2005 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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1.0 EXECUTIVE SUMMARY

The proposed action would implement management measures to achieve the recreational harvest limits for the summer flounder, scup, and black sea bass fisheries, published in the Federal Register as part of the 2005 annual quota specifications (70 FR 303, January 4, 2005). This Environmental Assessment analyzes the possession, size, and/or seasonal limits that will most likely achieve the 2005 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 management measures (i.e., possession limits, fish size limits, and seasons) to achieve state-specific harvest limits. Under this approach, each state may implement unique management measures appropriate to that state, so long as they are determined by the Commission to provide equivalent conservation. Also, as required under the conservation equivalency guidelines, the Council recommended precautionary default measures of an 18-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 EEZ if conservation equivalency is not implemented. These measures include a 17-inch TL minimum fish size, a 4-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). More specifically, 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. 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 2005 relative to 2004. 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 2005 relative to alternative 1. However, the proportional reduction of summer flounder (in number) landed under alternative 2 is greater than necessary to achieve the required summer flounder recreational harvest limit for 2005.

Scup Alternatives

For scup, the Council and Commission evaluated three alternatives. The preferred alternative (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 7 through November 30 for 2005. Alternative 1 is also the status quo 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 November 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 12 through September 30 for the 2005 recreational fishery. There are no socioeconomic, habitat, or protected resources impacts associated with alternatives 2 and 3 in 2005, 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 2005, 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 2005 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 as well. The preferred alternative (alternative 1) would implement a 12-inch TL minimum fish size, a 25-fish per person possession limit, and open seasons of January 1 through December 31 for the 2005 recreational fishery. Alternative 2 includes a coastwide 12-inch TL minimum fish size, 25-fish per person possession limit, and open seasons of January 1 through September 7, and September 22 through November 30. Alternative 3 includes a 12-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through November 30 for the 2005 recreational fishery. There are no biological, socioeconomic, habitat, or protected resources impacts associated with alternatives 1 and 3 in 2005, when compared to the status quo alternative (alternative 2).

Research Set Aside-Alternatives

A maximum research set-aside for summer flounder, scup, and black sea bass of 353,917 lb, 303,675 lb, and 109,500 lb, respectively were allocated to the 2005 fishing year (70 FR 303, January 4, 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 detail in sections 5.4 and 7.4 of the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications.

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 Administrative Order (NAO) 216-6 formatting requirements for an Environmental Assessment (EA). 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 Council-recommended level of recreational landings for summer flounder, scup, and black sea bass for 2005. For each species, the Council analyzed the biological, social, and economic impacts of the preferred alternatives and 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, and a zero is used for null impact. (S=short-term; L=long-term).

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

2.0 LIST OF ACRONYMS

ASMFC	Atlantic States Marine Fisheries Commission
B	Biomass
CEQ	Council on Environmental Quality
CZMA	Coastal Zone Management Act
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
E.O.	Executive Order
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FR	Federal Register
FRFA	Final Regulatory Flexibility Analysis
FMP	Fishery Management Plan
GRA	Gear Restricted Area
HPTRP	Harbor Porpoise Take Reduction Plan
IRFA	Initial Regulatory Flexibility Analysis
LTPC	Long-term Potential Catch
LWTRP	Large Whale Take Reduction Plan
M	Natural Mortality Rate
MA	Mid-Atlantic
MAFMC	Mid-Atlantic Fishery Management Council
MMPA	Marine Mammal Protection Act
MRFSS	Marine Recreational Fisheries Statistical Survey
MSFCMA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
mt	metric tons
NAO	National Oceanic and Atmospheric Administration Order
NE	New England
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OY	Optimal Yield
PRA	Paperwork Reduction Act
PREE	Preliminary Regulatory Economic Evaluation
RIR	Regulatory Impact Review
RFA	Regulatory Flexibility Analysis
RSA	Research Set-Aside
SARC	Stock Assessment Review Committee
SAW	Stock Assessment Workshop
SSB	Spawning Stock Biomass
SFA	Sustainable Fisheries Act
TAL	Total Allowable Landings

TEDs	Turtle Excluder Devices
TL	Total Length
VMS	Vessel Monitoring System
VPA	Virtual Population Analysis
VTR	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 2005 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 document is to propose measures (i.e., recreational size limits, possession limits, and seasonal closures) that would constrain recreational landings in 2005 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 state management measures must achieve the same level of conservation as would Federal coastwide measures developed to achieve 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).

These amendments 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) virtual population analysis (VPA); (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 Commission's Board in July 2004 to consider the 2005 commercial quotas and recreational harvest limits for these species (and 2006 for summer flounder). 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 "2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications", submitted to the National Marine Fisheries Service (NMFS) by the Council in October 2004, described the environmental, economic, and social impacts of the 2005 and 2006 commercial quotas and recreational harvest limits for summer flounder and 2005 commercial quotas and recreational harvest limits for black sea bass and scup, as well as the impacts of commercial measures aimed at achieving the commercial quotas. The 2005 and 2006 summer flounder commercial quotas and recreational harvest limits, 2005 scup and black sea bass commercial quotas and recreational harvest limits, and the specific measures to attain the commercial quotas, were implemented by the NMFS on January 4, 2005 (70 FR 303). In this specifications package all recreational management alternatives (possession, size, and seasonal limits) are evaluated for the 2005 fishing year.

The Council and Commission met again in December 2004 to recommend specific measures to attain the recreational harvest limits that had been specified in July 2004. 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;
6) minimize regulations to achieve the management objectives stated above.

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

- commercial quotas;
- minimum sizes;
- gear regulations;
- recreational harvest limits;
- recreational possession limits, seasons, and no-sale provisions.

4.3 Methods of Analysis

This EA analyzes the possession, size, and/or seasonal limits that will most likely achieve the 2005 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 2005 recreational harvest limits for summer flounder, scup, and black sea bass.

As published in the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications (70 FR 303; January 4, 2005), the recreational harvest limit for summer flounder in 2005 is 11.98 million lb (5.43 million kg), 6.9% more than the 2004 recreational harvest limit (MAFMC 2004). The 2004 recreational landings are projected to be 10.70 million lb (4.85 million kg), which is less than the 2004 recreational harvest limit of 11.21 million lb (5.08 million kg). Assuming the same level of fishing effort in 2005, a coastwide reduction in landings (pounds) would not be required for summer flounder. Under conservation equivalency, the only states that would be required to reduce landings (in number of fish) would be Connecticut (19.4%), Massachusetts (7.1%), and New York (6.3%).

The 2005 quota specifications for scup (70 FR 303; January 4, 2005) implemented a recreational harvest limit of 3.96 million lb (1.80 million kg), which is slightly less than the 2004 recreational harvest limit of 3.99 million lb (1.81 million kg; MAFMC 2003). The 2004 recreational scup landings are projected to be 4.34 million lb (1.97 million kg). Assuming the same level of fishing effort in 2005, an 8.8% coastwide reduction in landings would be required to achieve the 2005 recreational harvest limit for scup.

The black sea bass recreational harvest limit for 2005 is 4.13 million lb (1.87 million kg), 3.0% more than the 2004 recreational harvest limit (MAFMC 2004). The 2004 recreational black sea bass landings are projected to be 1.72 million lb (0.78 million kg). Assuming the same level of fishing effort in 2005, no coastwide reductions in landings would be required to achieve the harvest limit for black sea bass in 2005.

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 2005 summer flounder recreational harvest limit.

The Council and Commission's preferred alternative (alternative 1-conservation equivalency) would allow the states to implement conservation equivalent management measures. State-specific reductions associated with the 2005 coastwide recreational harvest limit of 11.98 million lb (5.43 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2004 (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 2005 recreational harvest limit in number of fish (the 2005 recreational harvest limit divided by the mean weight of summer flounder from 2003-2004) would have to be reduced by 31.3% to achieve this limit. State-specific 1998 landings were reduced by 31.3% to derive state-specific targets for 2005. These targets were then compared to 2004 landings to determine if state-specific reductions were necessary. Landings projections for 2004 indicate that Connecticut, Massachusetts, and New York will be the only states required to reduce recreational summer flounder landings in 2005 by 19.4%, 7.1, and 6.3%, respectively (Table 1).

In order to constrain recreational landings to the overall recreational harvest limit, the Commission established conservation equivalency guidelines that require each state, using state-specific tables, 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.

The Commission requires each state to submit its conservation equivalency proposal by January 15, 2005 (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 2005, the precautionary default measures include an 18-inch TL minimum fish size, a 1-fish per person possession limit, and no closed season. It is estimated that the precautionary default measures could reduce landings by 62% coastwide, assuming the measures are implemented by all states (Table 3). State-specific reductions could range from 41% in Delaware to 88% in North Carolina (based on 2001 data; Table 4).

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 17-inch total length (TL) minimum fish size, a 4-fish per person possession limit, and no closed season. It is estimated that this non-preferred coastwide alternative could reduce recreational landings by 18% coastwide, assuming the measures are implemented by all states (Table 3). State-specific reductions associated with these management measures could range from 0% in Maryland to 63% in North Carolina (based on 2001 data; Table 4).

5.2 Scup

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

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 7 through November 30 for the 2005 scup recreational measures. At the Council meeting in December, Council and Commission members were informed that an 8.8% coastwide reduction in landings would be required for scup in 2005 to meet the 3.96 million lb (1.80 million kg) recreational harvest limit. The preferred alternative could allow for the 8.8% required reduction based on the following logic. From 1994 to

2003, the percent standard error (PSE) for scup landings (in pounds) estimated from the Marine Recreational Fisheries Statistics Survey (MRFSS) has averaged 11.74, with the 2004 wave 1-5 PSE at 8.5. Using a PSE of 8.5, the 95% confidence intervals around the recreational landings in 2004 are between 3.62 and 5.07 million lb (1.64 and 2.30 million kg, respectively). The 2005 harvest limit is within the average observed PSE's, 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 2005.

The Commission adopted state-by-state conservation equivalency measures for 2005 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. Due to low scup landings in the southern states, the Commission approved the retention of existing recreational scup measures from Delaware through North Carolina for 2005. 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 2005 season. As such, the Federal measures would only apply to party/charter boats fishing in Federal waters with Federal permits. Based on 1995 to 2003 MRFSS data, on average about 9% 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 November 30 for the 2005 recreational fishery. It is estimated that this alternative could reduce recreational landings by 9.0% by closing 11 additional days in September (wave 5). 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 5 and 6a-b).

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 12 through September 30 for the 2005 recreational fishery. It is estimated that this alternative could reduce recreational landings by 8.9% by closing 5 additional days in September (wave 5) and 30 consecutive 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 5 and 6a-b).

5.3 Black Sea Bass

5.3.1 Alternative 1 (Preferred: Coastwide Measure)

The black sea bass landings in 2004 are projected to be 1.72 million lb (0.78 million kg), or 57.1% below the recreational harvest limit of 4.01 million lb (1.81 million kg). The Council and Commission recommended implementation of regulations in 2005 that maintained the same minimum size and possession limits that were in place in 2004, but eliminated the seasonal closures. In order to constrain recreational black sea bass landings to the 2005 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.

More specifically, under this preferred alternative the 2004 seasonal closures from September 8 through September 21 (14 days; wave 5) and from December 1 through December 31 (31 days; wave 6) were removed. The associated reduction of the September and December closures in 2004 were 9.7% and 5.6%, respectively (Tables 7a-b, 8). As the stock does not appear to be compromised based on the stock assessment (section 6.1.3.3), interannual changes in distribution and availability are suspected to have resulted in landings well below the 2004 coastwide harvest limit. Given these low landings in 2004 relative to what was observed in 2003, a relaxation of the seasonal restrictions was recommended.

5.3.2 Alternative 2 (Non-preferred: Status Quo Coastwide Measure/No Action)

This non-preferred alternative would maintain the same regulations in place in 2004 throughout the 2005 recreational fishery. Specifically these measures include a coastwide 12-inch TL minimum fish size, 25-fish per person possession limit, and open seasons of January 1 through September 7, and September 22 through November 30 for the 2005 recreational fishery. The black sea bass landings in 2004 are projected to be 1.72 million lb (0.78 million kg), or 57.1% below the recreational harvest limit of 4.01 million lb (1.81 million kg). As the stock does not appear to be compromised based on the stock assessment (section 6.1.3.3), interannual changes in distribution and availability are suspected to have resulted in landings well below the 2004 coastwide harvest limit. Given these low landings in 2004 relative to what was observed in 2003, the coastwide measure that maintains the status quo (alternative 2) is considered.

5.3.3 Alternative 3 (Non-preferred: Coastwide Measure)

A non-preferred alternative recommended to the Council by the Monitoring Committee includes a 12-inch TL minimum fish size, a 25-fish per person possession limit, and an open season of January 1 through November 30. This alternative would eliminate the September 8 through September 21 (14 days; wave 5) closure in place in 2004, while maintaining the same size and possession limits. The reduction associated with the September closure in 2004 was 9.7% (Tables 7a-b). As the stock does not appear to be

compromised based on the stock assessment (section 6.1.3.3), interannual changes in distribution and availability are suspected to have resulted in landings well below the 2004 coastwide harvest limit. Given these low landings in 2004 relative to what was observed in 2003, a relaxation of the seasonal restrictions was considered under alternative 3.

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 Environment 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 2004 fishing year, and based on the 2004 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 17-inch TL minimum fish size, a 4-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 7 through November 30; and (3) for black sea bass, an 12-inch TL minimum size, a 25-fish per person possession limit, and an open season of January 1 through September 7, and September 22 through November 30.

The implications of the no action alternative are substantial. For summer flounder, reductions in landings could range from 0% in MD to 63% in NC (based on 2001 data; Table 4). For scup and black sea bass, the no action alternative could constrain landings to the harvest limit for 2005. However, the black sea bass no action alternative contains management measures that are more restrictive than necessary to constrain black sea bass recreational landings in 2005.

In consideration of the Council-recommended recreational harvest limits established for the 2005 fishing year, implementation of the same recreational measures established for the 2004 fishing year would be consistent with the goals and objectives of the FMP and its implementing regulations because it could result in measures in the summer flounder

and black sea bass fisheries that are more restrictive than necessary to prevent anglers from exceeding the recreational harvest limits in 2005. These no action alternatives will be inconsistent with National Standard 8 of the Magnuson-Stevens Act as they could substantially impact angler effort which could in turn create negative socioeconomic impacts to ports and communities. 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 maximum research set-aside for summer flounder, scup, and black sea bass of 353,917 lb, 303,675 lb, and 109,500 lb, respectively were allocated to the 2005 fishing year (70 FR 303, January 4, 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 detail in sections 5.4 and 7.4 of the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications.

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 pounds in 1993 from the 1992 level of 7.16 million pounds (Table 9). From 1994 to 1999, recreational landings ranged from 5.42 million pounds (1995) to 12.52 million pounds (1998). Recreational landings in 2000 were estimated to be 16.52 million pounds, the highest in the time series since 1986. Recreational landings dropped to 8.03 million pounds in 2002 and then increased to 11.66 million pounds in 2003. Based on 2004 MRFSS data for waves 1-5 (January through October), summer flounder recreational landings for 2004 are projected to be 10.70 million lb (4.85 million kg) and recreational catches are projected to be 20.49 million fish.

6.1.1.1.1 Harvest Limits and Management Measures - A Review

As a review, recreational harvest limits have been established since 1993 (Table 9). In both 1993 and 1994, recreational landings were close to the harvest limits. The harvest limit established for 1993 was 8.38 million lb (3.80 million kg). In 1993, recreational

fishermen landed 8.84 million lb (4.01 million kg), exceeding the target by approximately 0.45 million lb (0.2 million kg).

Most states implemented the coastwide recreational management measures of a 14-inch TL minimum fish size, a 6-fish possession limit, and a May 15 through September 30 open season (or equivalent) in 1993. However, several states were out of compliance with the plan including Connecticut (no possession limit or season), Maryland (10-fish possession limit), Virginia (10-fish possession limit and no season), and North Carolina (13-inch TL minimum size, no possession limit or season). However, even with the implementation of some management measures in the states, recreational landings increased in 1993 relative to the 1992 landings of 7.15 million lb (3.24 million kg).

The harvest limit established for 1994 was 10.67 million lb (4.84 million kg). Estimated landings in 1994 were 9.33 million lb (4.23 million kg) or 1.34 million lb (0.61 million kg) less than the harvest limit. Most states implemented the coastwide recreational management measures of a 14-inch TL minimum fish size, an 8-fish possession limit, and an April 15 through October 15 season (or equivalent) in 1994. However, two states did not fully implement the season in 1994; Virginia had no opening date but closed October 31 and North Carolina had no closed season at all. In addition, several states maintained the 1993 possession limit and season for their 1994 season (New Hampshire, Connecticut, and New York).

The Council and Commission approved a recreational harvest limit of 7.76 million lb (3.52 million kg) for 1995. The landings estimate of 5.42 million lb (2.46 million kg) for 1995 was approximately 2.34 million lb (1.06 million kg) lower than the harvest limit. The limits implemented in 1995 were a 6-fish possession limit in the EEZ and an 8-fish possession limit in state waters, a 14-inch TL minimum fish size, and no closed season. All states had a 14-inch TL minimum fish size in 1995 and most states implemented the 8-fish possession limit although several states (New Hampshire, Connecticut, and New York) had a 6-fish possession limit.

The landings estimate for 1996 was about 2.41 million lb (1.09 million kg) greater than the limit approved by the Council and Commission for that year (7.41 million lb or 3.36 million kg). The management measures implemented in 1996 were a 10-fish possession limit, a 14-inch TL minimum fish size, and no closed season.

A harvest limit of 7.41 million lb (3.36 million kg) was adopted for 1997. Recreational landings exceeded this limit by about 4.46 million lb (2.02 million kg). The management measures implemented in 1997 were an 8-fish possession limit and a 14.5-inch minimum size limit.

The recreational harvest limit was unchanged for 1998 at 7.41 million lb (3.36 million kg). The management measures that were proposed by the Council and Commission to control landings in 1998 were an 8-fish possession limit and a 15-inch TL minimum fish size. However, some states did not implement these management measures until late in

the season. Recreational landings exceeded the harvest limit by 5.07 million lb (2.30 million kg) in 1998.

The recreational harvest limit implemented in 1999 was 7.41 million lb (3.36 million kg). Although the harvest limit was the same as previous years, the Council and Commission opted to modify the management system to allow states the flexibility to implement state-specific management measures. Specifically, the Council and Commission adopted coastwide management measures of 8 fish possession limit, 15-inch TL minimum fish size, and an open season from May 29 to September 11. In addition, they gave the states the option of choosing the coastwide management measures or other combinations of management measures that could reduce their 1998 state-specific landings by 40%. As a result, states in New England opted for the coastwide measures and the other states chose other alternatives including higher size limits and longer seasons.

The states used a form of conservation equivalency again in 2000 to achieve the coastwide harvest limit of 7.41 million lb (3.36 million kg). Specifically, the states were given the option of adopting state specific management measures or the coastwide measures of an 8-fish possession limit, a 15.5-inch minimum fish size, and an open season from May 10 through October 2. Coastwide management measures were based on the number of fish landed and equated to a 41% reduction in landings relative to 1998 estimates. State specific measures also had to reduce landings by 41%. However, as in 1999, states from Massachusetts to New York opted for the coastwide management measures with other states choosing longer seasons and/or smaller size limits.

The 2001 season was complicated by the different TALs that were initially adopted by the Council and Commission. Based on an emergency rule to comply with a court order, the Council recommended that the recreational harvest limit for 2001 be set at 7.16 million lb (3.25 million kg). However, the Commission initially set the overall TAL higher and adopted a recreational harvest limit of 8.2 million lb (3.72 million kg) for 2001. The Commission later revised their TAL to the same level adopted by the Council. The Commission also adopted an addendum that required the states to develop recreational management measures to reduce landings by state-specific percentages based on average landings for 1998-2000, a 43% coastwide reduction, a base year of 1998, and a harvest limit of 7.16 million lb (3.25 million kg; Table 9). Most states, with the exception of Massachusetts and New York, exceeded their targets in 2001. Coastwide landings exceeded the coastwide recreational harvest limit by 63% in 2001.

In 2001, the Council and Commission adopted, and NMFS approved, Framework 2 to the Summer Flounder, Scup, and Black Sea Bass FMP. This framework, which was first applied in 2002, implemented conservation equivalency as a management tool for the summer flounder recreational fishery and established a procedure to guide the Council and Commission in developing recreational management measures for the upcoming year.

The framework established two possible ways that the Council and Commission could manage summer flounder in 2002. The first alternative was to develop coastwide

management measures, as was done from 1993 through 1998. Regulations would then be consistent from state to state, and states would not have the flexibility to develop their own regulations. The other alternative was to implement regulations based on conservation equivalency for 2002. If conservation equivalency was adopted, the framework required that the Council and Commission also adopt both a coastwide management measure as a non-preferred alternative and a precautionary default measure. Precautionary default measures are defined as measures that would achieve at a minimum the overall required reduction in landings for each state.

The Council and Commission adopted conservation equivalency for 2002. As a result, each state developed regulations to achieve a state-specific target (Table 10). In addition, the Council and Commission adopted a 4-fish possession limit, a 17-inch TL minimum fish size, and no closed season as a non-preferred coastwide alternative and a 1-fish possession limit, an 18-inch TL minimum fish size, and no closed season as a precautionary default measure. Almost all states were below their targets in 2002, with some by significant amounts.

The Council and Commission used conservation equivalency to manage the summer flounder recreational fishery for 2003 (Table 11). As in 2002, each state developed regulations to achieve a state-specific. The Council and Commission also adopted a 4-fish possession limit and a 17-inch TL minimum fish size as a non-preferred, coastwide alternative and a one fish possession limit and 18-inch TL minimum fish size as a precautionary default measure. Both alternatives included an open season all year. Almost all of the states were below their targets in 2003, with only the states of New York, New Jersey, and Connecticut will exceed their targets in 2003; New York by more than 100%, New Jersey by 9%, and Connecticut by 6%.

The Council and Commission used conservation equivalency to manage the summer flounder recreational fishery in 2004. As in the prior two years, each state developed regulations to achieve a state-specific target (Table 12). The Council and Commission also adopted a 4 fish possession limit and 17" TL minimum fish size as a non-preferred, coastwide alternative and a one fish possession limit and 18" minimum fish size as a precautionary default measure; both with no seasonal closures. Based on projected landings, the majority of northern states will exceed their limits in 2004, some by substantial amounts (Table 13).

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 times series. 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 2000, catch and landings increased significantly to 11.28 million fish and 5.44 million lb (2.47 million kg), respectively. Catch and landings dropped in 2002 to 7.58 million fish and 3.62 million lb (1.64 million kg), respectively. In 2003, catch and landings increased to 14.66 million fish and 8.48 million lb (3.85 million kg),

respectively. Based on 2003 landings by wave and 2004 data for waves 1-5, scup recreational landings for 2004 are projected to be 4.34 million lb (1.97 million kg) and recreational catches are projected to be 9.51 million fish.

