32 | \$305 | \$610 |
| MD | 191,128 | 0.2% | 395 | 6 | \$676 | \$1,352 |
| VA | 45,361 | 7.4% | 3,379 | 21 | \$1,652 | \$3,304 |
| NC | 308,820 | 2.6% | 8,149 | 5 | \$16,733 | \$33,466 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 60. Combined effects of summer flounder precautionary default measures, scup alternative 3, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|-------|---|--|---|--|--|--|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,699 | 30 | \$7,084 | \$14,168 |
| RI | 33,580 | 15.3% | 5,122 | 27 | \$1,948 | \$3,895 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.7% | 46,136 | 98 | \$4,834 | \$9,667 |
| NJ | 510,128 | 6.4% | 32,454 | 99 | \$3,366 | \$6,732 |
| DE | 29,766 | 3.1% | 911 | 32 | \$292 | \$585 |
| MD | 191,128 | 0.2% | 301 | 6 | \$515 | \$1,029 |
| VA | 45,361 | 7.4% | 3,377 | 21 | \$1,651 | \$3,302 |
| NC | 308,820 | 2.6% | 7,950 | 5 | \$16,326 | \$32,652 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 61. Combined effects of summer flounder precautionary default measures, scup alternative 3, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|-------|--|--|---|--|--|--|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,945 | 30 | \$7,168 | \$14,337 |
| RI | 33,580 | 15.4% | 5,156 | 27 | \$1,961 | \$3,921 |
| CT | 50,656 | 3.0% | 1,542 | 12 | \$1,320 | \$2,639 |
| NY | 429,606 | 10.9% | 46,876 | 98 | \$4,911 | \$9,822 |
| NJ | 510,128 | 6.6% | 33,420 | 99 | \$3,466 | \$6,932 |
| DE | 29,766 | 3.4% | 1,011 | 32 | \$324 | \$649 |
| MD | 191,128 | 0.3% | 520 | 6 | \$890 | \$1,781 |
| VA | 45,361 | 7.5% | 3,381 | 21 | \$1,653 | \$3,306 |
| NC | 308,820 | 2.7% | 8,287 | 5 | \$17,018 | \$34,035 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 62. Combined effects of summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,753 | 30 | \$7,103 | \$14,206 |
| RI | 33,580 | 15.6% | 5,231 | 27 | \$1,989 | \$3,978 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 11.0% | 47,240 | 98 | \$4,949 | \$9,899 |
| NJ | 510,128 | 6.4% | 32,881 | 99 | \$3,410 | \$6,820 |
| DE | 29,766 | 3.2% | 967 | 32 | \$310 | \$620 |
| MD | 191,128 | 0.2% | 398 | 6 | \$681 | \$1,363 |
| VA | 45,361 | 7.5% | 3,406 | 21 | \$1,665 | \$3,330 |
| NC | 308,820 | 2.6% | 8,137 | 5 | \$16,709 | \$33,418 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 63. Combined effects of summer flounder alternative 2, scup alternative 1, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,710 | 30 | \$7,088 | \$14,176 |
| RI | 33,580 | 15.5% | 5,216 | 27 | \$1,983 | \$3,967 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.9% | 47,032 | 98 | \$4,928 | \$9,855 |
| NJ | 510,128 | 6.4% | 32,668 | 99 | \$3,388 | \$6,776 |
| DE | 29,766 | 3.1% | 927 | 32 | \$297 | \$595 |
| MD | 191,128 | 0.2% | 304 | 6 | \$520 | \$1,040 |
| VA | 45,361 | 7.5% | 3,404 | 21 | \$1,664 | \$3,329 |
| NC | 308,820 | 2.6% | 7,939 | 5 | \$16,302 | \$32,604 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 64. Combined effects of summer flounder alternative 2, scup alternative 1, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,956 | 30 | \$7,172 | \$14,344 |
| RI | 33,580 | 15.6% | 5,250 | 27 | \$1,996 | \$3,993 |
| CT | 50,656 | 3.0% | 1,542 | 12 | \$1,320 | \$2,639 |
| NY | 429,606 | 11.1% | 47,772 | 98 | \$5,005 | \$10,010 |
| NJ | 510,128 | 6.6% | 33,633 | 99 | \$3,488 | \$6,976 |
| DE | 29,766 | 3.4% | 1,027 | 32 | \$329 | \$659 |
| MD | 191,128 | 0.3% | 523 | 6 | \$896 | \$1,792 |
| VA | 45,361 | 7.5% | 3,408 | 21 | \$1,666 | \$3,332 |