6.1.1.2.1 Harvest Limits and Management Measures - A Review

The Council and Commission approved a recovery strategy that reduces overfishing on scup over a 7 year time frame. That recovery strategy called for minimum fish sizes and commercial gear regulations in 1996, year 1 of the plan. In 1996, the minimum size for the recreational fishery was 7-inch TL (Table 14). The minimum fish size was also 7-inch TL for each year from 1997 to 2000. Several states had larger minimum sizes (Massachusetts: 9-inch, Rhode Island: 9-inch, Connecticut: 8-inch) and maintained them for 1996-2000.

Beginning in 1997, recreational harvest limits were established to achieve the target exploitation rates. The harvest limit in 1997 was 1.95 million lb (0.88 million kg). Estimated landings in 1997 were 1.2 million lb (0.54 million kg) or about 0.74 million lb (0.34 million kg) less than the limit. Similarly, landings in 1998 were 0.88 million lb (0.40 million kg) or about 0.68 million lb (0.31 million kg) less than the limit of 1.55 million lb (0.70 million kg). In 1999, landings exceeded the harvest limit of 1.24 million lb (0.56 million kg) by 52% or about 650,000 lb (294,835 kg).

In 2000, the harvest limit was 1.24 million lb (0.56 million kg), the same limit adopted by the Council and Commission for 1999. The Council and Commission were presented with projected landings for 1999 that indicated landings could exceed this limit by 32%. In response, they recommended a 50-fish possession limit with a coastwide minimum size of 7-inches TL and no closed season for 2000. Those management measures were rejected by NMFS as ineffective. In fact, MRFSS data indicated that such a limit could reduce landings by approximately 1% on a coastwide basis, based on 1999 recreational data. Although a coastwide possession limit was never implemented in the EEZ, some states did have a 50-fish possession limit in effect in 2000.

The harvest limit for 2001 was 1.76 million lb (0.80 million kg). At their meeting in December 2000, the Council adopted coastwide management measures of a 50-fish possession limit, 9-inch TL minimum size limit, and an open season from August 15 through October 31. The Commission postponed their decision until early 2001 and decided to implement a system of conservation equivalency to reduce landings by 33% and allow for different regulations in each of the states. The various size, possession and seasonal limits did not constrain landings to the harvest limit in 2001. Landings for 2001 were 4.26 million lb (1.93 million kg) or about 2.50 million lb (1.13 million kg) more than the limit of 1.76 million lb (0.80 million kg).

The Council and Commission met in December 2001 to recommend management measures to achieve the harvest limit of 2.71 million lb (1.23 million kg) in 2002. The Council recommended that NMFS implement a 10-inch TL minimum fish size, a 50-fish possession limit and open seasons of January 1 through February 28, and July 1 through

October 31. However, the Council's recommendation was rejected by NMFS and instead a 20-fish possession limit, a 10-inch TL minimum fish size, and open seasons of January 1 through February 28, and July 1 through October 2 were implemented. The regulations became effective on August 2, 2002.

In addition, the Commission postponed action and prepared an addendum to allow states from Massachusetts through New York to develop state-specific management measures for 2002 (Table 15). The Commission approved a 50-fish possession limit, a 10-inch TL minimum fish size, and an open season from July 1 through October 31. States from Delaware to North Carolina were allowed to retain their existing measures.

The combination of the 2001 Federal management measures that rolled over into 2002, the Federal management measures that went into place on August 2, and the unique management measures implemented by the states, did not constrain landings to the recreational harvest limit in 2002. The landings for 2002 were about 34% higher than the harvest limit. Massachusetts was the only major state that had a 9-inch TL size limit in 2002.

The Council and Commission met in December 2002 to recommend management measures to achieve the harvest limit of 4.01 million lb (1.81 million kg). The Council recommended that NMFS implement a 10-inch TL minimum fish size, a 50-fish possession limit and an open season from January 1 through February 28, and July 1 through November 30.

The Commission adopted Addendum 9 to manage the recreational fishery in state waters in 2003. State-specific allocations were derived and states developed state-specific management measures to achieve those limits (Table 16). The combination of state and Federal limits in 2003 did not constrain the fishery. In fact, all the state limits were exceeded and landings were about 4.5 million pounds more than the limit on a coastwide basis (Table 14).

The management system was similar in 2004. The Council adopted management measures for federal waters that included a 50 fish possession limit, 10" TL minimum fish size, and an open season from January 1 through February 28 and September 7 through November 30. The Commission adopted an addendum which allowed states to develop alternative management measures for state water (Table 17). The combination of state and federal management measures did not constrain the landings to the harvest limit as the projected 2004 landings (4.34 million lb or 1.97 million kg; 9.51 million fish) exceeded the harvest limit by about 350,000 lbs (158,757 kg).

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 13.89 million fish in 2001. In 2002 the

recreational catch of black sea bass was estimated at 14.70 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 1999. Landings were estimated at 3.99 million lb (1.80 million kg) in 2000 and dropped to 3.42 million lb in 2001 (1.55 million kg). In 2002 black sea bass landings were estimated at 4.35 million lb (1.97 million kg). Recreational landings for 2003 were 3.29 million lb (1.49 million kg) and recreational catches were12.31 million fish. Based on 2003 landings by wave and 2004 data for waves 1-5, black sea bass recreational landings for 2004 are projected to be 1.72 million lb (0.78 million kg) and recreational catches are projected to be 7.52 million fish.

6.1.1.3.1 Harvest Limits and Management Measures - A Review

The Council and the Commission approved a recovery strategy that reduces overfishing on black sea bass over an 8-year time frame. That recovery strategy called for minimum fish sizes and commercial gear regulations in 1996 and 1997, years 1 and 2 of the plan. In 1996, the minimum size for the recreational fishery was 9-inch TL (Table 18). However, the minimum fish size was only in place for the last couple of weeks of 1996. The minimum fish size remained at 9-inch TL in 1997.

The Council and Commission approved a harvest limit of 3.15 million lb (1.43 million kg) for 1998. The management measures that were proposed to control landings were a 10-inch TL minimum size limit and a closure from August 1 through August 15. Some states implemented these regulations late or not at all in 1998. In addition, although the plan requires a coastwide possession, size, and/or seasonal limit, some states implemented alternative regulations in 1998. Landings in 1998 were 1.15 million lb (0.52 million kg).

The 1999 harvest limit was also 3.15 million lb (1.43 million kg). For 1999, the Council and Commission adopted a 10-inch TL minimum size limit. The landings for 1999 were 1.67 million lb (0.76 million kg) or about 1.5 million lb (0.68 million kg) less than the limit.

The harvest limit remained at 3.15 million lb (1.43 million kg) for 2000 and the minimum size limit was 10-inch TL. Management measures differed by state with some states implementing a 20-fish possession limit (Massachusetts, Connecticut, and North Carolina) or a 50-fish possession limit (Virginia). The landings for 2000 exceeded the limit by approximately 840,000 lb (381,018 kg).

The harvest limit remained at 3.15 million lb (1.43 million kg) in 2001. The Council and Commission adopted an 11-inch TL minimum size, a 25-fish possession limit and a closed season from March 1 through May 9 to control landings in 2001. In addition, Virginia adopted an alternative closed season, North Carolina had a lower size limit, and Massachusetts had 12-inch TL size limit and 20-fish possession limit. However, the combination of size, possession and seasonal limits failed to constrain landings to the

harvest limit in 2001. Projected landings exceed the limit by about 500,000 lb (230,000 kg).

In contrast, the management measures implemented in 2002 did not constrain landings to the harvest limit. In most states, the possession limit was 25 fish combined with a size limit of 11.5-inch TL and an open season all year (Table 19). However, a closed season was in effect in the EEZ, i.e., management measures were complicated by the August implementation of the 2002 regulations by NMFS. Specifically, the 2001 regulations remained in effect until August 2, 2002. As a result, the fishery was closed in the EEZ until May 10, 2002.

The harvest limit for 2003 was 3.43 million lb (1.56 million kg). Most states adopted the Federal regulations of 25-fish per person possession limit, 12-inch TL minimum fish size, and an open season from January 1 to September 1, and September 16 to November 30 (Table 20). The combinations of possession limit, minimum fish size, and seasonal limits constrained landings to the harvest limit in 2003; landings were 3.29 million lb (1.49 million kg) or about 140,000 lbs (63,502 kg) less than the harvest limit.

Based on 2003 landings by wave and 2004 data for waves 1-5, black sea bass recreational landings for 2004 are projected to be 1.72 million lb (0.78 million kg) and recreational catches are projected to be 7.52 million fish. Most states adopted the federal regulations of a 25-fish per person possession limit, 12-inch TL minimum fish size, and an open season from January 1 to September 7, and September 22 to November 30 (Table 21).

6.1.2 Status of the Stock

6.1.2.1 Summer Flounder

The status of the summer flounder stock is evaluated annually. The summer flounder stock assessment was completed by the NEFSC Southern Demersal Working Group in June 2004. The latest assessment indicates that the stock is not overfished and overfishing is occurring relative to the biological reference points detailed in Amendment 12. The fishing mortality rate estimated for 2002 is 0.29, a significant decline from the 1.32 estimated for 1994, but slightly above the threshold F of 0.26. In addition, total stock biomass has increased substantially since 1991 to 149 million lb in 2003, 27 percent above the biomass threshold (117 million lb or 53 million kg). Spawning stock biomass has increased each year since 1993 to 109 million lb (49.44 million kg) in 2003, the highest value in the time series (1981-2003).

Year-class estimates indicate that the 1995 to 1999 year classes ranged from 30 to 38 million fish; the average for 1982 to 2003 is about 40 million. The 2002 year class is estimated to be above average at 51 million fish. The 2003 year class was below average.

6.1.2.2 Scup

The most recent assessment on scup was completed in June 2002 (35th SAW by the Stock Assessment Review Committee (SARC)). That assessment indicated that scup are no longer overfished "but stock status with respect to overfishing cannot currently be evaluated." The SARC concluded that although "the relative exploitation rates have declined in recent years the absolute value of F cannot be determined." However, the assessment states that "survey data indicate strong recruitment and some rebuilding of age structure" in recent years.

State and federal survey indices for scup indicate an increase in stock abundance in recent years. The NEFSC spring survey results indicate that spawning stock biomass has increased each year since 1998. Biomass estimates are based on three year averages, and the estimate for 2003 (3-year average of 2002-2004) is 3.74 kg/tow, or about 35 percent above the biomass threshold of 2.77 kg/tow that defines an overfished stock. Given that the index is above the biomass threshold, the stock is no longer considered overfished.

The spring survey index increased significantly in 2004 relative to the low value derived in 2003; the index jumped from 0.15 to 1.82 kg/tow. In fact, if the 2002 value is excluded from the survey series, the 2004 index is the highest value in the spring survey since 1978. The winter trawl survey exhibited a similar trend increasing from 0.49 kg/tow in 2003 to 3.82 kg/tow in 2004. In fact, the 2004 winter index is the second highest in the time series (1992 to 2004) by weight and the highest by number. 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 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.

Year class strength is evident in the NEFSC autumn trawl survey results. The survey indicates that strong year classes resulted 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.

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 Fs on older fish because they are 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; the 2003 value is about 5 percent of the 1997 value.

6.1.2.3 Black Sea Bass

The most recent assessment on black sea bass, completed in June 2004, indicates that black sea bass are no longer overfished and overfishing is 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 0.9 kg/tow). The 2003 biomass index (the 3-year average for 2001-2003) is 1.4 kg/tow, approximately 55 percent above the threshold. Based on this value, the stock is no longer overfished.

A single extreme value for a tow could have a strong influence on the indices. The potential influence of a single extreme tow may be eliminated by log transforming the survey indices. This gives a more accurate indication of stock status, Gary Shepherd, NEFSC (pers. comm.). The transformed series indicates a general increase in the exploitable biomass since 1996. The index for 2002 of 0.799 kg/tow is the highest value in the time series (1968-2002). Although the biomass index declined to 0.493 kg/tow in 2003 and again in 2004 to 0.32 kg/tow, both the 2003 and 2004 index were above 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 kg/tow in 1997 to 0.537 kg/tow in 2003.

The spring survey also serves as an index of recruitment. This survey indicates that good year classes were produced in 1988, 1990 through 1992, and 1995 and poor year classes in 1993, 1994, and 1996 through 1998. Results for 2000 indicate a strong year class; the index is 0.661 kg/tow, the highest in the time series. The 2002 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 that a below 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 1998 to 2003 relative to 1996 and 1997 levels. Based on tag recapture models, the F estimated for 2003 is less than 0.26; exploitation rates for 2003 ranged from 15-20 percent. 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 35th Stock Assessment Workshop (SAW 35) documents. The following is taken from the "SAW Southern Demersal Working Group 2004 Advisory Report: Summer Flounder."

"An analytical assessment (VPA) of commercial and recreational total catch at age (landings plus discards) was conducted. The natural mortality rate (M) was assumed to be 0.2. Indices of recruitment and stock abundance from NEFSC winter, spring, and autumn; Massachusetts spring and autumn; Rhode Island, Connecticut spring and autumn; Delaware, and New Jersey trawl surveys were used in VPA tuning in an ADAPT framework. Recruitment indices from surveys conducted by the states of North Carolina, Virginia, and Maryland were also used in the VPA tuning. The current VPA tuning configuration is the same as that in the 2002 SAW 35 (NEFSC 2002) and 2003 SAW Southern Demersal Working Group assessments (Terceiro 2003). The uncertainty associated with the estimates of fishing mortality and stock biomass in 2003 was evaluated only with respect to research survey variability."

"Fishing mortality calculated from the average of the currently fully recruited ages (3-5) has been high, varying between 0.9 and 2.1 during 1982-1997 (55%-82% exploitation), far in excess of the revised FMP Amendment 12 overfishing definition, $F_{threshold} = F_{target} = F_{max} = 0.26$ (21% exploitation). The fishing mortality rate has declined substantially since 1997 and was estimated to be 0.29 (23% exploitation) in 2003, the lowest observed in the current 22-year VPA time series. There is an 80% probability that the fishing mortality rate in 2003 was between 0.25 and 0.35. The estimate of F for 2003 may understate the actual fishing mortality; retrospective analysis shows that the current assessment method tends to underestimate recent fishing mortality rates (e.g., by an average of 40% during 2000-2002)."

"Total stock biomass has increased substantially since 1989, and in 2004 total stock biomass was estimated to be 67,500 mt, 27% above the current biomass threshold. There is an 80% chance that total stock biomass in 2004 was between 61,000 and 77,000 mt. The current biomass target (BMSY) required to produce maximum sustainable yield (MSY=20,900 mt) is estimated to be BMSY = 106,400 mt, and the current biomass threshold of one-half BMSY = 53,200 mt."

"The arithmetic average recruitment from 1982 to 2003 is 40 million fish at age 0, with a median of 37 million fish. The 1982 and 1983 year classes are the largest in the VPA time series, at 74 and 80 million fish. Recruitment declined from 1983 to 1988, with the 1988 year class the weakest at only 13 million fish. Recruitment since 1988 has generally improved. The 2002 year class is currently estimated to be the largest since 1986, at

about 51 million fish. The 2003 year class is currently estimated to be below average at 27 million fish. There is no consistent retrospective pattern in the estimation of the abundance of age 0 fish over the last three years."

"Spawning stock biomass (SSB; Age 0+) declined 72% from 1983 to 1989 (18,800 mt to 5,200 mt), but has increased nine-fold, with improved recruitment and decreased fishing mortality, to 49,400 mt in 2003. Comparison with previous assessments shows a tendency to slightly overestimate the SSB in recent years. The age structure of the spawning stock has expanded, with 72% at ages 2 and older, and 20% at ages 5 and older. Under equilibrium conditions at F_{max}, about 85% of the spawning stock biomass would be expected to be ages 2 and older, with 50% at ages 5 and older."

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 are 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/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 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 3.1.1 of Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP. Additional information can be found in the 39th Stock Assessment Workshop (SAW 39) documents. The following is taken from the "SAW Southern Demersal Working Group 2004 Advisory Report: Black Sea Bass."

"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 Essential Fish Habitat (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, saltmarsh 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 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. The best scientific information available indicates that ecosystem impacts from fishing gears on fishery productivity in this region are mostly unpredictable and unquantifiable. Thus, mobile and stationary gears are characterized as having a potential impact on EFH because: 1) the specific habitat types along the Atlantic coast have not been mapped or quantified and 2) fishing effort and intensity of the gear are also not recorded. Since the potential exists that mobile bottom gear and stationary gear are having adverse effects on EFH, the Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP includes alternatives that minimize the adverse effects on EFH as required pursuant to section 303(a)(7) of the SFA. The principal gear used in the recreational fishery for summer flounder is rod and reel and 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 EFH impacts because the gear does not alter bottom structure.

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, mud, 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 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. The best scientific information available indicates that ecosystem

impacts from fishing gears on fishery productivity in this region are mostly unpredictable and unquantifiable. Thus, mobile and stationary gears are characterized as having a potential impact on EFH because: 1) the specific habitat types along the Atlantic coast have not been mapped or quantified and 2) fishing effort and intensity of the gear are also not recorded. Since the potential exists that mobile bottom gear and stationary gear are having adverse effects on EFH, the Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP includes alternatives that minimize the adverse effects on EFH as required pursuant to section 303(a)(7) of the SFA. The principal gears used in the recreational fishery for scup are rod and reel and 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 EFH impacts because the gear does not alter bottom structure.

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 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. The best scientific information available indicates that ecosystem impacts from fishing gears on fishery productivity in this region are mostly unpredictable and unquantifiable. Thus, mobile and stationary gears are characterized as having a potential impact on EFH because: 1) the specific habitat types along the Atlantic coast have not been mapped or quantified and 2) fishing effort and intensity of the gear are also not recorded. Since the potential exists that mobile bottom gear and stationary gear are having adverse effects on EFH, the Amendment 13 to the Summer Flounder, Scup, and Black Sea Bass FMP includes alternatives that minimize the adverse effects on EFH as required pursuant to section

303(a)(7) of the SFA. The principal gears used in the recreational fishery for black sea bass are rod and reel and 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 EFH impacts because the gear does not alter bottom structure.

6.3 Endangered and Protected Species

There are numerous species which inhabit the environment within the management unit of the Summer Flounder, Scup, and Black Sea Bass FMP 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). Fifteen are classified as endangered or threatened under the ESA, while the remaining species were 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	*Status*
Northern right whale (*Eubalaena glacialis*)	Endangered
Humpback whale (*Megaptera novaeangliae*)	Endangered
Fin whale (*Balaenoptera physalus*)	Endangered
Blue whale (*Balaenoptera musculus*)	Endangered
Sei whale (*Balaenoptera borealis*)	Endangered
Sperm whale (*Physeter macrocephalus*)	Endangered
Minke whale (*Balaenoptera acutorostrata*)	Protected
Beaked whales (*Ziphius and Mesoplodon spp.*)	Protected
Risso's dolphin (*Grampus griseus*)	Protected
Pilot whale (*Globicephala spp.*)	Protected
White-sided dolphin (*Lagenorhynchus acutus*)	Protected
Common dolphin (*Delphinus delphis*)	Protected
Spotted and Striped dolphins (*Stenella spp.*)	Protected
Bottlenose dolphin (*Tursiops truncatus*)	Protected

Sea Turtles

Species	*Status*
Leatherback sea turtle (*Dermochelys coriacea*)	Endangered
Kemp's ridley sea turtle (*Lepidochelys kempii*)	Endangered
Green sea turtle (*Chelonia mydas*)	Endangered
Hawksbill sea turtle (*Eretmochelys imbricata*)	Endangered
Loggerhead sea turtle (*Caretta caretta*)	Threatened

Fish

Species	*Status*
Shortnose sturgeon (*Acipenser brevirostrum*)	Endangered
Atlantic salmon (*Salmo salar*)	Endangered
Smalltooth sawfish (*Pristis pectinata*)	Endangered

Birds

Species	*Status*
Roseate tern (*Sterna dougallii dougallii*)	Endangered
Piping plover (*Charadrius melodus*)	Endangered

Critical Habitat Designations

Species	*Area*
Right whale	Cape Cod Bay

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. (1999). The most recent information on the stock assessment of various mammals can be found at: *http://www.nmfs.noaa.gov/pr/PR2/Stock_Assessment_Program/sars.html* and in Appendix A.

Three other useful websites on marine mammals are:
www.nmfs.noaa.gov/prot_res/PR3/recovery.html ,
http://spo.nwr.noaa.gov/mfr611/mfr611.htm , and
http://www.nmfs.noaa.gov/pr/species/Cetaceans/cetaceans.html.

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

The principle gears used in the recreational fisheries 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.

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 2004, 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 sections 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 sections 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 Environment

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 2005 and 2006 Summer Flounder and 2005 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 1981-2003 (Tables 22-24). 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 2005 and 2006 Summer Flounder and 2005 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 2003 that landed summer flounder were New Jersey, New York, Virginia, Rhode Island and Massachusetts (Table 25). Connecticut, Delaware, Maryland and North Carolina accounted for less than 9% of the total summer flounder landings in their respective states. VTR data indicate that summer flounder accounted for 22%, 16%, 11%, and 5% of the total catch by party/charter vessels in the states of Rhode Island, New York, New Jersey, and Connecticut, respectively, in 2003 (Table 26).

The top five states that landed scup in 2003 were New York, Massachusetts, Connecticut, and Rhode Island (Table 25). These states accounted for nearly 100% of the total recreational scup landings in 2003. VTR data indicate that scup accounted for 47%, 24%, 16% 10%, and 5% of the total catch by party/charter vessels in the states of New York, Massachusetts, Connecticut, Rhode Island, and New Jersey, respectively, in 2003 (Table 27).

The top five states that landed black sea bass in 2003 were New Jersey, New York, Delaware, Virginia, and Maryland (Table 25). New Jersey alone accounted for 59% of the landings. The states of Massachusetts, Rhode Island, Connecticut, and North Carolina each accounted for less than 5% of the total black sea bass recreational landings. VTR data indicate that black sea bass accounted for 94%, 53%, 42%, and 18% of the total catch by party/charter vessels in the states of Maryland, New Jersey and Virginia, North Carolina, and New York, respectively, in 2003 (Table 28).

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 is presented in section 6.5.2 of the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. Data from the Northeast permit application database indicates that 777 vessels held some combination of summer flounder, scup, and black sea bass permits in 2003. However, VTR data indicate that less than half (337) of these vessels reported landings of summer flounder, scup, and/or black sea bass in 2003.

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 considerable 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 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 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 preestablished reasons) for marine fishing are presented in Table 29. 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 30, 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 31). "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 through 2003 is the most recent audited data submitted by fishermen. 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 1996-2003 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 VTR reporting pattern has changed over this time-series for summer flounder and black sea bass, while the percentage of permitted party/charter vessels submitting reports for scup have remained relatively constant. The percentage of permitted vessels submitting reports for scup ranged from 27.7% to 34.9% and for summer flounder ranged from 41.8% to 65.3% from 1996 through 2003. For black seas bass the percentage of permitted vessels submitting reports dropped from 95.4% in 1997 to 66.87% in 1998, and then continued a gradual decline to 39.4% in 2003.

The number of summer flounder trips, catch, and vessels reporting based on general trends in the VTR data for party and charter vessels have changed over time (Table 32). The mean number of anglers for party boats that caught summer flounder peaked in 2002, with a mean of 32.29 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, from both party and charter boats remained relatively stable with some interannual variability. The

mean number of anglers on party vessels landing black sea bass peaked at 30.22 anglers per trip in 2002, while the catch per angler on these vessels showed a drop from the time series high of 14.12 fish in 1996 to 8.69 fish in 1997, and then a generally increasing trend to 12.63 fish per angler in 2002.