| NC | 308,820 | 2.7% | 8,275 | 5 | \$16,993 | \$33,987 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 65. Combined effects of summer flounder alternative 2, scup alternative 2, and black sea bass alternative 1 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,753 | 30 | \$7,103 | \$14,206 |
| RI | 33,580 | 18.6% | 6,234 | 27 | \$2,371 | \$4,741 |
| CT | 50,656 | 6.1% | 3,069 | 12 | \$2,626 | \$5,251 |
| NY | 429,606 | 13.5% | 57,904 | 98 | \$6,067 | \$12,133 |
| NJ | 510,128 | 7.0% | 35,567 | 99 | \$3,689 | \$7,377 |
| DE | 29,766 | 3.2% | 967 | 32 | \$310 | \$620 |
| MD | 191,128 | 0.2% | 421 | 6 | \$720 | \$1,440 |
| VA | 45,361 | 7.5% | 3,407 | 21 | \$1,666 | \$3,331 |
| NC | 308,820 | 2.7% | 8,488 | 5 | \$17,431 | \$34,862 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 66. Combined effects of summer flounder alternative 2, scup alternative 2, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFSS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|---|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,710 | 30 | \$7,088 | \$14,176 |
| RI | 33,580 | 18.5% | 6,219 | 27 | \$2,365 | \$4,730 |
| CT | 50,656 | 6.1% | 3,069 | 12 | \$2,626 | \$5,251 |
| NY | 429,606 | 13.4% | 57,696 | 98 | \$6,045 | \$12,090 |
| NJ | 510,128 | 6.9% | 35,354 | 99 | \$3,667 | \$7,333 |
| DE | 29,766 | 3.1% | 927 | 32 | \$297 | \$595 |
| MD | 191,128 | 0.2% | 326 | 6 | \$558 | \$1,117 |
| VA | 45,361 | 7.5% | 3,405 | 21 | \$1,665 | \$3,330 |
| NC | 308,820 | 2.7% | 8,290 | 5 | \$17,024 | \$34,048 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 67. Combined effects of summer flounder alternative 2, scup alternative 2, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,956 | 30 | \$7,172 | \$14,344 |
| RI | 33,580 | 18.6% | 6,253 | 27 | \$2,378 | \$4,755 |
| CT | 50,656 | 6.1% | 3,070 | 12 | \$2,627 | \$5,253 |
| NY | 429,606 | 13.6% | 58,436 | 98 | \$6,122 | \$12,245 |
| NJ | 510,128 | 7.1% | 36,319 | 99 | \$3,767 | \$7,533 |
| DE | 29,766 | 3.4% | 1,027 | 32 | \$329 | \$659 |
| MD | 191,128 | 0.3% | 546 | 6 | \$934 | \$1,869 |
| VA | 45,361 | 7.5% | 3,409 | 21 | \$1,667 | \$3,333 |
| NC | 308,820 | 2.8% | 8,627 | 5 | \$17,716 | \$35,431 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 68. Combined effects of summer flounder alternative 2, scup alternative 3, and black sea bass alternative 1 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,753 | 30 | \$7,103 | \$14,206 |
| RI | 33,580 | 15.6% | 5,231 | 27 | \$1,989 | \$3,978 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 11.0% | 47,240 | 98 | \$4,949 | \$9,899 |
| NJ | 510,128 | 6.4% | 32,881 | 99 | \$3,410 | \$6,820 |
| DE | 29,766 | 3.2% | 967 | 32 | \$310 | \$620 |
| MD | 191,128 | 0.2% | 398 | 6 | \$681 | \$1,363 |
| VA | 45,361 | 7.5% | 3,407 | 21 | \$1,666 | \$3,332 |
| NC | 308,820 | 2.6% | 8,151 | 5 | \$16,739 | \$33,478 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 69. Combined effects of summer flounder alternative 2, scup alternative 3, and black sea bass alternative 2 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|-------|---|--|---|--|--|--|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.2% | 20,710 | 30 | \$7,088 | \$14,176 |
| RI | 33,580 | 15.5% | 5,216 | 27 | \$1,983 | \$3,967 |
| CT | 50,656 | 3.0% | 1,541 | 12 | \$1,319 | \$2,637 |
| NY | 429,606 | 10.9% | 47,032 | 98 | \$4,928 | \$9,855 |
| NJ | 510,128 | 6.4% | 32,668 | 99 | \$3,388 | \$6,776 |
| DE | 29,766 | 3.1% | 927 | 32 | \$297 | \$595 |
| MD | 191,128 | 0.2% | 304 | 6 | \$520 | \$1,040 |
| VA | 45,361 | 7.5% | 3,406 | 21 | \$1,665 | \$3,330 |
| NC | 308,820 | 2.6% | 7,953 | 5 | \$16,332 | \$32,663 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