The summer flounder catch per angler for the party boats appears to be lower in recent years, while the charter catch per angler increased to a peak in 1999 of 4.48 fish per angler (Table 32). General trends in the VTR data also show decreases in the percentage contribution of summer flounder to total catch of all species in New York and New Jersey (Tables 26). New York, New Jersey, and Rhode Island show generally increasing trends in the percentage contribution of both scup and black sea bass to total catch of all species in recent years (Table 27 and 28).

Analysis of the recreational catch by state based on VTR data indicates that the proportion of summer flounder in the total catch ranged from less than 1% to 22% for party/charter vessels by state in 2003 (Table 26). The proportion of scup in the total recreational catch ranged from less than 1% to 47% for party/charter vessels by state in 2003 (Table 27). The recreational catch by state based on VTR indicates that the proportion of black sea bass to the total catch ranged from 1 to 95% for party/charter vessels by state in 2003 (Table 28).

7.0 ENVIRONMENTAL CONSEQUENCES AND REGULATORY ECONOMIC EVALUATION OF ALTERNATIVES

This EA analyzes the impacts of the recreational management measures considered for the year 2005 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 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications Package. The Council and Commission met in December 2004 to adopt specific recreational management measures (i.e., bag limits, size limits, and seasonal closures) for 2005. 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. However, the impact of each alternative is analyzed below.

The nature of the management programs for the summer flounder, scup, and black sea bass fisheries were examined in detail in the Environmental Impact Statements (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, and protected species, as well as on 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. 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, though 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 2005. A full description of this alternative is presented in section 5.0 of the EA.

7.1.1.1 Biological Impacts

Projected landings for 2004 (based on waves 1-5) are 10.70 million lb (4.85 million kg), which is less than the recreational harvest limit of 11.21 million lb (5.08 million kg). A comparison of the projected 2004 landings with the 2004 state-specific targets indicates that only the states of Massachusetts, Rhode Island, Connecticut, New York, and New Jersey will exceed their targets in 2004 (Table 13). State-specific reductions associated with the 2005 coastwide recreational harvest limit of 11.98 million lb (5.43 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2004 (Table 1). Assuming the same level of fishing effort in 2005, a coastwide reduction in landings (pounds) would not be required for summer flounder. However, under conservation equivalency, New York (6.3%), Connecticut (19.4%), and Massachusetts (7.1%) 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 2005. 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-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 that fail to implement conservation equivalent measures as specified in Framework 2 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 reduce state specific landings from 41% to 88% (based on 2001 data; Table 4). The state specific reduction 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 equivalent 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 impacts of any changes in recreational harvest limit were analyzed in the EA for the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass specifications. The principal gears used in the recreational fishery for summer flounder are rod and reel and handline. Although quantification of specific gear types on various bottom habitats is poorly understood, rod and reel and handline are generally not associated with adverse impacts because the gear does not alter bottom structure. As such, 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 B. 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). 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). Although the recreational fishery may impact these marine species, nothing considered in this alternative, relative to the no action alternative (alternative 2), 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 alternatives are 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 the no action alternative (alternative 2).

7.1.1.4 Socioeconomic Impacts

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. This would enable the summer flounder fishery to operate in a way that dissipates potential adverse economic effects in specific states. Table 33 details the proportion of summer flounder harvested in state and Federal waters. On average (1995-2003), approximately 92% of the harvested summer flounder (by number) came from state waters. The Board will either approve or disapprove each state's measures in February 2005 (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 2005 (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 is 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 are located in Massachusetts, followed by New Jersey, and New York (section 6.5.2 of the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications). Projected data from MRFSS indicate that anglers fished 33.94 million days in 2004 in the Northeast Region (Maine through North Carolina). Party/charter anglers comprised about 5% (1.67 million) of the angler fishing days in 2004, 52% (17.7 million) for private/rental mode, and 43% (14.54 million) for shore mode (Table 34).

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 2005 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.

Even though, the proposed management measures could affect the demand for trips for summer flounder, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. This is because recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (scup, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.), or fish within the new limits established by the 2005 regulations. Furthermore, this alternative 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. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

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-inch TL minimum fish size, a 1-fish possession limit, and no closed season. The precautionary default measures result in a coastwide reduction in landings of 63% (Table 3). State reductions ranging from 41% in Delaware to 88% in North Carolina could also occur (based on 2001 data; Table 4). The state-specific reductions in landings associated with the precautionary default measures are substantially higher than the state-specific reductions that are associated with conservation equivalency for most states (Tables 1 and 4). As such, it is expected that states will avoid the impacts of the precautionary default measures by establishing conservation equivalent measures. In other words, because states have a choice, it is more rational for the states to adopt the conservation equivalent 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 2004 that landed at least one summer flounder smaller than 18 inches TL or landed more than 1 summer flounder. The analysis concluded that the measure could affect 6.84% of the party/charter boat trips, 5.37% of the private/rental boat trips, and a 0.27%of the shore trips (Table 35).

It is likely 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 17-inch TL minimum fish size, an 4-fish per person possession limit, and no closed season for the 2005 recreational fishery. A full description of this alternative is presented in section 5.0 of the EA.

7.1.2.1 Biological Impacts

Based on 2004 MRFSS data for waves 1-5 (January through October), summer flounder recreational landings for 2004 are projected to be 10.70 million lb (4.85 million kg), which is less than the 2004 harvest limit of 11.21 million lb (5.08 million kg). The recreational harvest limit for 2005 is 11.98 million lb (5.43 million kg). A comparison of the projected 2004 landings with the state-specific targets indicates that only the states of Massachusetts, Rhode Island, Connecticut, New York, and New Jersey will exceed their targets in 2004 (Table 13).

Angler catches and landings in 2004 may be explained by regulatory effects. Analysis of coastwide intercept data indicates that 90% of the trips landed less than 3 fish in 2004 based on data through wave 4 (Table 36). 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 37). Landings were constrained by the various minimum size limits that were in effect in 2004 based on an analysis of length frequencies (Table 38). However, there was 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 2004 ranged from 1.6% (North Carolina) to 12.4% (Delaware).

Analysis of wave data suggests that some landings may have been affected by seasonal restrictions in 2004 (Table 39). Obviously, greater effects would be associated with seasonal closures in waves with a higher proportion of landings.

State-specific reductions associated with the 2005 coastwide recreational harvest limit of 11.98 million lb (5.08 million kg) are based on the number of fish landed in 1998, and the number of fish projected to have been landed in 2004 (Table 1). Assuming the same level of fishing effort in 2005, a coastwide reduction in landings (pounds) would not be required for summer flounder. However, under conservation equivalency, New York (6.3%), Connecticut (19.4%), and Massachusetts (7.1%) would be required to reduce landings (in number of fish). The non-preferred coastwide alternative could reduce recreational landings by 18% coastwide, assuming that states would maintain their more restrictive minimum size limits, and all states would implement the given season and

possession limit for 2005 (Table 3). Since this alternative is expected to result in a reduction in landings that is not required in 2005, it has positive biological impacts.

7.1.2.2 Habitat Impacts

The EFH impacts under this alternative are minimal and are similar to those described under section 7.1.1.2 of the EA.

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 2004 that landed at least one summer flounder smaller than 17 inches TL or landed more than 4 summer flounder. The analysis concluded that the measure could affect 0.49% of the party/charter boat trips, 0.79% of the private/rental boat trips, and a 0.02% of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may change the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (scup, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for summer flounder, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure. 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 7 through November 30 for the 2005 recreational fishery. This alternative is also the status quo alternative. A full description of this alternative is presented in section 5.0 of the EA.

7.2.1.1 Biological Impacts

The 2005 specifications for scup implemented a recreational harvest limit of 3.96 million lb (1.80 million kg), which is slightly less than the recreational harvest limit implemented in 2004. This is due to differences in the research set aside established between 2004 and 2005. The 2004 recreational scup landings are projected to be 4.34 million lb (1.97 million kg). Assuming the same level of fishing effort in 2005, an 8.8% coastwide reduction in landings would be required for scup.

Possession and size limits are one option to constrain landings to the harvest limit in 2005. 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 40). 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 can then be used to guide recommendations on the appropriate limits for 2005 (Table 41).

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 angler's increases, as expected for 2005, 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 most recent assessment indicates that the scup biomass increased in 2004 and is likely to increase again in 2005. Survey information also indicates that strong year classes were produced from 2000-2002. If the 2000, 2001, and 2002 year classes are large and mortality of undersized fish is reduced, substantial biomass could be added to the stock by 2005 and availability of legal-sized fish could increase. The correct management measures will allow anglers to land up to the harvest limit but not exceed the limit.

Analysis of length frequencies indicate that landings were constrained in Connecticut and New York by 10.5-inch TL and 11-inch TL size limit implemented in 2004, respectively. Coastwide, approximately 6.4% of the measured fish were less than 10-inch TL in the

first four waves of 2004 (Table 40). In 2001, almost 2.6% of the measured fish were less than 10-inch TL.

Landing frequencies for the first four waves of 2004 indicate about 90% of the trips had 18 or less fish per trip with about 50% of the trips landing 3 or less scup (Table 42). Anglers were slightly less successful in 2004 compared to 2003. In 2003, about 90% of the successful trips landed 20 or less scup per trip (Table 43).

If availability of scup increases as expected, the possession limit will act to control landings and will have more of an effect than the size limit. However, the possession limit depends on the length of the closed season. Cumulative reductions associated with size/possession limits and seasonal closures are not additive, i.e., the total recreational reduction does not equate to the sum of the size/possession limit reduction and the seasonal closure reduction. To derive the cumulative effect, an approach similar to that used in other Commission FMPs is used. Specifically, the following equation is used:

$$\text{Total Reduction} = X + [(1-X)*Y]$$

where X=percent reduction associated with seasonal closures and Y=the percent reduction associated with the size/possession limit.

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 7 through November 30, for 2005 scup recreational measures. When these management measures were presented at the Council meeting in December, Council and Commission members were informed that an 8.8% reduction in recreational scup landings in 2005 was required based on a harvest limit of 3.96 million lb (1.80 million kg). The preferred alternative could allow for the 8.8% required reduction based on the following logic. From 1994 to 2003, the percent standard error (PSE) for scup landings (in pounds) estimated from the Marine Recreational Fisheries Statistics Survey (MRFSS) has averaged 11.74, with the 2004 wave 1-5 PSE at 8.5. Using a PSE of 8.5, the 95% confidence intervals around the recreational landings in 2004 are between 3.62 and 5.07 million lb (1.64 and 2.30 million kg, respectively). The 2005 harvest limit is within the average observed PSE's, 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 2005. As such, this alternative will result in no biological impacts in 2005.

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 the Cape Hatteras, 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 impacts of any changes in recreational harvest limit were analyzed in the EA for the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. The principal gears used in the recreational fishery for scup are rod and reel and 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. 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 B. 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). 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).

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 alternatives are 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 this 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 2004 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 6, and December 1 through December 31). The analysis concluded that the measure could affect 2.61% of the party/charter boat trips, 1.40% of the private/rental boat trips, and a 0.61% of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may change the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (summer flounder, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for scup, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

This alternative evaluates the status quo management measures for scup. Even though these are the same coastwide management measures that were in place in 2004, the analysis conducted indicates that there could be a small number of impacted trips in 2005 if these measures were implemented. This is due to the fact that not all states implemented these coastwide measures in 2004 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 November 30 for the 2005 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 reduce landings by an additional 9% by removing 11 additional days in the month of September (wave 5).

The projected reductions are based the assumption that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit for 2005 (Tables 6a-b). These measures are expected to constrain scup

landings to the 2005 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 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 the Cape Hatteras, 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 impacts of any changes in recreational harvest limit were analyzed in the EA for the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. The principal gears used in the recreational fishery for scup are rod and reel and 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 to because the gear does not alter bottom structure. As such, the EFH impacts of this alternative would be similar to those of the no action alternative (alternative 1).

7.2.2.3 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 B. 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). 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). Although the recreational fishery may impact these marine species, nothing considered in this alternative, relative to the no action 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 alternatives are 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. EFH impacts (positive or negative) as a result of this alternative compared to the no action alternative (alternative 1) are not expected.

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 2004 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 December 1 through December 31). The analysis concluded that the measure could affect 3.18% of the party/charter boat trips, 1.56% of the private/rental boat trips, and a 0.67% of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may constrain the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (summer flounder, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for scup, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

It is likely that the potential effects on angler effort associated with this alternative would be greater than those associated with coastwide measures under preferred alternatives 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 35). 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 12 through September 30 for the 2005 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 reduce landings by an additional 8.9% by closing 30 additional days in the month of November (wave 6), and 5 additional days in the month of September (wave 5).

The projected reductions are based the assumption that that states would maintain their more restrictive minimum size limits, and all states would implement the given season and possession limit for 2005 (Tables 6a-b). These measures are expected to constrain scup landings to the 2005 recreational harvest limit. As such, this alternative is expected to result in positive biological impacts relative to the no action alternative (alternative 1).

7.2.3.2 Habitat Impacts

The EFH impacts under this alternative are minimal and similar to those described under section 7.2.1.2 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 2004 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 11, and October 1 through December 31). The analysis concluded that the measure could affect 3.76% of the party/charter boat trips, 1.75% of the private/rental boat trips, and a 0.68% of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may change the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (summer flounder, black sea bass, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for scup, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

It is likely that the potential effects on angler effort associated with this alternative would be greater than those associated with alternative 1 (preferred: no action/status quo) and alternative 2 (non-preferred), because the reductions associated with the management measures under this alternative have a greater impact on angler effort compared to those under alternatives 1 and 2 (Table 35). 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: Coastwide Measure)

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 seasons of January 1 through December 31 for the 2005 recreational fishery. 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 2004 are projected to be 1.72 million lb (0.78 million kg) or about 2.29 million lb (1.04 million kg) below the recreational harvest limit established that year. This implies that the management measures in place for 2004 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2004 (4.01 million lb or 1.82 million kg), however fish availability and distribution is believed to have contributed to the low landing levels. Since projected landings for 2004 are less than the 2005 recreational harvest level of 4.13 million lb (1.87 million kg), the Council and Commission recommended implementing regulations in 2005 that had size and bag limits similar to 2004 with modification to the dates associated with the opening and closure of the seasons. In order to constrain recreational black sea bass landings to the 2005 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 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 was constructed. The adjusted table can then be used to guide recommendations on the appropriate limits for 2005.

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, as expected for 2005, 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 is high.

Landing frequencies for the first four waves of 2004 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 44). This compares to 2003 when 90% of the trips landed 12 or less black sea bass per trip (Table 45).

Analysis of length frequencies indicates that landings were constrained by the 12-inch TL size limit in the first four waves of 2004 (Table 46). A total of 17.5% of the measured black sea bass was less than 12-inch TL in 2004 samples compared to 42.3% in 1996, the year before the 10-inch size limit was implemented.

Based on the NEFSC spring survey, stock size has increased in recent years and is likely to increase in 2005. In fact, the index for 2002 was the highest value in the time series, 1968-2003; the 2003 value was the third highest. Survey results indicate that the three-year moving average for 2001-2003 is 30% larger than the value for 2000-2002. In addition, the recruitment index for 2000 is the highest in the time series and it appears that the 2002 year class is also above average. The correct limits will allow anglers to land up to the harvest limit but not exceed the limit in 2005.

If availability of black sea bass increases as expected, the possession limit will act to control landings and will have more of an effect than the size limit. However, the size of the possession limit will depend on the length of the closed season. Cumulative reductions associated with size/possession limits and seasonal closures are not additive, i.e., the total recreational reduction does not equate to the sum of the size/possession limit reduction and the seasonal closure reduction. To derive the cumulative effect, an approach similar to that used in other Commission FMPs is used. Specifically, the following equation is used:

$$\text{Total Reduction} = X + [(1-X)*Y]$$

where X=percent reduction associated with seasonal closures and Y=the percent reduction associated with the size/possession limit.

This preferred black sea bass alternative contains the same minimum size and possession limits implemented in 2004. However, the seasonal component under this preferred alternative is slightly different from the seasonal component implemented in 2004 (see Non-Preferred alternative 2 below). More specifically, under this preferred alternative the fishery is open all year from January 1 through December 31. However, in 2004 the fishery was closed from September 8 through September 21 and from December 1 through December 31. Therefore, previously in 2004 under these two seasonal closures the fishery is closed for 14 consecutive days during September (wave 5) and 31 consecutive days during December (wave 6) for the same number of days. Since the value associated with closing one day per wave is the same across every day of that wave, therefore the average percent of black sea bass in numbers associated with the removal of those closures in 2005 is 15.05% (Table 7a-b).

The management measures under this alternative are expected to constrain black sea bass landings to the 2005 recreational harvest limit based on the assumption that regulations would be implemented by all states. This alternative would have no additional biological impacts beyond those analyzed for the no action alternative (alternative 2).

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 the Cape Hatteras, 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 impacts of any changes in recreational harvest limit were analyzed in the EA for the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. The principal gear used in the recreational fishery for black sea bass is rod and reel and 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 The EFH impacts of this alternative would be similar to those of the no action alternative (alternative 2).

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 B. 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). 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). Although the recreational fishery may impact these marine species, nothing considered in this alternative, relative to the no action alternative (alternative 2), 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, as only seasonal adjustments are addressed. It is not anticipated that these seasonal adjustments will result in large increases in associated fishing effort. Changes in overall fishing effort as a result of changes in recreational harvest limits, possession and size limits, and seasons are unknown. Because the alternatives are 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 2004 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 0.13% of the party/charter boat trips, <0.1% of the private/rental boat trips, and none of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may change the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and

may choose to fish for alternative species (summer flounder, scup, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for black sea bass, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

It is likely that the potential effects on angler effort associated with this alternative would be smaller than those associated with coastwide measures under non-preferred alternatives 2 (no action/status quo) because the reductions associated with the management measures under this alternative have a smaller impact on angler effort compared to those under alternative 2 (Table 35). 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: Status Quo Coastwide Measure/No Action)

Black sea bass non-preferred alternative 2 includes a coastwide 12-inch TL minimum fish size, 25-fish per person possession limit, and open seasons of January 1 through September 7 and September 22 through November 30 for the 2005 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.

7.3.2.1 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 6.3.1.1 of the EA is also relevant to this section.

The black sea bass landings in 2004 are projected to be 1.72 million lb (0.78 million kg) or about 2.29 million lb (1.04 million kg) below the recreational harvest limit established that year. This implies that the management measures in place for 2004 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2004 (4.01 million lb or 1.82 million kg). However, fish availability and distribution are believed to have contributed to the low landing levels. Since projected landings for 2004 are less than the 2005 recreational harvest level of 4.13 million lb (1.87 million kg), the alternative was recommended by staff to implement regulations in 2005 that had size and bag limits similar to 2004. Since projected landings for 2004 are less than the 2005 recreational harvest level, and availability of black sea bass is expected to increase based on the stock assessment, it is expected that the management measures under this alternative would constrain recreational black sea bass landings to the 2005 recreational harvest limit. Therefore, the biological impact of this alternative would be positive.

7.3.2.2 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 the Cape Hatteras, 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 impacts of any changes in recreational harvest limit were analyzed in the EA for the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. The principal gears used in the recreational fishery for scup are rod and reel and 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.

7.3.2.3 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 B. 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). 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).

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 alternatives are 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.

7.3.2.4 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 2004 that landed at least one black sea bass smaller than 12 inches TL, or landed more than 25 black sea bass, or landed 1 black sea bass during the closed season (September 8 through September 21, and December 1 through December 31). The analysis concluded that the measure could affect 0.22% of the party/charter boat trips, 0.06% of the private/rental boat trips, and none of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size, or closed season). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may constrain the number and size of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (summer flounder, scup, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for black sea bass, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

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 2004, the analysis conducted indicates that there could be a small number of impacted trips in 2005 if these measures were implemented. This is perhaps due to the fact that not all states implemented these coastwide measures in 2004 and angler compliance was not 100%. The economic impacts of the proposed measures under this and other alternatives are further discussed in section 5.0 of the EA.

7.3.3 Alternative 3 (Non-preferred: Coastwide Measure)

Black sea bass non-preferred alternative 3 includes a coastwide 12-inch TL minimum fish size, 25-fish per person possession limit, and open seasons of January 1 through November 30 for the 2005 recreational fishery. This non-preferred alternative was recommended to the Council by the Monitoring Committee. 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 2004 are projected to be 1.72 million lb (0.78 million kg) or about 2.29 million lb (1.04 million kg) below the recreational harvest limit established that year. This implies that the management measures in place for 2004 (minimum fish size, possession limit, and seasons) did constrain landings to the harvest limit for 2004 (4.01 million lb or 1.82 million kg), however fish availability and distribution is believed to have contributed to the low landing levels. Since projected landings for 2004 are much less than the 2005 recreational harvest level of 4.13 million lb (1.87 million kg), the Monitoring Committee recommended to implement regulations in 2005 that had size and bag limits similar to 2004 with modification to the dates associated with the opening and closure of the seasons.

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.

Using the reductions associated with seasonal closures shown in Tables 7a-b, the reduction associated with elimination of the September 8 to 21, 2004 closure is 9.7%. Projected reductions are based the assumption that regulations would be implemented by all the states. These measures are expected to constrain black sea bass landings to the 2005 recreational harvest limit. This alternative would have no additional impacts beyond those analyzed for the no action alternative (alternative 2).

7.3.3.2 Habitat Impacts

The EFH impacts under this alternative are minimal and similar to those described under section 7.3.1.2 of the EA.

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 2004 that landed at least one black sea bass smaller than 12 inches TL, or landed more than 25 black sea bass, or landed 1 black sea bass during the closed season (December 1 through December 31). The analysis concluded that the measure could affect 0.13% of the party/charter boat trips, 0.01% of the private/rental boat trips, and none of the shore trips (Table 35).

There is very little information available to empirically estimate how sensitive the affected anglers might be to the proposed fishing regulations. It is possible that the proposed management measures could restrict the recreational fishery for 2005 and cause some decrease in recreational satisfaction (i.e., low bag limit, larger fish size). However, due to lack of data, these effects cannot be quantified.

Although the proposed regulations may change the number of the fish that can be landed, they do not prohibit anglers from engaging in catch and release fishing. In addition, recreational anglers may choose not to stop recreational fishing altogether, and may choose to fish for alternative species (summer flounder, scup, spot, bluefish, weakfish, striped bass, tautog, pelagics, etc.). Even though, the proposed management measures could affect the demand for trips for black sea bass, it is not expected that it would negatively affect the overall number of recreational fishing trips in the North and Mid-Atlantic regions. Therefore the demand for fishing trips should remain relatively unaffected. As such, there should not be significant adverse impacts to ports and communities as a result of this management measure.

It is likely that the potential effects on angler effort associated with this alternative would be smaller than those associated with coastwide measures under the non-preferred alternatives 2 (no action/status quo) because the reductions associated with the management measures under this alternative have a smaller impact on angler effort compared to those under alternative 2 (Table 35). 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 353,917 lb, 303,675 lb, and 109,500 lb, respectively were allocated to the 2005 fishing year (70 FR 303, January 4, 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 detail in sections 5.4 and 7.4 of the 2005 and 2006 Summer Flounder and 2005 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, 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, 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 2005 through January 2010.

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 require the 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, thus 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" below).

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 pounds 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 pounds 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 of 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 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 between residents of different states (National Standard 4), they do not have economic allocation as its 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 insure 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 Reasonable Future Forseeable (RFF) Actions that relate to the federally managed summer flounder, scup, and black sea bass fisheries, the development of an Amendment 14 to the 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. While the issues to be addressed in this Amendment 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. In order for the proposed wind farm in Nantucket Sound to be permitted under the US Army Corp of Engineers, the Corp would 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 resource 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 historically been impacted 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, scup, and black sea bass were overfished prior to implementation of management measures and the status of these fisheries have 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 2002 is 0.29, a significant decline from the 1.32 estimated for 1994 and slightly above the threshold F of 0.26. The most recent scup assessment indicates that the scup fishery is no longer overfished and that relative exploitation rates follow a downward trend since the late 1990s. Finally, the black sea bass stock is no longer considered overfished and overfishing is not occurring.

The Council manages these three species only in the EEZ. Any anthropogenic activities in the EEZ that did not consider these three species could impact their populations locally. However, these activities are not quantifiable at present. The Council has commented on anthropogenic projects such as beach replenishment and ocean dumping in the past while raising concerns for the local health of summer flounder, scup, and black sea bass. Since these three species occur over wide areas of the mid and north Atlantic, it is unlikely that any anthropogenic activity could significantly impact either population on more than simply a local level at present.

7.5.3 Non-Target Species or Bycatch

National Standard 9 addresses bycatch in fisheries. This National Standard requires Councils to consider the bycatch effects of existing and planned conservation and management measures. Bycatch can, in two ways, impede efforts to protect marine

ecosystems, achieve sustainable fisheries and the full benefits they can provide to the Nation. First, bycatch can substantially increase the uncertainty concerning total fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate optimal yield (OY) and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded. Second, bycatch may also preclude other more productive uses of fishery resources.

The term "bycatch" means fish that are harvested in a fishery, but that are not sold or kept for personal use. Bycatch includes the discard of whole fish at sea or elsewhere, including economic and regulatory discards, and fishing mortality due to an encounter with fishing gear that does not result in capture of fish (i.e., unobserved fishing mortality). Bycatch does not include any fish that are legally retained in a fishery and kept for personal, tribal, or cultural use, or that enter commerce through sale, barter, or trade. Bycatch does not include fish released alive under a recreational catch-and-release fishery management program. A catch-and-release fishery management program is one in which the retention of a particular species is prohibited. In such a program, those fish released alive would not be considered bycatch.

There are significant recreational fisheries for summer flounder, scup, and black sea bass. A high 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 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 is the recent success in the management of 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.

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. Fifteen 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 either 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 any significant effect on protected resources by itself, 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 the 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 are rod and reel and 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 to EFH because the gear does not alter bottom structure. 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 any significant effect on habitat by itself, or in conjunction with other anthropogenic activities.

7.5.6 Communities

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 2005 and 2006 Summer Flounder and 2005 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 increases in recreational harvest limits and other 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 human 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.

Projected data from MRFSS indicate that 33,924,223 fishing trips were taken in the Northeast Region (Maine-North Carolina) in 2004. It is estimated that the number of trips by fishing mode was 1,673,573 party/charter boat trips, 17,712,601 private/rental boat trips, and 14,538,049 shore trips (Table 34).

Affected Effort

Assuming angler effort in 2005 will be the same as that estimated for 2004, fishing impacts were examined by estimating the number of recreational fishing trips in 2004 that would have been affected by the 2005 management measures proposed for all three species. All 2004 fishing trips that would have been constrained by the proposed 2005 measures in the Northeast Region were considered to be "affected" trips. To date, the first five waves of MRFSS effort data are available for 2004 (January - October). Wave six effort estimates for 2003 (November - December) were used as a proxy for wave six 2004 effort.

Of the potential 18 combinations of alternatives across species that could be analyzed, the measures proposed under summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 (when considered together), were estimated to effect the fewest number of party/charter boat trips in the Northeast Region (54,027; Table 47). The same combinations of alternatives were also estimated to have the lowest overall effect on private/rental boat fishing effort and shore fishing trips. However, 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 than any of the combinations that could be analyzed.

The percent of total party/charter boat trips in the Northeast Region that were estimated to be affected by the proposed actions ranged from a low of 3.23% for the combination of

measures proposed under summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 to 10.82% for the summer flounder precautionary default measures combined with those proposed under scup alternative 3 and black sea bass alternative 2 (Table 47). Affected private/rental effort ranged from a low of 2.20% of total private/rental trips for the combination of measures proposed under summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 to 7.17% of total private/rental effort for the precautionary default measures for summer flounder combined with scup alternative 3 and black sea bass alternative 2. Finally, estimated affected shore fishing trips ranged from a low of 0.63% of total shore trips for the three combinations of alternatives that include summer flounder alternative 2, scup alternative 1, and black sea bass alternative's 1 to 3 (because the proposed black sea measures are not estimated to impact shore fishing trips) to 0.95% for the precautionary default measures for summer flounder combined with the combination of measures proposed for scup alternative 2 or 3 and all of the black sea bass alternatives (i.e., six different combinations of alternatives are expected to effect 0.95% of shore fishing effort in 2005).

Unfortunately, no empirical information is available to determine how sensitive the affected anglers might be to the proposed regulations. In other words, it's not possible to determine how the affected anglers will respond to the new regulations. Will the affected angler's trip taking behavior remain unchanged, or will the management measures result in anglers taking fewer recreational 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, given the marginal changes in management measures from 2004 to those proposed for 2005, and the fact that the proposed measures do not prohibit anglers from engaging in catch and release fishing, the demand for fishing trips should remain relatively unaffected. Nevertheless, to the extent that the affected anglers do take fewer trips 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. 1997).

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 48). 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.

Economic losses were 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 economic losses in the Northeast Region associated with the hypothetical reductions in affected marine recreational fishing trips are shown in Table's 49 (assumes a 25% reduction in affected trips) and 50 (assumes a 50% reduction in affected trips). In total, the combinations of measures proposed under summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 result in the lowest sales, income, and employment losses to the Northeast Region because this combination of alternatives is projected to affect the fewest total fishing trips. A 25 % reduction in fishing trips projected to be affected by this combination of alternatives results in a total loss of $8.454 million in sales, $2.994 million in income, and about 78 jobs in 2005 in the coastal states of the Northeast Region (Table 49). The estimated losses are approximately twice as high if a 50% reduction in affected trips is assumed to occur (Table 50). The greatest potential losses to the Northeast Region would be generated from the implementation of summer flounder alternative 2, scup alternative 3, and black sea bass alternative 2.

Across all combinations of alternatives, approximately 70% 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 20% of potential region-wide reductions, while the remaining 10% 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, we do not know 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 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; and (2) a 50% reduction in the number of fishing trips that are predicted to by affected. Losses were estimated for all 18 combinations of alternatives that could be analyzed. The measures proposed under summer flounder alternative 1 could not 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. Angler welfare values are intrinsically connected to many variables, including the potential size distribution of the catch and keep rates. However, given the marginal changes in management measures from 2004 to those proposed for 2005, and the fact that the proposed measures do not prohibit anglers from engaging in catch and release fishing, the demand for fishing trips should remain relatively unaffected.

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 or food, ice, fuel, 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 2005 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. Stocks of all three species have been estimated to be more abundant in recent years, and 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 federal actions include additional or revised fishing regulations, both for the summer flounder, scup, and black sea bass 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 2005 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 2005 and 2006 Summer Flounder and 2005 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

Year	Harvest Limit	Landings	Overages (+)/Underages (-)
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	8.00	-1.72
2003	9.28	11.67	+2.39
2004	11.21	10.70[a]	-0.51[a]

[a] Projected

Scup

Year	Harvest Limit	Landings	Overages (+)/Underages (-)
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	1.76	4.26	+2.50
2002	2.71	3.62	+0.91
2003	4.01	8.48	+4.47
2004	3.99	4.34[a]	+0.35[a]

[a] Projected

Black Sea Bass

Year	Harvest Limit	Landings	Overages (+)/Underages (-)
1997	N/A	4.3	N/A
1998	3.15	1.2	-1.95
1999	3.15	1.7	-1.45
2000	3.15	4.0	+0.85
2001	3.15	3.4	+0.25
2002	3.43	4.3	+0.87
2003	3.43	3.3	-0.13
2004	4.01	1.7[a]	-2.31[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 FMPs 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 no overages in the summer flounder and black sea bass fisheries in 2004. However, a small overage is projected in the scup fishery in 2004. The Council and NMFS recognize that overages in any of the fisheries in 2005 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 2005 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 any significant effect on non-target species individually, or in conjunction with other anthropogenic activities. The proposed actions, together with past 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 2005 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 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 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

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 used in the recreational fishery for summer flounder is rod and reel and 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 EFH impacts because the gear does not alter bottom structure.

The proposed 2005 summer flounder, scup, and black sea bass recreational management measures are similar to those specified for 2004. However, a change in quota is not necessarily directly proportional to a change in fishing effort (MAFMC 2005). As discussed in the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications Package (section 6.1.3), the overall quotas for 2005 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, it is concluded that they will not affect critical habitat in any manner not considered in prior consultations. Since the proposed recreational management measures for each species is 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 expected that this action minimizes the adverse effects of fishing 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 Oceanographic and Atmospheric Administration Administrative Order (NAO) 216-6 (revised May 20, 1999) provides nine criteria for determining the significance of the impacts of a proposed fishery management action. The significance of this fishery management action is analyzed through this EA. These criteria are discussed below:

1. *Can the proposed action be reasonably 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 reduce recreational landings to achieve the F = 0.26 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 be reasonably expected to allow substantial damage to the ocean and coastal habitats and/or EFH 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.

3. ***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 between size limits, seasons and possession limits, so as not to compromise public health or safety.

4. ***Can the proposed action be reasonably expected to have an adverse impact on 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.

5. ***Can the proposed action be reasonably 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 2005 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.

6. ***Can the proposed action be reasonably 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 reduce recreational landings in order to achieve the recreational harvest limit specified through the FMP for the 2005 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 non-target species in the recreational fishery using rod and reel or handline is not expected to be substantial.

7. ***Can the proposed action be expected to have a substantial impact on biodiversity and 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 reduce recreational landings to achieve the F = 0.26 target for summer flounder, a 21% target exploitation rate for scup, and a 25% target exploitation rate for black sea bass. The alternatives being considered 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, rod and reel and handlines are generally not associated with adverse benthic impacts. The proposed action will likely ensure biodiversity and ecosystem stability over the long term as the species continue to rebuild.

8. ***Are significant social or economic impacts interrelated with significant 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 significant natural or physical environmental effects. Therefore, there are no significant social or economic impacts interrelated with significant natural or physical environmental impacts.

9. ***To what degree are the effects on the quality of the human environment expected 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 2005, as specified through the FMP.

FONSI Statement

Having reviewed the environmental assessment on the specification of the proposed recreational management measures to meet the recreational harvest limit for the summer flounder, scup, and black sea bass fisheries in 2005, and the available information relating to the action, I have determined that there will be no significant environmental impact, including cumulative impacts, resulting from the action and that preparation of an environmental impact statement on the action is not required by section 101 (2)(c) of the National Environmental Policy Act or its implementing regulations.

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 January 31, 2005 under section 307 of the Coastal Zone Management Act. Letters were sent to each of the following states (point of contact in parentheses) within the management unit reviewing the consistency of the proposed action relative to each state's Coastal Zone Management Program: Maine (Kathleen Leyden), New Hampshire (Brian Mazerski), Massachusetts (Joe Pelzarski), Rhode Island (Grover Fugate), Connecticut (Charles Evans), New York (William Barton), New Jersey (Mark Mauriello), Pennsylvania (Lawrence Toth), Delaware (Sarah Cooksey), Maryland (Gwynne Schultz), Virginia (Silvia Gazzera), and North Carolina (Steven Benton).

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 (2005 Specifications package) 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 August 10-12, 2004 and during the MAFMC meeting held on December 7-9, 2004. 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 (FR).

9.6 Section 515 (Data Quality Act)

Utility of Information Product

The proposed document includes: A description of the 2005 Recreational Specifications and the proposed changes to the implementing regulations of the FMP 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 (2005 and 2006 Summer Flounder and 2005 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 August 10-12, 2004 and during the MAFMC meeting held on December 7-9, 2004.

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

None of the evaluated management measures will affect the existing reporting requirements previously approved under OMB Control Nos. 0648-0202 (Vessel permits), 0648-0212 (Vessel logbooks), or 0648-0229 (Dealer reporting).

9.8 Impacts of the Plan Relative to Federalism/EO 13132

This amendment does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 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 the NMFS by the MAFMC. This specifications package was prepared by the following members of the MAFMC staff: Dr. Christopher M. Moore, Dr. José L. Montañez and Jessica Coakley. Dr. Scott Steinbeck (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 the NMFS, New England and South Atlantic Fishery Management Councils, Fish and Wildlife Service, and the states of Maine through North Carolina through their membership on the Mid-Atlantic and New England Fishery Management Councils. In addition, states that are members within the management unit were be consulted through the Coastal Zone Management Program consistency process. Letters were sent to each of the following states (point of contact in parentheses) within the management unit reviewing the

consistency of the proposed action relative to each state's Coastal Zone Management Program: Maine (Kathleen Leyden), New Hampshire (Brian Mazerski), Massachusetts (Joe Pelcarski), Rhode Island (Grover Fugate), Connecticut (Charles Evans), New York (William Barton), New Jersey (Mark Mauriello), Pennsylvania (Lawrence Toth), Delaware (Sarah Cooksey), Maryland (Gwynne Schultz), Virginia (Silvia Gazzera), and North Carolina (Steven Benton).

In order to ensure compliance with NMFS formatting requirements, the advice of NMFS Northeast Region personnel, including Sarah Thompson, Sarah McLaughlin, Michael Pentony, and Jennifer Anderson 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 (E.O.) 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 2005 recreational specifications for summer flounder, scup, and black sea bass.

2.0 Evaluation of E.O. 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 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 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications. Additional characterization of these fisheries is presented in sections 6.0 and 6.5 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 2005 and 2006 Summer Flounder and 2005 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 E.O. 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 33,924,223 fishing trips were taken in the Northeast Region (Maine-North Carolina) in 2004. It is estimated that the number of trips by fishing mode was 1,673,573 party/charter boat trips, 17,712,601 private/rental boat trips, and 14,538,049 shore trips (Table 34).

Assuming angler effort in 2005 will be the same as that estimated for 2004, fishing impacts were first examined by estimating the number of recreational fishing trips in 2004 that would have been "affected" by the proposed 2005 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.[1] 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 2005; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2005. 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 49 (assumes a 25% reduction in affected trips) and 50 (assumes a 50% reduction in affected trips). In total, the combinations of measures proposed under summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 result in the lowest sales, income, and employment losses to the Northeast Region because this combination of alternatives is projected to affect the fewest total fishing trips. A 25 % reduction in fishing trips projected to be affected by this combination of alternatives results in a total loss of $8.454 million in sales, $2.994 million in income, and about 78 jobs in 2005 in the coastal states of the Northeast Region (Table 49). The estimated losses are approximately twice as high if a 50% reduction in affected trips is assumed to occur (Table 50). The greatest potential losses to the Northeast Region would be generated from the implementation of summer flounder alternative 2, scup alternative 3, and black sea bass alternative 2.

Across all combinations of alternatives, approximately 70% 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 20% of potential region-wide reductions, while the remaining 10% 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.

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,

[1] However, since the management measures under fluke 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 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 could be analyzed.

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 E.O. 12866. Based on the results of the RIR, this action is not significant under E.O. 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 certify that the rule: (A) 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 $3.5 and $5.0 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 2005.

Data from the Northeast permit application database indicates that in 2003 there were 775 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 337 party/charter vessels participated in the summer flounder, scup, and/or black sea bass fisheries in the Northeast in 2003 (Table 51).

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 alternative 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 2005 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 52). From 1996 to 2001, recreational landings have been above the recreational harvest limit ranging from 0.96 million lb in 1999 to 9.06 million lb in 2000. In 2002, recreational landings were 1.72 million lb below the recreational harvest limit of 9.72 million lb. In 2003, recreational landings were approximately 2.35 million lb above the recreational harvest limits of 9.32 million lb. For 2004, recreational landings are projected to be slightly below (0.12 million lb) the recreational harvest limit of 11.21 million lb. The total number of recreational trips from Maine through North Carolina has fluctuated throughout the 1993 to 2004 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 2003 period (Table 52).

The proposed recreational harvest limit for 2005 is 11.98 million lb. This recreational harvest limit is approximately 7% higher than the recreational harvest limit implemented

in 2004 (11.21 million lb) and 11% above the projected recreational landings for 2004 (10.70 million lb; Table 52). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2005.

Scup

Scup recreational landings have declined over 89% for the period 1991 through 1998 (Table 53). 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 had 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 1999-2003 period, recreational landings were above the recreational harvest limit for those years. In 2004, scup landings are projected to be 0.54 million lb (14%) below the recreational harvest limit for that year (Table 53).

The recreational harvest limit for 2005 is 3.96 million lb. This recreational harvest limit is near identical to the recreational harvest limit implemented in 2004 (3.99 million lb) and about 9% above the projected recreational landings in 2004 (4.34 million lb; Table 53). 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 2005.

Black Sea Bass

Black sea bass recreational fishing trips have shown a slight upward trend from the early to Mid-1990's (Table 54). 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 4.01 million lb. In 2001, 2002, and 2003 recreational landings were 3.42, 4.35, and 3.29 million lb, respectively. For 2004, recreational landings are projected to be 2.29 million lb below the recreational harvest limit of 4.01 million lb.

The proposed recreational harvest limit for 2005 is about 3% lower than the limit established in 2004 (Table 54). The proposed recreational management measures are necessary to prevent anglers from exceeding the recreational harvest limit in 2005.

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 2005 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 48). 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.[2] Estimates of the impacts 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 2004 that would have been affected by the proposed 2005 management measures. All 2004 party/charter fishing trips that would have been constrained by the proposed 2005 measures in each Northeast state were considered to be "affected" trips. To date, the first five waves of MRFSS effort data are available for 2004. Wave six effort estimates for 2003 (November - December) were used as a proxy

[2] 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 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.

for wave six 2004 effort. Therefore, wave six effort estimates for 2004 were assumed to be the same as in 2003.

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 2005; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2005.

Total economic losses to party/charter vessels were then estimated by multiplying the number of potentially affected trips in each state in 2005, under the two hypothetical scenarios, by the estimated average access fee paid by party/charter anglers in the Northeast region in 2004 ($38.93).[3] 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 2003 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 2005.

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 9 of the 11 northeast coastal states (Tables 55 through 72). Angler effort aboard party/charter boats in 2005 in Maine and New Hampshire is not predicted to be constrained (i.e, affected) by the proposed measures, thus party/charter revenues for vessels operating in these states are not estimated to be impacted. In addition, although potential losses were estimated for party/charter vessels operating out of Delaware these results are suppressed for confidentiality purposes. Average party/charter losses for federally permitted vessels operating in the remaining states are estimated to vary considerably across the 18 combinations of alternatives. For instance, in New York, average losses are predicted to range from $1,917 per boat under the combined effects of summer flounder alternative 2, scup alternative 1, and black sea bass alternative 1 (Table 64; assuming a 25% reduction in affected effort), to $8,817 for the combination of alternatives proposed for the summer flounder precautionary default, scup alternative 3, and black sea bass alternative 3 (Table 63). Average gross revenue losses in

[3] The 1998 party/charter average expenditure estimate ($33.22; Table 48) was adjusted to its 2004 equivalent using the Bureau of Labor's Consumer Price Index.

Massachusetts, New York, Rhode Island, New Jersey, and Maryland are generally predicted to be higher across the 18 combinations of alternatives than in the remaining northeast coastal states.

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 2005 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 over 90% of the landings of summer flounder and scup in 2003 were caught in state waters 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 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 2005; and (2) a 50% reduction in the number of fishing trips that are predicted to be affected in the Northeast Region in 2005. Reductions in fishing effort of this magnitude in 2005 may not occur given the marginal changes in management measures from 2004 to those proposed for 2005, and the fact that the proposed measures do not prohibit anglers from engaging in catch and release fishing. 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 ONeil 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 ONeil (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 2005 target (number in thousands), and the 2004 projected landings. The percent reduction necessary to achieve the 2005 recreational harvest limit relative to 2004 landings is also presented.

State	1998	2005 Target[1]	2004[2]	% Reduction
MA	383	263	283	7.1
RI	395	271	271	0
CT	261	179	222	19.4
NY	1,230	845	902	6.3
NJ	2,728	1,873	1,775	0
DE	219	150	121	0
MD	206	141	67	0
VA	1,165	800	589	0
NC	391	269	176	0

[1]Based on a 31.3% reduction in 1998 landings.
[2]Projected using waves 1-5.

Table 2. Procedures for establishing summer flounder recreational management measures.

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.

State Conservation Equivalency Measures

Late December

Commission staff summarizes and distributes equivalency guideline to states.

Early January

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**.**

January 15

ASMFC distributes state conservation equivalency proposals to Technical Committee.

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, state conservation equivalency 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:
-State specific conservation equivalency measures with precautionary default measures, or -Coastwide measures.

Coastwide Measures

Early January

Council staff submits recreational measure package to NMFS. Package includes:
-Overall % reduction required.
-Coastwide measures.

February 15

NMFS publishes proposed rule for recreational measures announcing the overall % reduction required and Coastwide measures.

April

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.

Table 3. The effect of various size and possession limits on 2004 summer flounder recreational landings. The table contains the proportional reduction in number of summer flounder landed adjusting for the effectiveness of 2004 regulations.

	Coast Size (TL ")						
Bag	**0**	**15.5**	**16**	**17**	**18**	**19**	**20**
1	0.398	0.418	0.425	0.470	0.624	0.743	0.826
2	0.163	0.198	0.206	0.275	0.511	0.639	0.785
3	0.067	0.110	0.118	0.204	0.466	0.651	0.765
4	0.034	0.079	0.087	0.177	0.450	0.641	0.760
5	0.017	0.063	0.071	0.164	0.444	0.636	0.757
6	0.007	0.053	0.062	0.157	0.440	0.634	0.756
7	0.003	0.049	0.058	0.154	0.438	0.632	0.756
8	0.001	0.047	0.055	0.154	0.437	0.632	0.756

Table 4. The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.