Table 70. Combined effects of summer flounder alternative 2, scup alternative 3, and black sea bass alternative 3 management measures - affected party/charter effort and the average estimated gross revenue loss per party/charter vessel (federally permitted) in each state in the Northeast Region (ME-NC).

| State | MRFS Projected Total Estimated Angler Effort in 2007 Aboard Party/Charter Boats | Estimated Percent of Angler Party/Charter Effort Subject to Measures | Estimated Angler Trips Aboard Party/Charter Boats Subject to Measures | Number of Participating Federally Permitted Party/Charter Vessels (VTR 2005) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 25% Reduction in Affected Effort (\$'s) | Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2007 Assuming a 50% Reduction in Affected Effort (\$'s) |
|--------------|--|---|--|---|---|---|
| ME | 30,226 | 0.0% | 0 | - | - | - |
| NH | 66,101 | 0.0% | 0 | - | - | - |
| MA | 203,113 | 10.3% | 20,956 | 30 | \$7,172 | \$14,344 |
| RI | 33,580 | 15.6% | 5,250 | 27 | \$1,996 | \$3,993 |
| CT | 50,656 | 3.0% | 1,542 | 12 | \$1,320 | \$2,639 |
| NY | 429,606 | 11.1% | 47,772 | 98 | \$5,005 | \$10,010 |
| NJ | 510,128 | 6.6% | 33,633 | 99 | \$3,488 | \$6,976 |
| DE | 29,766 | 3.4% | 1,027 | 32 | \$329 | \$659 |
| MD | 191,128 | 0.3% | 523 | 6 | \$896 | \$1,792 |
| VA | 45,361 | 7.5% | 3,409 | 21 | \$1,667 | \$3,334 |
| NC | 308,820 | 2.7% | 8,290 | 5 | \$17,023 | \$34,047 |

- Less than 4 observations. Source: Scott Steinback, NMFS/NER/NEFSC.

GLOSSARY

Glossary

Amendment. A formal change to a fishery management plan (FMP). The Council prepares amendments and submits them to the Secretary of Commerce for review and approval. The Council may also change FMPs through a "framework adjustment framework adjustment" (see below).

B. Biomass, measured in terms of total weight, spawning capacity, or other appropriate units of production.

B_{MSY}. Long term average exploitable biomass that would be achieved if fishing at a constant rate equal to F_{MSY}. For most stocks, B_{MSY} is about ½ of the carrying capacity. Overfishing definition control rules usually call for action when biomass is below ¼ or ½ B_{MSY}, depending on the species.

B_{target}. A desirable biomass to maintain fishery stocks. This is usually synonymous with B_{MSY} or its proxy.

B_{threshold}. 1) A limit reference point for biomass that defines an unacceptably low biomass i.e., puts a stock at high risk (recruitment failure, depensation, collapse, reduced long term yields, etc). 2) A biomass threshold that the SFA requires for defining when a stock is overfished. A stock is overfished if its biomass is below B_{threshold}. A determination of overfished triggers the SFA requirement for a rebuilding plan to achieve B_{target} as soon as possible, usually not to exceed 10 years except certain requirements are met. B_{threshold} is also known as B_{minimum}, or B_{min}.