Coast
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.409	0.413	0.413	0.435	0.488	0.543	0.592	0.652
2	0.164	0.170	0.170	0.216	0.306	0.393	0.462	0.552
3	0.081	0.089	0.090	0.146	0.249	0.344	0.419	0.521
4	0.040	0.049	0.050	0.113	0.222	0.320	0.400	0.507
5	0.024	0.034	0.035	0.098	0.209	0.308	0.391	0.500
6	0.016	0.026	0.027	0.091	0.202	0.303	0.387	0.496
7	0.012	0.022	0.023	0.087	0.198	0.300	0.385	0.494
8	0.009	0.019	0.020	0.084	0.196	0.299	0.384	0.493

Massachusetts
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.238	0.238	0.238	0.238	0.238	0.286	0.524	0.571
2	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
3	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
4	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
5	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
6	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
7	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476
8	0.000	0.000	0.000	0.000	0.000	0.190	0.429	0.476

Rhode Island
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.417	0.417	0.417	0.417	0.417	0.417	0.417	0.462
2	0.167	0.167	0.167	0.167	0.167	0.167	0.167	0.295
3	0.068	0.068	0.068	0.068	0.068	0.068	0.068	0.250
4	0.015	0.015	0.015	0.015	0.015	0.015	0.015	0.235
5	0.008	0.008	0.008	0.008	0.008	0.008	0.008	0.227
6	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
7	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220
8	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.220

Table 4 (continued). The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.

Connecticut
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.414	0.414	0.414	0.414	0.414	0.414	0.414	0.477
2	0.180	0.180	0.180	0.180	0.180	0.180	0.180	0.270
3	0.090	0.090	0.090	0.090	0.090	0.090	0.090	0.207
4	0.072	0.072	0.072	0.072	0.072	0.072	0.072	0.189
5	0.054	0.054	0.054	0.054	0.054	0.054	0.054	0.171
6	0.036	0.036	0.036	0.036	0.036	0.036	0.036	0.153
7	0.027	0.027	0.027	0.027	0.027	0.027	0.027	0.144
8	0.018	0.018	0.018	0.018	0.018	0.018	0.018	0.135

New York
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.345	0.345	0.345	0.345	0.345	0.345	0.400	0.468
2	0.123	0.123	0.123	0.123	0.123	0.123	0.217	0.319
3	0.047	0.047	0.047	0.047	0.047	0.047	0.149	0.255
4	0.021	0.021	0.021	0.021	0.021	0.021	0.128	0.238
5	0.009	0.009	0.009	0.009	0.009	0.009	0.115	0.226
6	0.004	0.004	0.004	0.004	0.004	0.004	0.111	0.221
7	0.000	0.000	0.000	0.000	0.000	0.000	0.106	0.217
8	0.000	0.000	0.000	0.000	0.000	0.000	0.106	0.217

New Jersey
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.379	0.379	0.379	0.379	0.479	0.567	0.644	0.712
2	0.154	0.154	0.154	0.154	0.318	0.465	0.572	0.655
3	0.080	0.080	0.080	0.080	0.268	0.430	0.548	0.636
4	0.042	0.042	0.042	0.042	0.243	0.411	0.532	0.622
5	0.028	0.028	0.028	0.028	0.235	0.403	0.526	0.617
6	0.024	0.024	0.024	0.024	0.231	0.399	0.524	0.614
7	0.021	0.021	0.021	0.021	0.230	0.398	0.524	0.614
8	0.019	0.019	0.019	0.019	0.229	0.397	0.524	0.614

Table 4 (continued). The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.

Delaware
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.308	0.308	0.308	0.308	0.308	0.308	0.308	0.408
2	0.124	0.124	0.124	0.124	0.124	0.124	0.124	0.258
3	0.064	0.064	0.064	0.064	0.064	0.064	0.064	0.217
4	0.043	0.043	0.043	0.043	0.043	0.043	0.043	0.201
5	0.037	0.037	0.037	0.037	0.037	0.037	0.037	0.194
6	0.030	0.030	0.030	0.030	0.030	0.030	0.030	0.187
7	0.023	0.023	0.023	0.023	0.023	0.023	0.023	0.181
8	0.017	0.017	0.017	0.017	0.017	0.017	0.017	0.174

Maryland
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.370	0.370	0.370	0.370	0.370	0.370	0.410	0.450
2	0.020	0.020	0.020	0.020	0.020	0.020	0.120	0.290
3	0.010	0.010	0.010	0.010	0.010	0.010	0.110	0.280
4	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
5	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
6	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
7	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280
8	0.000	0.000	0.000	0.000	0.000	0.000	0.110	0.280

Virginia
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.513	0.513	0.513	0.563	0.613	0.686	0.723	0.758
2	0.225	0.225	0.225	0.348	0.439	0.539	0.596	0.656
3	0.116	0.116	0.116	0.270	0.374	0.487	0.547	0.620
4	0.055	0.055	0.055	0.229	0.335	0.452	0.522	0.602
5	0.028	0.028	0.028	0.203	0.310	0.429	0.508	0.594
6	0.013	0.013	0.013	0.189	0.298	0.423	0.504	0.591
7	0.005	0.005	0.005	0.181	0.292	0.421	0.502	0.588
8	0.001	0.001	0.001	0.178	0.289	0.421	0.502	0.588

Table 4 (continued). The effect of various size and possession limits on 2001 summer flounder recreational landings by state. The tables contain the proportional reduction in number of summer flounder landed and are adjusted for the effectiveness of regulations in each state.

North Carolina
Size (TL")

Bag	0	15.0	15.5	16.0	16.5	17.0	17.5	18.0
1	0.329	0.329	0.329	0.474	0.599	0.691	0.783	0.882
2	0.099	0.099	0.099	0.289	0.493	0.645	0.743	0.868
3	0.026	0.026	0.026	0.243	0.474	0.632	0.743	0.868
4	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
5	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
6	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
7	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868
8	0.000	0.000	0.000	0.230	0.474	0.632	0.743	0.868

Table 5. The effect of various size and possession limits on 2004 scup recreational landings. The table contains the proportional reduction in number of scup landed adjusting for the effectiveness of the 2004 management measures.

	Coast Size (TL“)				
Bag	**10**	**10.5**	**11**	**11.5**	**12**
1	0.887	0.891	0.895	0.900	0.913
2	0.807	0.812	0.820	0.834	0.856
3	0.742	0.747	0.762	0.780	0.808
4	0.685	0.693	0.711	0.737	0.770
5	0.634	0.646	0.668	0.701	0.743
6	0.590	0.605	0.630	0.671	0.720
7	0.550	0.567	0.597	0.646	0.699
8	0.515	0.534	0.569	0.624	0.683
9	0.485	0.506	0.545	0.604	0.668
10	0.458	0.481	0.525	0.586	0.655
15	0.359	0.389	0.449	0.527	0.612
20	0.292	0.329	0.401	0.491	0.584
25	0.253	0.294	0.370	0.467	0.561
30	0.221	0.264	0.344	0.444	0.541
35	0.190	0.238	0.322	0.423	0.528
40	0.164	0.215	0.302	0.403	0.517
45	0.139	0.193	0.282	0.387	0.508
50	0.117	0.174	0.265	0.375	0.501

Table 6. 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 7. 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 8. The effect of various size and possession limits on 2004 black sea bass recreational landings. The table contains the proportional reduction in number of black sea bass landed adjusting for the effectiveness of 2004 management measures.

Coast
Size (TL ")

Bag	11.5	12	12.5	13	13.5	14
1	0.688	0.688	0.711	0.747	0.776	0.807
2	0.502	0.502	0.545	0.611	0.672	0.726
3	0.369	0.369	0.441	0.531	0.604	0.674
4	0.282	0.282	0.369	0.473	0.556	0.637
5	0.217	0.217	0.320	0.434	0.523	0.612
6	0.169	0.169	0.280	0.405	0.497	0.594
7	0.131	0.131	0.247	0.376	0.480	0.586
8	0.098	0.098	0.220	0.359	0.471	0.580
9	0.078	0.078	0.204	0.349	0.463	0.576
10	0.059	0.059	0.190	0.341	0.458	0.573
11	0.044	0.044	0.178	0.335	0.453	0.570
12	0.034	0.034	0.173	0.331	0.449	0.568
13	0.027	0.027	0.168	0.326	0.446	0.566
14	0.022	0.022	0.163	0.323	0.443	0.565
15	0.017	0.017	0.158	0.320	0.441	0.565
20	0.004	0.004	0.147	0.313	0.439	0.565
25	0.000	0.000	0.144	0.313	0.439	0.565

Table 9. Summary of federal management measures for the summer flounder recreational fishery, 1994-2004.

Measure	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Harvest Limit (m lb)	8.38	10.67	7.76	7.41	7.41	7.41	7.41	7.41	7.16	9.72	9.28	11.21
Landings (m lb)	8.84	9.33	5.42	9.82	11.87	12.52	8.37	16.52	11.64	8.00	11.67	10.70[a]
Possession Limit	6	8	6/8	10	8	8	8	8	3	[b]	[b]	[b]
Size Limit (TL inches)	14	14	14	14	14.5	15	15	15.5	15.5	[b]	[b]	[b]
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	5/10 - 10/2	4/15 - 10/15	[b]	[b]	[b]

[a]Projected using waves 1-5.
[b]State specific conservation equivalency measures.

Table 10. Summer flounder recreational management measures by state, 2002.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16.5	7	All year
Rhode Island	18.0	5	May 25 - Sept. 20
Connecticut	17.0	6	All year
New York	17.0	7	May 2 - Oct. 31
New Jersey	16.5	8	May 18 - Sept. 24
Delaware	17.5	4	May 16 - Dec. 31
Maryland	17.0	8	Jan. 1 - July 24 Aug. 12 - Dec. 31
Potomac River Fisheries Commission	17.0	8	Jan. 1 - July 24 Aug. 12 - Dec. 31
Virginia	17.5	8	March 29 - Jul. 23 Aug. 8 - Dec. 31
North Carolina	15.5	8	July 4-Nov. 19

Table 11. Summer flounder recreational management measures by state, 2003.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	16.5	7	All Year
Rhode Island	17.5	5	May 1 - Sept. 20
Connecticut	17	6	All year
New York	17	7	All Year
New Jersey	16.5	8	May 3 - Oct. 13
Delaware	17.5	4	All Year
Maryland	17	8	All Year
Potomac River Fisheries Commission	17	8	All Year
Virginia	17.5	8	March 29 - Jul. 23 Aug. 8 - Dec. 31
North Carolina			
Ocean	15	8	Jan. 1 - Dec. 31
Inside	14	unlimited	Jan. 1 - Dec. 31

Table 12. 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

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

Table 13. Projected summer flounder recreational landings (in number of fish) relative to targets, by state for 2004.

State	2004 Target	2004 Landings[1]	Difference (%)
MA	244,000	282,534	-16
RI	251,000	270,838	-8
CT	166,000	222,387	-34
NY	783,000	901,903	-15
NJ	1,736,000	1,774,699	-2
DE	139,000	121,221	13
MD	131,000	66,659	49
VA	741,000	588,686	21
NC	249,000	176,372	29

[1]Projected using waves 1-5.

Table 14. Summary of management measures for the scup recreational fishery, 1996-2004.

Measure	1996	1997	1998	1999	2000	2001	2002[c]	2003[c]	2004[c]
Harvest Limit (m lb)	-	1.95	1.55	1.24	1.24	1.76	2.71	4.01	3.99
Landings (m lb)	2.16	1.20	0.88	1.89	5.44	4.26	3.62	8.48	4.34[a]
Possession Limit	-	-	-	-	-	50	20	50	50
Size Limit (TL inches) [b]	7	7	7	7	-	9	10	10	10
Open Season	1/1 - 12/31	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

[a]Projected using waves 1-5.
[b]Coastwide minimum size limit, some states have larger minimum size limits.
[c]The Board developed a conservation equivalency program for scup in 2002, 2003, and 2004.

Table 15. Scup recreational management measures by state, 2002.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	9	100 fish for anglers on party charter boats 50 fish for all other anglers	May 10 - Dec.31
Rhode Island	10	Period 1: 8 fish Period 2: 50 fish	Period 1: July 1 - Aug.23 Period 2: Aug.24 - Dec.31
Connecticut	10	50 fish	July 13 - Sept.25
New York	10	50 fish	Party/Charter Boats: June 25 - Nov.30 All other anglers: Oct.1 - Nov.30
New Jersey	10	50 fish	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. Scup recreational management measures by state, 2003.

State	Minimum Size (inches)	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 17. Scup recreational management measures by state, 2004.

State	Minimum Size (inches)	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 18. Summary of management measures for the black sea bass recreational fishery, 1996-2004.

Measure	1996	1997	1998	1999	2000	2001	2002	2003	2004
Harvest Limit (m lb)	-	-	3.15	3.15	3.15	3.15	3.43	3.43	4.01
Landings (m lb)	4.0	4.3	1.2	1.7	4.0	3.4	4.3	3.3	1.72[b]
Possession Limit	-	-	-[a]	-[a]	-[a]	25	25	25	25
Size Limit (TL inches)	9	9	10	10	10	11	11.5	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

[a] There was no federal possession limit but some states implemented a 20 fish possession limit in these years
[b]Projected using waves 1-5.

Table 19. Black sea bass recreational management measures by state, 2002.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	12	20 fish	All year
Rhode Island	11.5	25 fish	All year
Connecticut	11.5	25 fish	All year
New York	11.5	25 fish	All year
New Jersey	11.5	25 fish	All year
Delaware	11.5	25 fish	May 10 - Dec. 31
Maryland	11.5	25 fish	Jan. 1 - Feb. 28 and May 10 - Dec. 31
PRFC	11.5	25 fish	Jan. 1 - Feb. 28 and May 10 - Dec. 31
Virginia	11.5	25 fish	All year
North Carolina (North of Cape Hatteras)	11.5	25 fish	All year

Table 20. Black sea bass recreational management measures by state, 2003.

State	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	12	20 fish	May 10 - Dec. 31
Rhode Island	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
Connecticut	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
New York	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
New Jersey	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
Delaware	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
Maryland	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
PRFC	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
Virginia	12	25 fish	Jan. 1 - Sept. 1 and Sept. 16 - Nov. 30
North Carolina (North of Cape Hatteras)	12	25 fish	All Year

Table 21. Black sea bass recreational management measures by state, 2004.

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

Table 22. The number of summer flounder landed from Maine through North Carolina by mode, 1981-2003.

	Mode		
Year	**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	1,588,850	8,774,922
1987	406,095	1,150,096	6,308,570
1988	945,864	1,134,298	7,879,442
1989	180,269	141,179	1,395,176
1990	261,897	413,228	3,118,447
1991	565,403	597,377	4,904,636
1992	275,472	375,169	4,351,389
1993	342,226	1,013,409	5,138,354
1994	447,184	833,591	5,419,146
1995	241,904	266,508	2,816,462
1996	206,929	655,577	6,130,181
1997	255,066	928,874	5,981,122
1998	316,314	358,872	6,302,006
1999	213,446	300,596	3,592,740
2000	569,614	648,673	6,582,707
2001	226,995	329,597	4,736,909
2002	154,957	258,708	2,845,647
2003	203,719	389,141	3,965,812
% of Total	10	14	76

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

Table 23. The number of scup landed from Maine through North Carolina by mode, 1981-2003.

	Mode		
Year	**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	1,762,052	3,616,036
1994	229,924	914,893	3,122,101
1995	222,397	837,390	1,359,241
1996	120,596	450,864	2,399,997
1997	141,367	451,031	1,322,000
1998	117,056	163,916	929,148
1999	197,876	821,995	2,230,780
2000	550,951	1,140,055	5,552,866
2001	766,084	768,893	3,563,841
2002	505,079	1,309,023	1,832,594
2003	858,699	1,329,399	7,264,026
% of Total	10	16	74

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

Table 24. The number of black sea bass landed from Maine through North Carolina by mode, 1981-2003.

	Mode		
Year	**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	16,647,923	4,187,088
1987	71,956	1,094,121	2,238,164
1988	140,755	1,038,045	2,227,902
1989	237,967	1,889,826	2,419,648
1990	289,379	2,180,198	1,710,455
1991	250,678	2,534,397	2,621,274
1992	45,368	1,960,095	1,780,225
1993	54,675	4,537,560	1,562,230
1994	243,347	1,951,899	1,321,626
1995	275,981	5,130,781	1,413,573
1996	70,522	2,556,415	1,062,026
1997	8,337	3,922,325	908,839
1998	7,073	743,416	474,072
1999	19,231	586,774	771,258
2000	177,489	1,787,572	1,780,238
2001	14,035	1,793,849	1,164,977
2002	16,618	2,036,765	1,338,447
2003	10,760	2,034,866	1,308,494
% of Total	4	63	33

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

Table 25. 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, 2003.

State	Summer Flounder	Scup	Black Sea Bass
Maine	0%	0%	0%
New Hampshire	0%	0%	0%
Massachusetts	3.89%	17.18%	3.61%
Rhode Island	4.51%	10.87%	2.16%
Connecticut	3.64%	16.18%	0.16%
New York	33.76%	54.08%	9.77%
New Jersey	39.14%	1.58%	58.55%
Delaware	2.32%	0.01%	9.44%
Maryland	0.90%	0.01%	7.41%
Virginia	9.90%	0.08%	8.15%
North Carolina	1.93%	0.01%	0.75%
Total	**100%**	**100%**	**100%**

Table 26. The percentage (%) contribution of summer flounder to the total catch of all species from party/charter vessels by state, 1996 - 2003.

Summer Flounder

	Year							
State	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
CT	1.2	1.0	1.6	2.3	2.2	1.4	4.6	5.0
DE	38.9	9.2	5.8	6.4	18.9	8.4	2.8	
MA	0.1	1.4	0.7	0.4	0.3	0.4	0.2	0.1
MD	2.2	1.8	0.5	0.1	0.1	0.1	0.1	0.1
ME	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
NC	6.2	1.3	0.7	0.9	1.0	0.0	0.1	0.9
NH	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NJ	12.0	10.5	15.4	15.0	11.4	9.2	8.6	10.9
NY	35.4	33.7	27.8	39.0	27.3	13.1	14.3	16.1
RI	3.6	5.0	4.4	14.9	26.2	7.2	15.1	21.9
VA	0.0	0.1	2.5	2.2	2.6	3.7	4.4	1.1

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. Data was not available for Delaware in 2003.

Table 27. The percentage (%) contribution of scup to the total catch of all species from party/charter vessels by state, 1996 - 2003.

Scup

	Year							
State	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
CT	0.2	0.0	0.9	0.4	15.1	13.5	8.3	15.6
DE	0.2	0.9	0.0	0.0	0.1	0.0	0.5	
MA	22.5	19.3	17.9	27.1	32.2	24.4	28.7	23.7
MD	0.0	2.8	0.1	1.1	0.1	0.0	0.1	0.0
ME	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0
NC	0.0	0.0	1.6	1.3	1.3	0.6	1.0	0.2
NH	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	4.7
NY	8.8	8.3	25.6	16.6	29.0	48.5	36.4	47.1
RI	26.6	12.0	5.7	13.1	17.6	32.4	29.3	9.7
VA	0.0	0.0	0.2	0.1	0.0	0.2	0.7	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. Data was not available for Delaware in 2003.

Table 28. The percentage (%) contribution of black sea bass to the total catch of all species from party/charter vessels by state, 1996 - 2003.

Black Sea Bass

	Year							
State	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**
CT	0.1	0.1	0.0	0.2	1.0	0.8	1.6	1.1
DE	25.1	18.4	11.7	24.9	18.9	61.5	85.1	
MA	1.5	1.3	1.5	2.9	5.5	4.0	4.0	4.2
MD	17.6	57.9	59.1	39.0	66.4	84.9	95.3	94.3
ME	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
NC	2.6	14.6	42.9	38.6	37.3	52.5	64.0	42.1
NH	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
NJ	43.0	26.5	23.7	27.6	37.0	41.5	44.7	53.4
NY	26.5	12.6	14.8	16.6	19.4	20.5	23.7	17.7
RI	1.3	3.1	0.6	3.6	8.5	13.3	15.8	12.2
VA	100.0	82.4	36.1	42.7	20.7	29.9	49.6	53.4

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. Data was not available for Delaware in 2003,

Table 29. Recreational anglers' ratings (mean) of reasons for marine fishing, by subregion.

	New England			Mid-Atlantic		
Statement	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 30. Recreational anglers' ratings (mean) of fishing regulation methods, by subregion.

	New England		Mid-Atlantic	
Type of Regulation	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 31. Recreational anglers' ratings (mean) of fishing regulation methods, by mode.

	Party/Charter		Private/Rental		Shore	
Type of Regulation	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 32. Party and charter vessel trip report (VTR) data for summer flounder, scup, and black sea bass, 1996-2003.

Summer Flounder

	Number of Vessels		Number of Trips		Mean Number of Anglers		Numbers of Fish Caught		Mean Effort (catch per angler)	
Year	Party	Charter	Party	Charter	Party	Charter	Party	Charter	Party	Charter
1996	138	242	5,544	2,087	27.47	12.52	629,582	101,314	4.67	3.92
1997	117	241	5,885	2,365	29.35	13.42	556,108	118,004	3.65	3.79
1998	124	254	6,432	2,849	29.17	12.41	580,181	133,786	3.56	3.85
1999	126	248	6,226	2,749	29.46	13.04	745,467	157,481	4.67	4.48
2000	137	269	5,915	3,430	30.21	11.23	560,050	163,718	3.53	4.32
2001	118	241	5,320	2,703	29.57	11.00	330,201	131,541	2.39	4.50
2002	108	264	4,596	2,865	32.29	10.37	318,864	104,793	2.43	3.58
2003	99	201	3,997	2,163	28.70	11.69	262,653	93,673	2.66	3.77

Scup

	Number of Vessels		Number of Trips		Mean Number of Anglers		Numbers of Fish Caught		Mean Effort (catch per angler)	
Year	Party	Charter	Party	Charter	Party	Charter	Party	Charter	Party	Charter
1996	66	88	1,366	363	26.19	8.68	324,853	41,565	10.31	13.85
1997	57	59	1,167	278	26.32	6.93	257,102	42,608	9.12	23.02
1998	61	79	1,542	345	25.95	6.76	556,322	50,076	15.46	21.79
1999	62	84	1,535	468	26.34	6.65	514,284	84,304	14.01	27.56
2000	79	113	1,819	804	28.08	8.40	726,250	130,765	15.63	19.66
2001	67	120	2,215	1,025	29.28	7.32	1,104,985	166,728	18.43	22.52
2002	78	137	2,006	990	27.71	8.80	700,496	139,217	14.18	16.24
2003	60	117	1,603	872	26.72	8.47	570,712	129,483	14.61	17.87

Black Sea Bass

	Number of Vessels		Number of Trips		Mean Number of Anglers		Numbers of Fish Caught		Mean Effort (catch per angler)	
Year	Party	Charter	Party	Charter	Party	Charter	Party	Charter	Party	Charter
1996	111	189	3,776	1,301	25.96	10.24	1,295,103	113,755	14.12	8.65
1997	108	184	3,891	1,175	27.43	11.91	881,870	132,019	8.69	9.56
1998	107	185	4,018	1,148	26.13	9.54	875,854	65,707	8.95	6.04
1999	119	193	4,024	1,425	27.76	10.19	1,176,437	132,495	11.27	9.19
2000	133	225	4,818	2,165	29.00	10.78	1,401,312	223,189	10.80	9.67
2001	115	225	5,007	2,393	29.73	9.17	1,614,957	243,855	11.63	11.21
2002	106	234	4,922	2,496	30.22	10.16	1,732,563	288,801	12.63	11.56
2003	90	178	3,519	1,796	28.10	9.87	1,042,303	259,577	11.60	14.90

Table 33. 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.

	Summer Flounder		Scup		Black Sea Bass	
Year	**State < 3 mi**	**EEZ > 3 mi**	**State < 3 mi**	**EEZ > 3 mi**	**State < 3 mi**	**EEZ > 3 mi**
1995	95.94%	4.06%	67.22%	32.78%	19.71%	80.29%
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	89.39%	10.61%	91.57%	8.43%	21.49%	78.51%
2003	91.66%	8.34%	95.21%	4.79%	14.47%	85.52%
Avg.	91.69%	8.31%	91.22%	8.78%	20.48%	79.52%

Table 34. MRFSS projected total estimated angler effort (fishing trips) by state, in 2004.

State	Party/Charter	Private/Rental	Shore
ME	51,517	306,269	403,323
NH	40,156	138,234	179,813
MA	152,740	2,433,848	1,913,491
RI	41,915	543,488	896,593
CT	39,236	913,892	586,699
NY	366,449	2,370,642	1,824,731
NJ	432,709	3,974,310	2,057,232
DE	58,103	675,265	456,042
MD	235,786	1,588,250	879,231
VA	86,838	2,381,248	1,062,008
NC	168,124	2,387,155	4,278,885
Total	1,673,573	17,712,601	14,538,049

Table 35. Effort effects of individual management measures in isolation, by mode (2004 catch and effort estimates were used to project 2005 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)	?	1,673,573	?	?	17,712,601	?	?	14,538,049	?
Fluke precautionary default measures	114,510	1,673,573	6.84%	951,185	17,712,601	5.37%	39,475	14,538,049	0.27%
Fluke Alternative 2	8,191	1,673,573	0.49%	139,979	17,712,601	0.79%	2,275	14,538,049	0.02%
Scup Alternative 1 (status quo)	43,694	1,673,573	2.61%	248,824	17,712,601	1.40%	88,679	14,538,049	0.61%
Scup Alternative 2	53,236	1,673,573	3.18%	276,928	17,712,601	1.56%	98,227	14,538,049	0.67%
Scup Alternative 3	62,853	1,673,573	3.76%	309,623	17,712,601	1.75%	98,950	14,538,049	0.68%
BSB Alternative 1	2,152	1,673,573	0.13%	580	17,712,601	<0.1%	0	14,538,049	0.00%
BSB Alternative 2 (status quo)	3,747	1,673,573	0.22%	9,848	17,712,601	0.06%	0	14,538,049	0.00%
BSB Alternative 3	2,175	1,673,573	0.13%	2,176	17,712,601	0.01%	0	14,538,049	0.00%

Table 36. The percent of successful anglers landing 1 to 10 summer flounder (MRFSS Type A fish) per trip, waves 1-4, 2004.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1287	54.05	1287	54.05
2	580	24.36	1867	78.41
3	294	2.35	2161	90.76
4	105	4.41	2266	95.17
5	53	2.23	2319	97.40
6	31	1.30	2350	98.70
7	12	0.50	2362	99.20
8	7	0.29	2369	99.50
9	9	0.38	2378	99.87
10	3	0.13	2381	100.00

Table 37. The percent of successful anglers landing 1 to 30 summer flounder (MRFSS Type A fish) per trip, 1992.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
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 38. 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 2004). The number in parentheses is sample size (N).

State	1999		2000		2001			2002			2003			2004		
	% 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	% 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	6.7	(30)	16.5
RI	11.9	(160)	18.1	(282)	14.8	(196)	17.5	11.8	(228)	18.0	8.4	(250)	17.5	7.0	(503)	17.5
CT	15.5	(258)	2.9	(379)	3.1	(129)	17.5	5.8	(69)	17.0	7.8	(179)	17.0	5.8	(174)	17.0
NY	5.9	(272)	5.5	(325)	5.8	(274)	17.0	6.9	(246)	17.0	6.2	(482)	17.0	3.4	(381)	17.0
NJ	4.1	(635)	9.8	(705)	14.7	(1169)	16.0	6.1	(540)	16.5	6.4	(934)	16.5	2.5	(756)	16.5
DE	19	(216)	5.2	(249)	9.2	(325)	17.5	7.5	(267)	17.5	10.9	(266)	17.5	12.4	(193)	17.5
MD	3.8	(263)	9.1	(243)	4.0	(101)	17.0	5.2	(77)	17.0	5.0	(20)	17.0	9.1	(55)	16.0
VA	0.5	(183)	4.4	(386)	3.9	(1094)	15.5	24.6	(884)	17.5	14.6	(513)	17.5	8.1	(334)	17.0
NC	59.4	(544)	56.0	(703)	66.6	(915)	15.5	75.7	(474)	15.5	57.5	(73)	15.0	1.6	(186)	14.0
Coast	18.9	(2555)	17.1	(3316)	17.2	(4229)	15.5	-	(2838)	-	13.2	(2763)	17.0	15.0	(2612)	17.0

Table 39. 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 40. The percent of measured scup (MRFSS Type A fish) relative to state specific and coastal size limits from 2001 through 2004. The number in parentheses is sample size (N).

State	2001			2002			2003			2004		
	% Below Size Limit	Number Measured	Size Limit	% 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	2.1	(579)	10.0
RI	25.0	(523)	10.0	9.0	(435)	10.0	2.2	(313)	10.0	5.4	(138)	10.5
CT	1.0	(328)	9.0	1.3	(152)	10.0	1.1	(362)	10.0	12.3	(96)	10.5
NY	4.1	(49)	9.0	7.5	(94)	10.0	0	(969)	10.0	0	(220)	11.0
NJ	0	(56)	9.0	4.6	(44)	10.0	6.9	(29)	10.0	20.0	(5)	10.0
DE	0	(5)	8.0	0	(1)	8.0	33.3	(6)	8.0	0	(0)	8.0
MD	0	(0)	7.0	0	(1)	8.0	0	(0)	8.0	0	(0)	8.0
VA	0	(0)	8.0	0	(0)	8.0	0	(3)	8.0	0	(0)	8.0
NC	0	(3)	8.0	0	(0)	8.0	0	(0)	8.0	0	(3)	8.0
Coast	2.6	(1037)	9.0	6.1	(1006)	10.0	7.0	(2397)	10.0	6.4	(1041)	10.0

Table 41. The effect of various size and possession limits on 2003 scup recreational landings. The table contains the proportional reduction in number of scup landed adjusting for the effectiveness of the 2003 management measures.

	Coast Size (TL“)				
Bag	**10**	**10.5**	**11**	**11.5**	**12**
1	0.887	0.891	0.895	0.900	0.913
2	0.807	0.812	0.820	0.834	0.856
3	0.742	0.747	0.762	0.780	0.808
4	0.685	0.693	0.711	0.737	0.770
5	0.634	0.646	0.668	0.701	0.743
6	0.590	0.605	0.630	0.671	0.720
7	0.550	0.567	0.597	0.646	0.699
8	0.515	0.534	0.569	0.624	0.683
9	0.485	0.506	0.545	0.604	0.668
10	0.458	0.481	0.525	0.586	0.655
15	0.359	0.389	0.449	0.527	0.612
20	0.292	0.329	0.401	0.491	0.584
25	0.253	0.294	0.370	0.467	0.561
30	0.221	0.264	0.344	0.444	0.541
35	0.190	0.238	0.322	0.423	0.528
40	0.164	0.215	0.302	0.403	0.517
45	0.139	0.193	0.282	0.387	0.508
50	0.117	0.174	0.265	0.375	0.501

Table 42. The percent of successful anglers landing 1 to 114 scup (MRFSS Type A fish) per trip, waves 1-4, 2004.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	116	27.95	116	27.95
2	56	13.49	172	41.45
3	42	10.12	214	51.57
4	28	6.75	242	58.31
5	21	5.06	263	63.37
6	16	3.86	279	67.23
7	5	1.20	284	68.43
8	15	3.61	299	72.05
9	13	3.13	312	75.18
10	21	5.06	333	80.24
11	6	1.45	339	81.69
12	7	1.69	346	83.37
13	4	0.96	350	84.34
14	2	0.48	352	84.82
15	13	3.13	365	87.95
16	1	0.24	366	88.19
17	6	1.45	372	89.64
18	3	0.72	375	90.36
19	2	0.48	377	90.84
20	3	0.72	380	91.57
21	2	0.48	382	92.05
22	1	0.24	383	92.29
24	2	0.48	385	92.77
25	1	0.24	386	93.01
28	1	0.24	387	93.25
29	2	0.48	389	93.73
30	2	0.48	391	94.22
32	3	0.72	394	94.94
42	2	0.48	396	95.42
44	1	0.24	397	95.66
45	2	0.48	399	96.14
46	1	0.24	400	96.39
51	1	0.24	401	96.63
53	1	0.24	402	96.87
57	1	0.24	403	97.11
60	2	0.48	405	97.59
70	1	0.24	406	97.83
75	2	0.48	408	98.31
76	1	0.24	409	98.55
77	1	0.24	410	98.80
82	1	0.24	411	99.04
88	1	0.24	412	99.28
91	1	0.24	413	99.52
103	1	0.24	414	99.76
114	1	0.24	415	100.00

Table 43. The percent of successful anglers landing 1 to 105 scup (MRFSS Type A fish) per trip, waves 1-4, 2003.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	123	21.77	123	21.77
2	53	9.38	176	31.15
3	77	13.63	253	44.78
4	51	9.03	304	53.81
5	37	6.55	341	60.35
6	22	3.89	363	64.25
7	18	3.19	381	67.43
8	17	3.01	398	70.44
9	14	2.48	412	72.92
10	21	3.72	433	76.64
11	12	2.12	445	78.76
12	9	1.59	454	80.35
13	15	2.65	469	83.01
14	14	2.48	483	85.49
15	13	2.30	496	87.79
16	6	1.06	502	88.85
17	2	0.35	504	89.20
18	4	0.71	508	89.91
20	4	0.71	512	90.62
21	6	1.06	518	91.68
24	4	0.71	522	92.39
25	2	0.35	524	92.74
26	2	0.35	526	93.10
27	1	0.18	527	93.27
28	3	0.53	530	93.81
29	1	0.18	531	93.98
30	1	0.18	532	94.16
31	1	0.18	533	94.34
33	3	0.53	536	94.87
35	2	0.35	538	95.22
36	1	0.18	539	95.40
38	1	0.18	540	95.58
39	1	0.18	541	95.75
41	2	0.35	543	96.11
43	1	0.18	544	96.28
44	2	0.35	546	96.64
45	2	0.35	548	96.99
47	1	0.18	549	97.17
56	2	0.35	551	97.52
60	7	1.24	558	98.76
62	1	0.18	559	98.94
63	1	0.18	560	99.12
73	1	0.18	561	99.29
75	1	0.18	562	99.47
78	1	0.18	563	99.65
79	1	0.18	564	99.82
105	1	0.18	565	100.00

Table 44. The percent of successful anglers landing 1 to 34 black sea bass (MRFSS Type A fish) per trip, waves 1-4, 2004.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	510	46.92	510	46.00
2	159	14.63	669	61.55
3	109	10.03	778	71.57
4	86	7.91	864	79.48
5	73	6.72	937	86.20
6	28	2.58	965	88.78
7	23	2.12	988	90.89
8	28	2.58	1016	93.47
9	7	0.64	1023	94.11
10	17	1.56	1040	95.68
11	13	1.20	1053	96.87
12	6	0.55	1059	97.42
13	5	0.46	1064	97.88
14	8	0.74	1072	98.62
15	6	0.55	1078	99.17
16	2	0.18	1080	99.36
17	1	0.09	1081	99.45
23	3	0.28	1084	99.72
25	1	0.09	1085	99.82
30	2	0.18	1087	100.00

Table 45. The percent of successful anglers landing 1 to 34 black sea bass (MRFSS Type A fish) per trip, 2003.

Catch per Angler/Trip	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	642	34.78	642	34.78
2	271	14.68	913	49.46
3	184	9.97	1097	59.43
4	134	7.26	1231	66.68
5	111	6.01	1342	72.70
6	91	4.93	1433	77.63
7	49	2.65	1482	80.28
8	54	2.93	1536	83.21
9	38	2.06	1574	85.27
10	34	1.84	1608	87.11
11	27	1.46	1635	88.57
12	35	1.90	1670	90.47
13	15	0.81	1685	91.28
14	7	0.38	1692	91.66
15	42	2.28	1734	93.93
16	5	0.27	1739	94.20
17	9	0.49	1748	94.69
18	15	0.81	1763	95.50
19	3	0.16	1766	95.67
20	17	0.92	1783	96.59
21	7	0.38	1790	96.97
22	5	0.27	1795	97.24
23	10	0.54	1805	97.78
24	8	0.43	1813	98.21
25	20	1.08	1833	99.30
27	2	0.11	1835	99.40
28	3	0.16	1838	99.57
29	1	0.05	1839	99.62
30	2	0.11	1841	99.73
34	5	0.27	1846	100.00

Table 46. Measured black sea bass (MRFSS Type A fish) less than 10" TL (1992-1999), 11" (2000-2001), 11.5" (2002), and 12" (2003-2004) by state and year.

	Year												
State	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**	**2002**	**2003**	**2004[1]**
ME	-	-	-	-	-	-	-	-	-	-	-	-	-
NH	-	-	-	-	-	-	-	-	0	7.1	0		-
MA	14.3	0	0	0	0	0	0	-	44.4	0	0	4.6	1.7
RI	23.1	2.3	5.3	32.2	10.0	28.6	15.6	2.9	17.4	2.7	9.8	1.8	2.3
CT	50.0	55.6	-	44.4	0	0	0	0	0	0	9.1	9.1	12.5
NY	54.7	45.5	70.3	60.9	25.0	55.2	0	37.9	42.2	4.4	4.8	11.3	4.8
NJ	39.4	38.1	35.0	60.2	37.0	36.2	8.4	3.1	47.0	2.5	2.6	2.7	0.3
DE	52.1	51.1	56.5	55.4	36.7	24.0	8.5	4.8	26.1	9.8	13.8	9.4	11.2
MD	35.0	21.2	29.2	34.7	0	15.0	10.0	3.0	37.2	6.4	1.8	3.5	2.2
VA	31.5	42.6	47.8	50.5	52.7	20.1	18.9	15.3	9.3	6.3	8.0	9.8	11.2
NC[2]	30.6	37.1	29.8	39.9	26.5	26.3	33.5	17.4	31.7	22.5	12.1	46.0	59.0
Coast	38.4	40.7	44.3	48.6	42.3	26.5	18.4	13.1	25.6	8.2	9.0	8.1	17.5

[1]Projected using waves 1-4.
[2]All of NC, both North and South of Hatteras.

Table 47. Effort Effects of Combined Management Measures, by Mode (2004 catch and effort estimates were used to project 2005 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 precautionary default measures, Scup Alt 1, BSB Alt 1	160,356	1,673,573	9.58	1,200,589	17,712,601	6.78	128,154	14,538,049	0.88
Fluke precautionary default measures, Scup Alt1, BSB Alt 2	161,951	1,673,573	9.68	1,209,857	17,712,601	6.83	128,154	14,538,049	0.88
Fluke precautionary default measures, Scup Alt1, BSB Alt 3	160,379	1,673,573	9.58	1,202,185	17,712,601	6.79	128,154	14,538,049	0.88
Fluke precautionary default measures, Scup Alt2, BSB Alt 1	169,898	1,673,573	10.15	1,228,693	17,712,601	6.94	137,702	14,538,049	0.95
Fluke precautionary default measures, Scup Alt2, BSB Alt 2	171,493	1,673,573	10.25	1,237,961	17,712,601	6.99	137,702	14,538,049	0.95
Fluke precautionary default measures, Scup Alt2, BSB Alt 3	169,921	1,673,573	10.15	1,230,289	17,712,601	6.95	137,702	14,538,049	0.95
Fluke precautionary default measures, Scup Alt3, BSB Alt 1	179,515	1,673,573	10.73	1,261,388	17,712,601	7.12	138,425	14,538,049	0.95
Fluke precautionary default measures, Scup Alt3, BSB Alt 2	181,110	1,673,573	10.82	1,270,656	17,712,601	7.17	138,425	14,538,049	0.95
Fluke precautionary default measures, Scup Alt3, BSB Alt 3	179,538	1,673,573	10.73	1,262,984	17,712,601	7.13	138,425	14,538,049	0.95
Fluke Alt2, Scup Alt1, BSB Alt1	54,027	1,673,573	3.23	389,383	17,712,601	2.20	90,954	14,538,049	0.63
Fluke Alt2, Scup Alt1, BSB Alt2	55,632	1,673,573	3.32	398,651	17,712,601	2.25	90,954	14,538,049	0.63
Fluke Alt2, Scup Alt1, BSB Alt3	54,060	1,673,573	3.23	390,979	17,712,601	2.21	90,954	14,538,049	0.63
Fluke Alt2, Scup Alt2, BSB Alt1	63,579	1,673,573	3.80	417,487	17,712,601	2.36	100,502	14,538,049	0.69
Fluke Alt2, Scup Alt2, BSB Alt2	65,174	1,673,573	3.89	426,755	17,712,601	2.41	100,502	14,538,049	0.69
Fluke Alt2, Scup Alt2, BSB Alt3	63,602	1,673,573	3.80	419,083	17,712,601	2.37	100,502	14,538,049	0.69
Fluke Alt2, Scup Alt3, BSB Alt1	73,196	1,673,573	4.37	450,182	17,712,601	2.54	101,225	14,538,049	0.70
Fluke Alt2, Scup Alt3, BSB Alt2	74,791	1,673,573	4.47	426,755	17,712,601	2.41	101,225	14,538,049	0.70
Fluke Alt2, Scup Alt3, BSB Alt3	73,219	1,673,573	4.38	451,778	17,712,601	2.55	101,225	14,538,049	0.70

Table 48. 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, 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 49. Regional Economic Impacts of Combined Management Measures Assuming a 25% Reduction in the Number of Affected Trips (2005 $'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]	4,930	1,794	50	17,954	6,305	160	1,366	487	13	24,250	8,586	223
Combination 2[b]	4,979	1,812	51	18,093	6,353	161	1,366	487	13	24,437	8,651	225
Combination 3[c]	4,930	1,794	50	17,978	6,312	160	1,366	487	13	24,274	8,593	223
Combination 4[d]	5,223	1,901	53	18,374	6,451	164	1,468	523	14	25,065	8,875	231
Combination 5[e]	5,272	1,919	54	18,513	6,500	165	1,468	523	14	25,253	8,941	233
Combination 6[f]	5,224	1,901	53	18,398	6,460	164	1,468	523	14	25,090	8,884	231
Combination 7[g]	5,519	2,008	56	18,863	6,623	168	1,475	526	14	25,857	9,157	238
Combination 8[h]	5,568	2,026	57	19,002	6,672	169	1,475	526	14	26,045	9,223	240
Combination 9[i]	5,519	2,009	56	18,887	6,631	168	1,475	526	14	25,882	9,166	238
Combination 10[j]	1,661	605	17	5,823	2,045	52	969	345	9	8,454	2,994	78
Combination 11[k]	1,710	622	17	5,962	2,093	53	969	345	9	8,641	3,061	80
Combination 12[l]	1,662	605	17	5,847	2,053	52	969	345	9	8,478	3,003	78
Combination 13[m]	1,955	711	20	6,243	2,192	56	1,071	382	10	9,269	3,285	86
Combination 14[n]	2,004	729	20	6,382	2,241	57	1,071	382	10	9,457	3,351	87
Combination 15[o]	1,955	712	20	6,267	2,200	56	1,071	382	10	9,294	3,294	86
Combination 16[p]	2,250	819	23	6,732	2,364	60	1,079	384	10	10,061	3,567	93
Combination 17[q]	2,299	837	23	6,871	2,412	61	1,079	384	10	10,249	3,633	95
Combination 18[r]	2,251	819	23	6,756	2,372	60	1,079	384	10	10,086	3,576	93

[a]Fluke precautionary default measures, Scup alternative 1, BSB alternative 1
[b]Fluke precautionary default measures, Scup alternative 1, BSB alternative 2
[c]Fluke precautionary default measures, Scup alternative 1, BSB alternative 3
[d]Fluke precautionary default measures, Scup alternative 2, BSB alternative 1
[e]Fluke precautionary default measures, Scup alternative 2, BSB alternative 2
[f]Fluke precautionary default measures, Scup alternative 2, BSB alternative 3
[g]Fluke precautionary default measures, Scup alternative 3, BSB alternative 1
[h]Fluke precautionary default measures, Scup alternative 3, BSB alternative 2
[i]Fluke precautionary default measures, Scup alternative 3, BSB alternative 3
[j]Fluke alternative 2, Scup alternative 1, BSB alternative 1
[k]Fluke alternative 2, Scup alternative 1, BSB alternative 2
[l]Fluke alternative 2, Scup alternative 1, BSB alternative 3
[m]Fluke alternative 2, Scup alternative 2, BSB alternative 1
[n]Fluke alternative 2, Scup alternative 2, BSB alternative 2
[o]Fluke alternative 2, Scup alternative 2, BSB alternative 3
[p]Fluke alternative 2, Scup alternative 3, BSB alternative 1
[q]Fluke alternative 2, Scup alternative 3, BSB alternative 2
[r]Fluke alternative 2, Scup alternative 3, BSB alternative 3

Table 50. Regional Economic Impacts of Combined Management Measures Assuming a 50% Reduction in the Number of Affected Trips (2005 $'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]	9,859	3,588	100	35,908	12,608	320	2,732	973	26	48,499	17,169	446
Combination 2[b]	9,957	3,624	101	36,185	12,705	322	2,732	973	26	48,874	17,302	450
Combination 3[c]	9,861	3,588	100	35,956	12,625	320	2,732	973	26	48,548	17,186	447
Combination 4[d]	10,446	3,801	106	36,748	12,903	327	2,935	1,046	28	50,130	17,750	462
Combination 5[e]	10,544	3,837	107	37,026	13,000	330	2,935	1,046	28	50,505	17,883	465
Combination 6[f]	10,447	3,802	106	36,796	12,920	328	2,935	1,046	28	50,179	17,767	462
Combination 7[g]	11,037	4,017	112	37,726	13,246	336	2,951	1,051	28	51,714	18,314	476
Combination 8[h]	11,135	4,052	113	38,004	13,344	339	2,951	1,051	28	52,090	18,447	480
Combination 9[i]	11,039	4,017	112	37,774	13,263	337	2,951	1,051	28	51,764	18,331	477
Combination 10[j]	3,322	1,209	34	11,646	4,089	104	1,939	691	18	16,907	5,989	156
Combination 11[k]	3,420	1,245	35	11,923	4,186	106	1,939	691	18	17,282	6,122	159
Combination 12[l]	3,324	1,210	34	11,694	4,106	104	1,939	691	18	16,956	6,006	156
Combination 13[m]	3,909	1,423	40	12,486	4,384	111	2,142	763	20	18,538	6,570	171
Combination 14[n]	4,007	1,458	41	12,764	4,481	114	2,142	763	20	18,913	6,703	175
Combination 15[o]	3,911	1,423	40	12,534	4,401	112	2,142	763	20	18,587	6,587	172
Combination 16[p]	4,500	1,638	46	13,464	4,728	120	2,158	769	21	20,122	7,134	186
Combination 17[q]	4,598	1,673	47	13,742	4,825	122	2,158	769	21	20,498	7,267	190
Combination 18[r]	4,502	1,638	46	13,512	4,744	120	2,158	769	21	20,172	7,151	187

[a]Fluke precautionary default measures, Scup alternative 1, BSB alternative 1
[b]Fluke precautionary default measures, Scup alternative 1, BSB alternative 2
[c]Fluke precautionary default measures, Scup alternative 1, BSB alternative 3
[d]Fluke precautionary default measures, Scup alternative 2, BSB alternative 1
[e]Fluke precautionary default measures, Scup alternative 2, BSB alternative 2
[f]Fluke precautionary default measures, Scup alternative 2, BSB alternative 3
[g]Fluke precautionary default measures, Scup alternative 3, BSB alternative 1
[h]Fluke precautionary default measures, Scup alternative 3, BSB alternative 2
[i]Fluke precautionary default measures, Scup alternative 3, BSB alternative 3
[j]Fluke alternative 2, Scup alternative 1, BSB alternative 1
[k]Fluke alternative 2, Scup alternative 1, BSB alternative 2
[l]Fluke alternative 2, Scup alternative 1, BSB alternative 3
[m]Fluke alternative 2, Scup alternative 2, BSB alternative 1
[n]Fluke alternative 2, Scup alternative 2, BSB alternative 2
[o]Fluke alternative 2, Scup alternative 2, BSB alternative 3
[p]Fluke alternative 2, Scup alternative 3, BSB alternative 1
[q]Fluke alternative 2, Scup alternative 3, BSB alternative 2
[r]Fluke alternative 2, Scup alternative 3, BSB alternative 3

Table 51. Summary of Landings Combinations by Vessels Reporting Party/Charter Trips (Calendar year 2003 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	0	0	0
NH	0	0	0	0	0	0	0	0
MA	11	7	3	5	2	8	0	36
RI	17	1	0	4	0	9	0	31
CT	9	0	0	0	1	2	1	13
NY	77	2	3	6	0	12	7	107
NJ	49	11	1	42	0	13	0	116
DE	1	0	0	2	0	0	0	3
MD	1	0	1	2	0	0	0	4
VA	1	8	0	10	0	3	0	22
NC	0	0	2	1	0	2	0	5
Total	166	29	10	72	3	49	8	337

Table 52. Number of summer flounder recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2005.