Bycatch. Fish that are harvested in a fishery, but which are not sold or kept for personal use. This includes economic discards and regulatory discards. The fish that are being targeted may be bycatch if they are not retained.

Commission. Atlantic States Marine Fisheries Commission.

Committee. The Monitoring Committee, made up of staff representatives of the Mid-Atlantic, New England, and South Atlantic Fishery Management Councils, the Commission, the Northeast Regional Office of NMFS, the Northeast Fisheries Center, and the Southeast Fisheries Center. The MAFMC Executive Director or his designee chairs the Committee.

Conservation equivalency. The approach under which states are required to develop, and submit to the Commission for approval, state-specific management measures (i.e., possession limits, size limits, and seasons) designed to achieve state-specific harvest limits.

Control rule. A pre-determined method for determining rates based on the relationship of current stock biomass to a biomass target. The biomass threshold ($B_{\text{threshold}}$ or B_{min}) defines a minimum biomass below which a stock is considered.

Council. The Mid-Atlantic Fishery Management Council.

Environmental Impact Statement. An analysis of the expected impacts of a fishery management plan (or some other proposed Federal action) on the environment and on people, initially prepared as a "Draft" (DEIS) for public comment. After an initial EIS is prepared for a plan, subsequent analyses are called "Supplemental." The Final EIS is referred to as the Final Supplemental Environmental Impact Statement (FSEIS).

Exclusive Economic Zone. For the purposes of the Magnuson-Stevens Fishery Conservation and Management Act, the area from the seaward boundary of each of the coastal states to 200 nautical miles from the baseline.

Fishing for summer flounder, scup, or black sea bass. Any activity, other than scientific research vessel activity, which involves: (a) the catching, taking, or harvesting of summer flounder, scup, or black sea bass; (b) any other activity which can reasonably be expected to result in the catching, taking, or harvesting of summer flounder, scup, or black sea bass; or (c) any operations at sea in support of, or in preparation for, any activity described in paragraphs (a) or (b) of this definition.

Fishing effort. The amount of time and fishing power used to harvest fish. Fishing power is a function of gear size, boat size, and horsepower.

Fishing mortality rate. The part of the total mortality rate (which also includes natural mortality) applying to a fish population that is caused by man's harvesting. Fishing mortality is usually expressed as an instantaneous rate (F), and can range from 0 for no fishing to very high values such as 1.5 or 2.0. The corresponding annual fishing mortality rate (A) is easily computed but not frequently used. Values of A that would correspond to the F values of 1.5 and 2.0 would be 78% and 86%, meaning that there would be only 22% and 14% of the fish alive (without any natural mortality) at the end of the year that were alive at the beginning of the year. Fishing mortality rates are estimated using a variety of techniques, depending on the available data for a species or stock.

F_{max} . A calculated instantaneous fishing mortality rate that is defined as "the rate of fishing mortality for a given method of fishing that maximizes the harvest in weight taken from a single year class of fish over its entire life span".

F_{MSY} . A fishing mortality rate that would produce MSY when the stock biomass is sufficient for producing MSY on a continuing basis.

Framework adjustments. Adjustments within a range of measures previously specified in a fishery management plan (FMP). A change usually can be made more quickly and easily by a framework adjustment than through an amendment. For plans developed by

the Mid-Atlantic Council, the procedure requires at least two Council meetings including at least one public hearing and an evaluation of environmental impacts not already analyzed as part of the FMP.

F_{target}. The target fishing mortality rate, equal to the annual F determined from the selected rebuilding schedule for overfished resources (i.e., summer flounder) and Council selected fishing mortality level for non-overfished resources (i.e., surfclams). Overfishing occurs when the overfishing target is exceeded.

F_{threshold}. 1) The maximum fishing mortality rate allowed on a stock and used to define overfishing for status determination. 2) The maximum fishing mortality rate allowed for a given biomass as defined by a control rule.

Landings. The portion of the catch that is harvested for personal use or sold.

Metric ton. A unit of weight equal to 1,000 kilograms (1 kg = 2.2 lb.). A metric ton is equivalent to 2,205 lb. A thousand metric tons is equivalent to 2.2 million lb.