Year	Number of Fishing Trips[a]	Recreational Harvest Limit (million lb)	Recreational Landings of Summer Flounder (million lb)[b]
1991	4,536,651	None	7.96
1992	3,820,071	None	7.15
1993	4,671,638	8.38	8.83
1994	5,769,037	10.67	9.33
1995	4,683,754	7.76	5.42
1996	4,885,179	7.41	9.82
1997	5,595,636	7.41	11.87
1998	5,268,926	7.41	12.48
1999	4,219,909	7.41	8.37
2000	5,802,215	7.41	16.47
2001	6,130,383	7.16	11.64
2002	4,564,011	9.72	8.01
2003	5,624,387	9.32[d]	11.67
2004	4,963,279	11.21[d]	10.70[c]
2005	-	11.98[d]	-

[a]Estimated number of recreational fishing trips (expanded) where the primary target species was summer flounder, Maine through North Carolina. Source: Scott Steinback, NMFS/NER/NEFSC.
[b]From Maine through North Carolina. Source: MRFSS.
[c]Projected landings using waves 1-5.
[d]Adjusted for research set-aside.

Table 53. Number of scup recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2005.

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	1.76	4.26
2002	481,716	2.71[d]	3.62
2003	971,770	4.01[d]	8.48
2004	494,392	3.99[d]	4.34[c]
2005	-	3.96[d]	-

[a]Estimated number of recreational fishing trips where the primary target species was scup, Maine through North Carolina.
Source: Scott Steinback, NMFS/NEFSC.
[b]From Maine to North Carolina. Source MRFSS.
[c]Projected landings using waves 1-5.
[d]Adjusted for research set-aside.

Table 54. Number of black sea bass recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2005.

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	4.01
2001	293,191	3.15	3.42
2002	283,537	3.43[d]	4.35
2003	285,861	3.43[d]	3.29[c]
2004	138,902	4.01[d]	1.72[c]
2005	-	4.13[d]	-

[a]Estimated number of recreational fishing trips (expanded) where the primary target species was black sea bass, Maine through North Carolina. Source: Scott Steinback, NMFS/NEFSC.
[b]From Maine to Cape Hatteras, North Carolina. Source MRFSS.
[c]Projected landings using waves 1-5.
[d]Adjusted for research set-aside.

Table 55. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.2%	20,208	36	$5,463	$10,926
RI	41,915	17.2%	7,212	31	$2,264	$4,528
CT	39,236	1.71%	669	13	$501	$1,002
NY	366,449	24.1%	88,333	107	$8,036	$16,072
NJ	432,709	9.0%	38,963	116	$3,269	$6,538
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.37%	865	4	$2,105	$4,210
VA	86,838	1.45%	1,256	22	$556	$1,112
NC	168,124	0.16%	270	5	$526	$1,052

- Less than 4 observations

Table 56. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.6%	20,774	36	$5,616	$11,233
RI	41,915	17.3%	7,236	31	$2,272	$4,543
CT	39,236	1.7%	669	13	$501	$1,002
NY	366,449	24.1%	88,333	107	$8,035	$16,069
NJ	432,709	9.2%	39,968	116	$3,353	$6,707
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.4%	865	4	$2,106	$4,211
VA	86,838	1.4%	1,256	22	$556	$1,111
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 57. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.2%	20,208	36	$5,463	$10,926
RI	41,915	17.3%	7,236	31	$2,272	$4,543
CT	39,236	1.7%	669	13	$501	$1,002
NY	366,449	24.1%	88,333	107	$8,035	$16,069
NJ	432,709	9.0%	38,963	116	$3,269	$6,538
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.4%	865	4	$2,106	$4,211
VA	86,838	1.4%	1,256	22	$556	$1,111
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 58. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.3%	24,908	36	$6,734	$13,468
RI	41,915	18.2%	7,612	31	$2,390	$4,779
CT	39,236	1.7%	669	13	$501	$1,002
NY	366,449	25.2%	92,420	107	$8,406	$16,813
NJ	432,709	9.1%	39,254	116	$3,293	$6,587
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.4%	865	4	$2,106	$4,211
VA	86,838	1.5%	1,321	22	$584	$1,169
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 59. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.7%	25,475	36	$6,887	$13,774
RI	41,915	18.2%	7,635	31	$2,397	$4,794
CT	39,236	1.7%	669	13	$501	$1,002
NY	366,449	25.2%	92,420	107	$8,406	$16,813
NJ	432,709	9.3%	40,258	116	$3,378	$6,755
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.4%	865	4	$2,106	$4,211
VA	86,838	1.5%	1,321	22	$584	$1,169
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 60. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.3%	24,908	36	$6,734	$13,468
RI	41,915	18.2%	7,635	31	$2,397	$4,794
CT	39,236	1.7%	669	13	$501	$1,002
NY	366,449	25.2%	92,420	107	$8,406	$16,813
NJ	432,709	9.1%	39,254	116	$3,293	$6,587
DE	58,103	4.4%	2,579	-	-	-
MD	235,786	0.4%	865	4	$2,106	$4,211
VA	86,838	1.5%	1,321	22	$584	$1,169
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 61. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.3%	23,325	36	$6,306	$12,612
RI	41,915	27.0%	11,311	31	$3,551	$7,102
CT	39,236	2.6%	1,001	13	$749	$1,498
NY	366,449	26.5%	96,938	107	$8,817	$17,635
NJ	432,709	9.5%	40,979	116	$3,438	$6,876
DE	58,103	5.2%	3,017	-	-	-
MD	235,786	0.5%	1,109	4	$2,698	$5,397
VA	86,838	1.8%	1,565	22	$693	$1,385
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 62. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.6%	23,891	36	$6,459	$12,918
RI	41,915	27.0%	11,334	31	$3,558	$7,117
CT	39,236	2.6%	1,001	13	$749	$1,498
NY	366,449	26.5%	96,938	107	$8,817	$17,635
NJ	432,709	9.7%	41,984	116	$3,522	$7,045
DE	58,103	5.2%	3,017	-	-	-
MD	235,786	0.5%	1,109	4	$2,698	$5,397
VA	86,838	1.8%	1,565	22	$693	$1,385
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 63. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.3%	23,325	36	$6,306	$12,612
RI	41,915	27.0%	11,334	31	$3,558	$7,117
CT	39,236	2.6%	1,001	13	$749	$1,498
NY	366,449	26.5%	96,938	107	$8,817	$17,635
NJ	432,709	9.5%	40,979	116	$3,438	$6,876
DE	58,103	5.2%	3,017	-	-	-
MD	235,786	0.5%	1,109	4	$2,698	$5,397
VA	86,838	1.8%	1,565	22	$693	$1,385
NC	168,124	0.2%	270	5	$526	$1,051

- Less than 4 observations

Table 64. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.2%	20,208	36	$5,463	$10,926
RI	41,915	5.4%	2,271	31	$713	$1,426
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	5.8%	21,078	107	$1,917	$3,834
NJ	432,709	1.9%	8,419	116	$706	$1,413
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.7%	644	22	$285	$570
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 65. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.6%	20,774	36	$5,616	$11,233
RI	41,915	5.5%	2,295	31	$720	$1,441
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	5.8%	21,078	107	$1,917	$3,834
NJ	432,709	2.2%	9,424	116	$791	$1,581
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.7%	644	22	$285	$570
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 66. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	13.2%	20,208	36	$5,463	$10,926
RI	41,915	5.5%	2,295	31	$720	$1,441
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	5.8%	21,078	107	$1,917	$3,834
NJ	432,709	1.9%	8,419	116	$706	$1,413
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.7%	644	22	$285	$570
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 67. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.3%	24,908	36	$6,734	$13,468
RI	41,915	6.4%	2,671	31	$839	$1,677
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	6.9%	25,165	107	$2,289	$4,578
NJ	432,709	2.0%	8,710	116	$731	$1,461
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.8%	709	22	$314	$627
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 68. 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 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.7%	25,475	36	$6,887	$13,774
RI	41,915	6.4%	2,694	31	$846	$1,692
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	6.9%	25,165	107	$2,289	$4,578
NJ	432,709	2.2%	9,714	116	$815	$1,630
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.8%	709	22	$314	$627
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 69. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	16.3%	24,908	36	$6,734	$13,468
RI	41,915	6.4%	2,694	31	$846	$1,692
CT	39,236	0.2%	92	13	$69	$138
NY	366,449	6.9%	25,165	107	$2,289	$4,578
NJ	432,709	2.0%	8,710	116	$731	$1,461
DE	58,103	1.3%	753	-	-	-
MD	235,786	0.1%	333	4	$811	$1,621
VA	86,838	0.8%	709	22	$314	$627
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 70. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.3%	23,325	36	$6,306	$12,612
RI	41,915	15.2%	6,370	31	$2,000	$4,000
CT	39,236	1.1%	424	13	$317	$634
NY	366,449	8.1%	29,683	107	$2,700	$5,400
NJ	432,709	2.4%	10,435	116	$875	$1,751
DE	58,103	2.1%	1,191	-	-	-
MD	235,786	0.2%	577	4	$1,404	$2,807
VA	86,838	1.1%	953	22	$422	$843
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 71. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.6%	23,891	36	$6,459	$12,918
RI	41,915	15.3%	6,393	31	$2,007	$4,014
CT	39,236	1.1%	424	13	$317	$634
NY	366,449	8.1%	29,683	107	$2,700	$5,400
NJ	432,709	2.6%	11,440	116	$960	$1,920
DE	58,103	2.1%	1,191	-	-	-
MD	235,786	0.2%	577	4	$1,404	$2,807
VA	86,838	1.1%	953	22	$422	$843
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

Table 72. 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	MRFSS Projected Total Estimated Angler Effort in 2005 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 2003)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 25% Reduction in Affected Effort ($'s)	Average Estimated Gross Revenue Loss per Party/Charter Vessel in 2005 Assuming a 50% Reduction in Affected Effort ($'s)
ME	51,517	0.0%	0	0	$0	$0
NH	40,156	0.0%	0	0	$0	$0
MA	152,740	15.3%	23,325	36	$6,306	$12,612
RI	41,915	15.3%	6,393	31	$2,007	$4,014
CT	39,236	1.1%	424	13	$317	$634
NY	366,449	8.1%	29,683	107	$2,700	$5,400
NJ	432,709	2.4%	10,435	116	$875	$1,751
DE	58,103	2.1%	1,191	-	-	-
MD	235,786	0.2%	577	4	$1,404	$2,807
VA	86,838	1.1%	953	22	$422	$843
NC	168,124	0.1%	239	5	$465	$929

- Less than 4 observations

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 ($B_{threshold}$ 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.

Overfishing. 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 MSY on a continuing basis.

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 $B_{threshold}$ (defines overfished) and $F_{threshold}$ (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.

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 worlds oceans. The scarcity of right whales is the result of an 800-year history of whaling that continued into the 1960s (Klumov 1962). Historical records indicate that right whales were subject to commercial whaling in the North Atlantic as early as 1059. Between the 11th and 17th centuries, an estimated 25,000-40,000 right whales may have been harvested. The size of the western north Atlantic right whale population at the termination of whaling is unknown, but the stock was recognized as seriously depleted as early as 1750. However, right whales continued to be taken in shore-based operations or opportunistically by whalers in search of other species as late as the 1920's. By the time the species was internationally protected in 1935, there may have been fewer than 100 western north Atlantic right whales in the western Atlantic (Hain 1975; Reeves et al. 1992; Waring et al. 2002).

Right whales appear to prefer shallow coastal waters, but their distribution is also strongly correlated to the distribution of their prey (zooplankton). In both the northern and southern hemispheres, right whales are observed in the lower latitudes and more coastal waters during winter where calving takes place, and then tend to migrate to higher latitudes during the summer. The distribution of right whales in summer and fall in both hemispheres appears linked to the distribution of their principal zooplankton prey (Winn et al. 1986). They generally occur in Northwest Atlantic waters west of the Gulf Stream and are most commonly associated with cooler waters (21º C). They are not found in the Caribbean and have been recorded only rarely in the Gulf of Mexico.

Right whales feed on zooplankton through the water column, and in shallow waters may feed near the bottom. In the Gulf of Maine they have been observed feeding on zooplankton, primarily copepods, by skimming at or below the water's surface with open mouths (NMFS 1991b; Kenney et al. 1986; Murison and Gaskin 1989; and Mayo and Marx 1990). Research suggests that right whales must locate and exploit extremely dense patches of zooplankton to feed efficiently (Waring et al. 2000). New England waters include important foraging habitat for right whales and at least some portion of the North Atlantic right whale population is present in these waters throughout most months of the year. They are most abundant in Cape Cod Bay between February and April

(Hamilton and Mayo 1990; Schevill et al. 1986; Watkins and Schevill 1982) and in the Great South Channel in May and June (Payne et al. 1990) where they have been observed feeding predominantly on copepods, largely of the genera Calanus and Pseudocalanus (Waring et al. 2002). Right whales also frequent Stellwagen Bank and Jeffrey's Ledge, as well as Canadian waters including the Bay of Fundy and Browns and Baccaro Banks, in the spring and summer months. Mid-Atlantic waters are used as a migratory pathway from the spring and summer feeding/nursery areas to the winter calving grounds off the coast of Georgia and Florida.

NMFS designated right whale critical habitat on June 3, 1994 (59 FR 28793) to help protect important right whale foraging and calving areas within the U.S. These include the waters of Cape Cod Bay and the Great South Channel off the coast of Massachusetts, and waters off the coasts of southern Georgia and northern Florida. In 1993, Canada's Department of Fisheries declared two conservation areas for right whales; one in the Grand Manan Basin in the lower Bay of Fundy, and a second in Roseway Basin between Browns and Baccaro Banks (Canadian Recovery Plan for the North Atlantic Right Whale 2000).

The northern right whale was listed as endangered throughout it's 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 it's range on June 2, 1970. This species is the fourth most numerically depleted large cetacean worldwide. Humpback whales calve and mate in the West Indies and migrate to feeding areas in the northwestern Atlantic during the summer months. Six separate feeding areas are utilized in northern waters after their return (Waring et al. 2002). Only one of these feeding areas, the GOM, lies within U.S. waters and is within the action area of this consultation. Most of the humpbacks that forage in the GOM visit Stellwagen Bank and the waters of Massachusetts and Cape Cod Bays. Sightings are most frequent from mid-March through November between 41º N and 43º N, from the Great South Channel north along the outside of Cape Cod to Stellwagen Bank and Jeffreys Ledge (CeTAP 1982), and peak in May and August. Small numbers of individuals may be present in this area year-round. They feed on a number of species of small schooling fishes, particularly sand lance and Atlantic herring, by targeting fish schools and filtering large amounts of water for their associated prey. Humpback whales have also been observed feeding on krill (Wynne and Schwartz 1999).

Various papers (Barlow & Clapham 1997; Clapham et al. 1999) summarized information gathered from a catalogue of photographs of 643 individuals from the western North Atlantic population of humpback whales. These photographs identified reproductively mature western North Atlantic humpbacks wintering in tropical breeding grounds in the Antilles, primarily on Silver and Navidad Banks, north of the Dominican Republic. The primary winter range also includes the Virgin Islands and Puerto Rico (Waring et al. 2002). In general, it is believed that calving and copulation take place on the winter range. Calves are born from December through March and are about 4 meters at birth. Sexually mature females give birth approximately every 2 to 3 years. Sexual maturity is reached between 4 and 6 years of age for females and between 7 and 15 years for males. Size at maturity is about 12 meters.

Humpback whales use the mid-Atlantic as a migratory pathway, but it may also be an important feeding area for juveniles. Since 1989, observations of juvenile humpbacks in the mid-Atlantic have been increasing during the winter months, peaking January through March (Swingle et al. 1993). Biologists speculate that non-reproductive animals may be establishing a winter feeding range in the mid-Atlantic since they are not participating in reproductive behavior in the Caribbean. Swingle et al. (1993) identified a shift in distribution of juvenile humpback whales in the nearshore waters of Virginia, primarily in winter months. Those whales using this mid-Atlantic area that have been identified were found to be residents of the GOM and Atlantic Canada (Gulf of St. Lawrence and Newfoundland) feeding groups, suggesting a mixing of different feeding stocks in the mid-Atlantic region. A shift in distribution may be related to winter prey availability. Studies conducted by the Virginia Marine Science Museum indicate that these whales are feeding on, among other things, bay anchovies and menhaden. In concert with the

increase in mid-Atlantic whale sightings, strandings of humpback whales have increased between New Jersey and Florida since 1985. Strandings were most frequent during September through April in North Carolina and Virginia waters, and were composed 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 it's range on June 2, 1970 under the ESA. Hain et al. (1992) estimated that about 5,000 fin whales inhabit the northeastern United States continental shelf waters. Waring et al. 2002 present a more recent estimate of 2,814 (CV=0.21) fin whales based on aerial and shipboard surveys of the area from Georges Bank to the mouth of the Gulf of S. Lawrence in 1999.

Sei Whale

Sei whales are a widespread species in the world's temperate, subpolar and subtropical and even tropical marine waters. However, they appear to be more restricted to temperate waters than other balaenopterids (Perry et al. 1999). The IWC recognized three stocks in the North Atlantic based on past whaling operations as opposed to biological information: (1) Nova Scotia; (2) Iceland Denmark Strait; (3) Northeast Atlantic (Donovan 1991 in Perry et al. 1999). Mitchell and Chapman (1977) suggested that the sei whale population in the western North Atlantic consists of two stocks, a Nova Scotian Shelf stock and a Labrador Sea stock. The Nova Scotian Shelf stock includes the continental shelf waters of the northeastern United States, and extends northeastward to south of Newfoundland. The IWC boundaries for this stock are from the U.S. east coast to Cape Breton, Nova Scotia and east to longitude 42° (Waring et al. 2002). This is the only sei whale stock within the action area.

Sei whales became the target of modern commercial whalers primarily in the late 19th and early 20th century after stocks of other whales, including right, humpback, fin and blues, had already been depleted. Sei whales were taken in large numbers by Norway and Scotland from the beginning of modern whaling. More than 700 sei whales were killed off of Norway in 1885, alone. Small numbers were also taken off of Spain, Portugal and in the Strait of Gibraltar beginning in the 1920's, and by Norwegian and Danish whalers off of West Greenland from the 1920's to 1950's (Perry et al. 1999). In the western North Atlantic, sei whales were originally hunted off of Norway and Iceland; from 1967-1972, sei whales were also taken off of Nova Scotia (Perry et al. 1999). A total of 825 sei whales were taken on the Scotian Shelf between 1966 and 1972, and an additional 16 were taken from the same area during the same time by a shore based Newfoundland whaling station (Perry et al. 1999). The species continued to be exploited in Iceland until 1986 even though measures to stop whaling of sei whales in other areas had been put into place in the 1970's (Perry et al. 1999). There is no estimate for the abundance of sei whales prior to commercial whaling. Based on whaling records, approximately14,295 sei whales were taken in the entire North Atlantic from 1885 to 1984 (Perry et al. 1999).

Sei whales winter in warm temperate or subtropical waters and summer in more northern latitudes. In the northern Atlantic, most births occur in November and December when the whales are on the wintering grounds. Conception is believed to occur in December and January. Gestation lasts for 12 months and the calf is weaned at 6-9 months when the whales are on the summer feeding grounds. Sei whales reach sexual maturity at 5-15 years of age. The calving interval is believed to be 2-3 years (Perry et al. 1999).

Sei whales occur in deep water throughout their range, typically over the continental slope or in basins situated between banks. In the northwest Atlantic, the whales travel along the eastern Canadian coast in autumn, June and July on their way to and from the Gulf of Maine and Georges Bank where they occur in winter and spring. Within the action area, the sei whale is most common on Georges Bank and into the Gulf of Maine/Bay of Fundy region during spring and summer, primarily in deeper waters. Individuals may range as far south as North Carolina. It is important to note that sei whales are known for inhabiting an area for weeks at a time then disappearing for year or even decades; this has been observed all over the world, including in the southwestern GOM in 1986. The basis for this phenomenon is not clear.

Although sei whales may prey upon small schooling fish and squid in the action area, available information suggests that calanoid copepods and euphausiids are the primary prey of this species. There are occasional influxes of sei whales further into Gulf of Maine waters, presumably in conjunction with years of high copepod abundance inshore. Sei whales are occasionally seen feeding in association with right whales in the southern Gulf of Maine and in the Bay of Fundy. However, there is no evidence to demonstrate interspecific competition between these species for food resources. There is very little information on natural mortality factors for sei whales. Possible causes of natural mortality, particularly for young, old or otherwise compromised individuals are shark attacks, killer whale attacks, and endoparasitic helminths. Baleen loss has been observed in California sei whales, presumably as a result of an unknown disease (Perry et al. 1999).