MSY. Maximum sustainable yield. The largest long-term average yield (catch) that can be taken from a stock under prevailing ecological and environmental conditions. Overfished. An overfished stock is one whose size is sufficiently small that a change in management practices is required in order to achieve an appropriate level and rate of rebuilding.

Natural Mortality Rate. The part of the total mortality rate applying to a fish population that is caused by factors other than fishing. This may include disease, senility, predation, pollution, etc., with all sources of natural mortality being considered together. Natural mortality is usually expressed as an instantaneous rate, and is abbreviated as "M". An instantaneous mortality rate reflects the percentage of fish dying at any one time, as compared to an annual rate which reflects the percentage of fish dying in one year. Natural mortality is differentiated from the instantaneous fishing mortality rate, "F". Together, these comprise the instantaneous total mortality rate, "Z" (i.e., $Z = F + M$). Natural mortality rates can be estimated using a variety of techniques depending on data availability. As compared to fishing mortality, natural mortality is often difficult to investigate because direct evidence about the timing or magnitude of natural deaths is rarely available.

Overfished. An overfished stock is one "whose size is sufficiently small that a change in management practices is required to achieve an appropriate level and rate of rebuilding." A stock or stock complex is considered overfished when its population size falls below the minimum stock size threshold (MSST). A rebuilding plan is required for stocks that are deemed overfished. A stock is considered "overfished" when exploited beyond an explicit limit beyond which its abundance is considered 'too low' to ensure safe reproduction.

Overfishing. According to the National Standard Guidelines, “overfishing occurs whenever a stock or stock complex is subjected to a rate or level of fishing mortality that jeopardizes the capacity of a stock or stock complex to produce maximum sustainable yield (MSY) on a continuing basis.” Overfishing is occurring if the maximum fishing mortality threshold (MFMT) is exceeded for 1 year or more. In general, it is the action of exerting fishing pressure (fishing intensity) beyond the agreed optimum level. A reduction of fishing pressure would, in the medium term, lead to an increase in the total catch.

Party/Charter boat. Any vessel which carries passengers for hire to engage in fishing

Recruitment. The addition of fish to the fishable population due to migration or to growth. Recruits are usually fish from one year class that have just grown large enough to be retained by the fishing gear.

Spawning Stock Biomass. The total weight of all sexually mature fish in the population. This quantity depends on year class abundance, the exploitation pattern, the rate of growth, fishing and natural mortality rates, the onset of sexual maturity and environmental conditions.

Status Determination. A determination of stock status relative to $B_{\text{threshold}}$ (defines overfished) and $F_{\text{threshold}}$ (defines overfishing). A determination of either overfished or overfishing triggers a SFA requirement for rebuilding plan (overfished), ending overfishing (overfishing) or both.

Stock. A grouping of a species usually based on genetic relationship, geographic distribution and movement patterns. A region may have more than one stock of a species (for example, Gulf of Maine cod and Georges Bank cod).

TAL. Total allowable landings; the total regulated landings from a stock in a given time period, usually one year.

Total length. The straight-line distance from the tip of the snout to the end of the tail while the fish is lying on its side. For black sea bass, the total length excludes any caudal filament.

Year-class. The fish spawned or hatched in a given year.

Yield per recruit. The theoretical yield that would be obtained from a group of fish of one age if they were harvested according to a certain exploitation pattern over the life span of the fish. From this type of analysis, certain critical fishing mortality rates are estimated that are used as biological reference points for management, such as F_{max} and $F_{0.1}$.

APPENDIX A

Description of Species Listed as Endangered and Threatened which inhabit the management unit of the FMP

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 world's 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 (21° 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 41° N and 43° 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, approximately 14,295 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 whale 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-1960's. 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 the Potential Biological Removal (PBR) Guidelines (Wade and Angliss 1997): $NMIN = N / \exp(0.842 \times [\ln(1 + [CV(N)]^2)]^{1/2})$. It was recognized that these estimates may be negatively biased because they do not include corrections for $g(0)$ and, for some of the management 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*, *Chrysaora*, 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 from 1990-2000. 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.

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.

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.

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

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 molluscs, 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.

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.