There are insufficient data to determine trends of the sei whale population. Because there are no abundance estimates within the last 10 years, a minimum population estimate cannot be determined for NMFS management purposes (Waring et al. 2002). Abundance surveys are problematic not only because this species is difficult to distinguish from the fin whale but more significant is that too little is known of the sei whale's distribution, population structure and patterns of movement; thus survey design and data interpretation are very difficult.

Few instances of injury or mortality of sei whales due to entanglement or vessel strikes have been recorded in U.S. waters. Entanglement is not known to impact this species in the U.S. Atlantic, possibly because sei whales typically inhabit waters further offshore than most commercial fishing operations, or perhaps entanglements do occur but are less likely to be observed. A small number of ship strikes of this species have been recorded. The most recent documented incident occurred in 1994 when a carcass was brought in on

the bow of a container ship in Charlestown, Massachusetts. Other impacts noted above for other baleen whales may also occur. Due to the deep-water distribution of this species, interactions that do occur are less likely to be observed or reported than those involving right, humpback, and fin whales that often frequent areas within the continental shelf (Waring et al. 2002).

Blue Whale

Like the fin whale, blue whales occur worldwide and are believed to follow a similar migration pattern from northern summering grounds to more southern wintering areas (Perry et al. 1999). Three subspecies have been identified: *Balaenoptera musculus musculus, B.m. intermedia,* and *B.m. brevicauda* (Waring et al. 2002). Only *B. musculus* occurs in the northern hemisphere. Blue whales range in the North Atlantic extends from the subtropics to Baffin Bay and the Greenland Sea. The IWC currently recognizes these whales as one stock (Perry et al. 1999).

Blue whales were intensively hunted in all of the world's oceans from the turn of the century to the mid-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 he Potential Biological Removal (PBR) Guidelines (Wade and

Angliss 1997): NMIN= N/exp(0.842×[ln(1+[CV(N)]2)]½). It was recognized that these estimates may be negatively biased because they do not include corrections for g(0) and, for some of the managements units, do not include the entire spatial range of the unit during that season. The strip transect surveys compensate for some of the abundance omitted during line-transect survey; nonetheless, for some management units the entire range was not covered. There are insufficient data to determine the population trend for this stock (Waring et al. 2002).

In addition, Current and maximum net productivity rates are not known for the WNA coastal morphotype. The maximum net productivity rate was assumed to be 0.04. This value is based on theoretical modeling showing that cetacean populations may not grow at rates much greater than 4% given the constraints of their reproductive life history (Barlow et al. 1995; Waring et al. 2002).

PBR is the product of the minimum population size, one-half the maximum productivity rate, and a "recovery" factor (Wade and Angliss 1997). The "recovery" factor is assumed to be 0.50, the default for depleted stocks and stocks of unknown status. At least part of the range-wide stock complex is depleted; for the remainder, status is unknown. For consistency with achieving the goals of the MMPA, such as maintaining marine mammals as functioning components of their ecosystems, it is more appropriate to establish separate PBRs for each management unit.

Total estimated average annual fishery-related mortality or serious injury resulting from observed fishing trips during 1996-2000 was 233 bottlenose dolphins (CV=0.16) in the mid-Atlantic coastal gillnet fishery (Waring et al. 2002). The management units affected by this fishery would be the NM, NNC, and SC. An estimated 24 (CV=0.89) were taken in the shark drift gillnet fishery off the coast of Florida during 1999-2000, affecting the Central and Northern Florida management units. No estimates of mortality from observed trips are available for any of the other fisheries that interact with WNA coastal bottlenose dolphins. Therefore, the total average annual mortality estimate is considered to be a lower bound of the actual annual human-caused mortality and serious injury (Waring et al. 2002).

Bottlenose dolphins are known to interact with commercial fisheries and occasionally are taken in various kinds of fishing gear including gillnets, seines, long-lines, shrimp trawls, and crab pots (Read 1994; Wang et al. 1994) especially in near-shore areas where dolphin densities and fishery efforts are greatest. There are nine Category II commercial fisheries that interact with WNA coastal bottlenose dolphins in the 2001 MMPA List of Fisheries (LOF), six of which occur in North Carolina waters. Category II fisheries include the mid-Atlantic coastal gillnet, NC inshore gillnet, mid-Atlantic haul/beach seine, NC long haul seine, NC stop net, Atlantic blue crab trap/pot, Southeast Atlantic gillnet, Southeastern U.S. Atlantic shark gillnet and the Virginia pound net (see 2001 List of Fisheries, 66 FR 42780, August 15, 2001; Waring et al. 2002). The mid-Atlantic haul/beach seine fishery also includes the haul seine and swipe net fisheries. There are five Category III fisheries that may interact with WNA coastal bottlenose dolphins. Three of these are inshore gillnet fisheries: the Delaware Bay inshore gillnet, the Long Island

Sound inshore gillnet, and the Rhode Island, southern Massachusetts, and New York Bight inshore gillnet. The remaining two are the shrimp trawl and mid-Atlantic menhaden purse seine fisheries. There have been no takes observed by the NMFS observer programs in any of these fisheries (Waring et al. 2002).

The mid-Atlantic coastal gillnet fishery is actually a combination of small-vessel fisheries that target a variety of fish species, including bluefish, croaker, spiny and smooth dogfish, kingfish, Spanish mackerel, spot, striped bass, and weakfish (Steve et al. 2001). These fisheries operate in different seasons targeting different species in different states throughout the range of the coastal morphotype. Most nets are set gillnets without anchors and are fished close to shore. Anchored set gillnets or drift gillnets are used in some fisheries (e.g., monkfish or dogfish). A comprehensive description of coastal gillnet gears and fishing effort in North Carolina is available in Steve et al. (2001). This fishery has the highest documented level of mortality of WNA coastal bottlenose dolphins; the North Carolina sink gillnet fishery is its largest component in terms of fishing effort and observed takes. Bycatch estimates are available for the period 1996-2000 (Waring et al. 2002). Of 12 observed mortalities from 1995-2000, 5 occurred in sets targeting spiny or smooth dogfish and another in a set targeting "shark" species, 2 occurred in striped bass sets, 2 occurred in Spanish mackerel sets, and the remainder were in sets targeting kingfish, weakfish, or "finfish" (Rossman and Palka 2001; Waring et al. 2002).

The shark gillnet fishery operates in federal waters from southern Florida to southern Georgia. The fishery is defined by vessels using relatively large mesh nets (>10 inches) and net lengths typically greater than 1500 feet. The fishery primarily uses drifting nets that are set overnight; however, recently it has been employing a small number of shorter duration "strike" sets that encircle targeted schools of sharks. Since 1999, the Atlantic Large Whale Take Reduction Plan restricted the activities of the fishery to waters south of 27°51' N latitude during the critical right whale season from 15 November – 31 March and mandated 100% observer coverage during this period. During the remainder of the year, these vessels generally operate north of Cape Canaveral, FL and there is little observer coverage of the fleet. The fishery potentially interacts with the Georgia, Northern Florida, and Central Florida management units of coastal bottlenose dolphin. During an observer program in 1993 and 1994 and limited observer coverage during the summer of 1998, no takes of bottlenose dolphin were observed (Trent et al. 1997; Carlson and Lee, 2000). However, takes resulting in mortality were observed in the Central Florida management unit during 1999 and 2000. Total bycatch mortality for this management unit has been estimated for 1999 and 2000 (Garrison 2001b).

A beach seine fishery operates along northern North Carolina beaches targeting striped bass, mullet, spot, weakfish, sea trout, and bluefish. The fishery operates on the Outer Banks of North Carolina primarily in the spring (April through June) and fall (October through December). It uses two primary gear types: a "beach anchored gill net" and a "beach seine." Both systems utilize a small net anchored to the beach. The beach seine system also uses a bunt and a wash net that are attached to the beach and are in the surf (Steve et al. 2001). The North Carolina beach seine fishery has been observed since April 7, 1998 by the NMFS fisheries sampling program (observer program) based at the

Northeast Fisheries Science Center. Through 2001, there were 101 sets observed during the winter season (Nov-Apr) and 65 sets observed during the summer season (May-Oct). A total of 2 coastal bottlenose dolphin takes were observed, 1 in May 1998 and 1 in December 2000. The beach seine observer data are currently being reviewed but estimates of mortality are not yet available (Waring et al. 2002).

Between 1994 and 1998, 22 bottlenose dolphin carcasses (4.4 dolphins per year on average) recovered by the Stranding Network between North Carolina and Florida's Atlantic coast displayed evidence of possible interaction with a trap/pot fishery (i.e., rope and/or pots attached, or rope marks). Additionally, at least 5 dolphins were reported to be released alive (condition unknown) from blue crab traps/pots during this time period. In recent years, reports of strandings with evidence of interactions between bottlenose dolphins and both recreational and commercial crab-pot fisheries have been increasing in the Southeast Region (McFee and Brooks 1998). The increased reporting may result from increased effort towards documenting these marks or increases in mortality (Waring et al. 2002).

Data from the Chesapeake Bay suggest that the likelihood of bottlenose dolphin entanglement in pound net leads may be affected by the mesh size of the lead net (Bellmund et al. 1997), but the information is not conclusive. Stranding data for 1993-1997 document interactions between WNA coastal bottlenose dolphins and pound nets in Virginia. Two bottlenose dolphin carcasses were found entangled in the leads of pound nets in Virginia during 1993-1997, for an average of 0.4 bottlenose dolphin strandings per year. A third record of an entangled bottlenose dolphin in Virginia in 1997 may have been applicable to this fishery. This entanglement involved a bottlenose dolphin carcass found near a pound net with twisted line marks consistent with the twine in the nearby pound net lead rather than with monofilament gillnet gear. Given that other sources of annual serious injury and mortality estimates (e.g., observer data) are not available, the stranding data (0.4 bottlenose dolphins per year) were used as a minimum estimate of annual serious injury and mortality and this fishery was classified as a Category II fishery in the 2001 List of Fisheries (Waring et al. 2002).

The shrimp trawl fishery operates from North Carolina through northern Florida virtually year around, moving seasonally up and down the coast. One bottlenose dolphin was recovered dead from a shrimp trawl in Georgia in 1995 (Southeast USA Marine Mammal Stranding Network unpublished data), and another was taken in 1996 near the mouth of Winyah Bay, SC, during a research survey. No other bottlenose dolphin mortality or serious injury has been previously reported to NMFS (Waring et al. 2002).

The Atlantic menhaden purse seine fishery targets the Atlantic menhaden in Atlantic coastal waters. Smith (1999) summarized menhaden fishing patterns by the Virginia-North Carolina vessels from 1985-1996. Most of the catch and sets during that time occurred within three miles of the shore. Between 1994 and 1997, menhaden were processed at only three facilities, two in Reedville Beach, VA, and one in Beaufort, NC. Each of the Virginia facilities had a fleet of 9-10 vessels while the Beaufort facility is supported by 2-6 vessels. Since 1998, only one plant has operated in Virginia and the

number of vessels has been reduced to ten in Virginia and two in North Carolina (Vaughan et al. 2001). The fishery moves seasonally, with most effort occurring off of North Carolina from November-January and moving northward to southern New England during warmer months. Menhaden purse seiners have reported an annual incidental take of 1 to 5 bottlenose dolphins, although observer data are not available (Waring et al. 2002).

From 1997-1999, 995 bottlenose dolphins were reported stranded along the Atlantic coast from New York to Florida (Hohn and Martone 2001; Hohn et al. 2001; Palka et al. 2001). Of these, it was possible to determine whether a human interaction had occurred for 449 (45%); for the remainder it was not possible to make that determination. The proportion of carcasses determined to have been involved in a human interaction averaged 34%, but ranged widely from 11-12% in Delaware and Georgia to 49% and 53% in Virginia and North Carolina, respectively.

The nearshore habitat occupied by the coastal morphotype is adjacent to areas of high human population and in the northern portion of its range is highly industrialized. The blubber of stranded dolphins examined during the 1987-88 mortality event contained anthropogenic contaminants in levels among the highest recorded for a cetacean (Geraci 1989). There are no estimates of indirect human-caused mortality resulting from pollution or habitat degradation.

The coastal migratory stock is designated as depleted under the MMPA. From 1995-2001, NMFS recognized only a single migratory stock of coastal bottlenose dolphins in the WNA and, therefore, the entire stock was listed as depleted. The management units in this report now replace the single coastal migratory stock. A re-analysis of the depletion designation on a management unit basis needs to be undertaken. In the interim, because one or more of the management units may be depleted, all management units retain the depleted designation. In addition, mortality in multiple units exceeded PBR (Waring et al. 2002). There are no rigorous results that would provide reliable information on current abundance relative to historical abundance. All prior estimates cover only part of the range of management units spatially or temporally, include the offshore morphotype, or are otherwise compromised. Population trends cannot be determined due to insufficient data. Over the past five years, estimated average annual mortality exceeded PBR in the mid-Atlantic gillnet fisheries for the northern migratory and northern NC management units during summer and for the NC mixed management units in winter (Waring et al. 2002).

The species is not listed as threatened or endangered under the Endangered Species Act, but because, as noted above, the stock is listed as depleted under the MMPA it is a strategic stock. This stock is also considered strategic under the MMPA because fishery-related mortality and serious injury exceed the potential biological removal level.

Leatherback Sea Turtle

Leatherback turtles are widely distributed throughout the oceans of the world, and are found in waters of the Atlantic, Pacific, Caribbean, and the Gulf of Mexico (Ernst and Barbour 1972). The leatherback sea turtle is the largest living turtle and ranges farther than any other sea turtle species, exhibiting broad thermal tolerances (NMFS and USFWS, 1995). Evidence from tag returns and strandings in the western Atlantic suggests that adults engage in routine migrations between boreal, temperate and tropical waters (NMFS and USFWS, 1992). In the U.S., leatherback turtles are found throughout the action area of this consultation. Located in the northeastern waters during the warmer months, this species is found in coastal waters of the continental shelf and near the Gulf Stream edge, but rarely in the inshore areas. However, leatherbacks may migrate close to shore, as a leatherback was satellite tracked along the mid-Atlantic coast, thought to be foraging in these waters. A 1979 aerial survey of the outer Continental Shelf from Cape Hatteras, North Carolina to Cape Sable, Nova Scotia showed leatherbacks to be present throughout the area with the most numerous sightings made from the Gulf of Maine south to Long Island. Shoop and Kenney (1992) also observed concentrations of leatherbacks during the summer off the south shore of Long Island and off New Jersey. Leatherbacks in these waters are thought to be following their preferred jellyfish prey. This aerial survey estimated the leatherback population for the northeastern U.S. at approximately 300-600 animals (from near Nova Scotia, Canada to Cape Hatteras, North Carolina).

Compared to the current knowledge regarding loggerhead populations, the genetic distinctness of leatherback populations is less clear. However, genetic analyses of leatherbacks to date indicate female turtles nesting in St. Croix/Puerto Rico and those nesting in Trinidad differ from each other and from turtles nesting in Florida, French Guiana/Suriname and along the South African Indian Ocean coast. Much of the genetic diversity is contained in the relatively small insular subpopulations. Although populations or subpopulations of leatherback sea turtles have not been formally recognized, based on the most recent reviews of the analysis of population trends of leatherback sea turtles, and due to our limited understanding of the genetic structure of the entire species, the most conservative approach would be to treat leatherback nesting populations as distinct populations whose survival and recovery is critical to the survival and recovery of the species. Further, any action that appreciably reduces the likelihood for one or more of these nesting populations to survive and recover in the wild, would appreciably reduce the species' likelihood of survival and recovery in the wild.

Leatherbacks are predominantly a pelagic species and feed on jellyfish (i.e., *Stomolophus, Chryaora*, and *Aurelia* (Rebel 1974)), cnidarians (*medusae, siphonophores*) and tunicates (*salps, pyrosomas*). Time-Depth-Recorder data recorded by Eckert et al. (1998b) indicate that leatherbacks are night feeders and are deep divers, with recorded dives to depths in excess of 1000 meters. However, leatherbacks may come into shallow waters if there is an abundance of jellyfish nearshore. Leary (1957) reported a large group of up to 100 leatherbacks just offshore of Port Aransas, Texas associated with a dense aggregation of *Stomolophus*. Leatherbacks also occur annually in places such as Cape Cod and Narragansett Bays during certain times of the year, particularly the fall.

Although leatherbacks are a long lived species (> 30 years), they are somewhat faster to mature than loggerheads, with an estimated age at sexual maturity reported as about 13-14 years for females, and an estimated minimum age at sexual maturity of 5-6 years, with 9 years reported as a likely minimum (Zug and Parham 1996) and 19 years as a likely maximum (NMFS 2001). In the U.S. and Caribbean, female leatherbacks nest from March through July. They nest frequently (up to 7 nests per year) during a nesting season and nest about every 2-3 years. During each nesting, they produce 100 eggs or more in each clutch and thus, can produce 700 eggs or more per nesting season (Schultz 1975). The eggs will incubate for 55-75 days before hatching. The habitat requirements for post-hatchling leatherbacks are virtually unknown (NMFS and USFWS 1992).

Anthropogenic impacts to the leatherback population are similar to those discussed above for the loggerhead sea turtle, including fishery interactions as well as intense exploitation of the eggs (Ross 1979). Eckert (1996) and Spotila et al. (1996) record that adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries. Zug and Parham (1996) attribute the sharp decline in leatherback populations to the combination of the loss of long-lived adults in fishery related mortality, and the lack of recruitment stemming from elimination of annual influxes of hatchlings because of intense egg harvesting.

Poaching is not known to be a problem for U.S. nesting populations. However, numerous fisheries that occur in both U.S. state and Federal waters are known to negatively impact juvenile and adult leatherback sea turtles. These include incidental take in several commercial and recreational fisheries. Fisheries known or suspected to incidentally capture leatherbacks include those deploying bottom trawls, off-bottom trawls, purse seines, bottom longlines, hook and line, gill nets, drift nets, traps, haul seines, pound nets, beach seines, and surface longlines (NMFS and USFWS 1992). At a workshop held in the Northeast in 1998 to develop a management plan for leatherbacks, experts expressed the opinion that incidental takes in fisheries were likely higher than is being reported.

Leatherback interactions with the southeast shrimp fishery are also common. Turtle Excluder Devices (TEDs), typically used in the southeast shrimp fishery to minimize sea turtle/fishery interactions, are less effective for the large-sized leatherbacks. Therefore, the NMFS has used several alternative measures to protect leatherback sea turtles from lethal interactions with the shrimp fishery. These include establishment of a Leatherback Conservation Zone (60 FR 25260). NMFS established the zone to restrict, when necessary, shrimp trawl activities from off the coast of Cape Canaveral, Florida to the Virginia/North Carolina Border. It allows the NMFS to quickly close the area or portions of the area to the shrimp fleet on a short-term basis when high concentrations of normally pelagic leatherbacks are recorded in more coastal waters where the shrimp fleet operates. Other emergency measures may also be used to minimize the interactions between leatherbacks and the shrimp fishery. For example, in November 1999 parts of Florida experienced an unusually high number of leatherback strandings. In response, the NMFS required shrimp vessels operating in a specified area to use TEDs with a larger opening for a 30-day period beginning December 8, 1999 (64 FR 69416) so that leatherback sea turtles could escape if caught in the gear.

Leatherbacks are also susceptible to entanglement in lobster and crab gear, possibly as a result of attraction to gelatinous organisms and algae that collect on buoys and buoy lines at or near the surface, attraction to the buoys which could appear as prey, or the gear configuration which may be more likely to wrap around flippers. The total number of leatherbacks reported entangled from New York through Maine from all sources for the years 1980 - 2000 is 119; out of this total, 92 of these records occurred from1990-2000. Entanglements are also common in Canadian waters where Goff and Lien (1988) reported that 14 of 20 leatherbacks encountered off the coast of Newfoundland/Labrador were entangled in fishing gear including salmon net, herring net, gillnet, trawl line and crab pot line. It is unclear how leatherbacks become entangled in such gear. Prescott (1988) reviewed stranding data for Cape Cod Bay and concluded that for those turtles where cause of death could be determined (the minority), entanglement in fishing gear is the leading cause of death followed by capture by dragger, cold stunning, or collision with boats.

Spotila et al. (1996) describe a hypothetical life table model based on estimated ages of sexual maturity at both ends of the species' natural range (5 and 15 years). The model concluded that leatherbacks maturing in 5 years would exhibit much greater population fluctuations in response to external factors than would turtles that mature in 15 years. Furthermore, the simulations indicated that leatherbacks could maintain a stable population only if both juvenile and adult survivorship remained high, and that if other life history stages (i.e., egg, hatchling, and juvenile) remained static. Model simulations indicated that an increase in adult mortality of more than 1% above background levels in a stable population was unsustainable. As noted, there are many human-related sources of mortality to leatherbacks; a tally of all leatherback takes anticipated annually under current biological opinions completed for the NMFS June 30, 2000, biological opinion on the pelagic longline fishery projected a potential for up to 801 leatherback takes, although this sum includes many takes expected to be nonlethal. Leatherbacks have a number of pressures on their populations, including injury or mortality in fisheries, other Federal activities (e.g., military activities, oil and gas development, etc.), degradation of nesting habitats, direct harvest of eggs, juvenile and adult turtles, the effects of ocean pollutants and debris, lethal collisions, and natural disturbances such as hurricanes (which may wipe out nesting beaches).

Spotila et al. (1996) recommended not only reducing mortalities resulting from fishery interactions, but also advocated protection of eggs during the incubation period and of hatchlings during their first day, and indicated that such practices could potentially double the chance for survival and help counteract population effects resulting from adult mortality. They conclude, "stable leatherback populations could not withstand an increase in adult mortality above natural background levels without decreasing . . . the Atlantic population is the most robust, but it is being exploited at a rate that cannot be sustained and if this rate of mortality continues, these populations will also decline. ".

Estimated to number approximately 115,000 adult females globally in 1980 (Pritchard 1982) and only 34,500 by 1995 (Spotila et al. 1996), leatherback populations have been decimated worldwide, not only by fishery related mortality but, at least historically,

primarily due to intense exploitation of the eggs (Ross 1979). On some beaches nearly 100% of the eggs laid have been harvested (Eckert 1996). Eckert (1996) and Spotila et al. (1996) record that adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries. Spotila (2000) states that a conservative estimate of annual leatherback fishery-related mortality (from longlines, trawls and gillnets) in the Pacific during the 1990s is 1,500 animals. He estimates that this represented about a 23% mortality rate (or 33% if most mortality was focused on the East Pacific population).

Nest counts are currently the only reliable indicator of population status available for leatherback turtles. The status of the leatherback population in the Atlantic is difficult to assess since major nesting beaches occur over broad areas within tropical waters outside the United States. Recent information suggests that Western Atlantic populations declined from 18,800 nesting females in 1996 (Spotila et al. 1996) to 15,000 nesting females by 2000. Eastern Atlantic (i.e., off Africa, numbering ~ 4,700) and Caribbean (4,000) populations appear to be stable, but there is conflicting information for some sites and it is certain that some populations (e.g., St. John and St. Thomas, U.S. Virgin Islands) have been extirpated (NMFS and USFWS 1995). It does appear, however, that the Western Atlantic population is being subjected to mortality beyond sustainable levels, resulting in a continued decline in numbers of nesting females.

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 wester 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 (arnphipods, 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.