2005 Bluefish Specifications
Environmental Assessment
Essential Fish Habitat 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 purpose of this document is to recommend annual management measures for fishing year 2005 to ensure that the annual fishing targets specified in the Fishery Management Plan for this species are attained. The 2005 measures include commercial quotas, recreational harvest limits, and other measures to ensure that the annual fishing targets specified in the Fishery Management Plan for this species are attained. The management alternatives analyzed in this document include the total allowable landings (commercial quotas and recreational harvest limits), which are necessary to achieve the annual target exploitation rates established under the bluefish rebuilding schedule.

In the final deliberations, the Council and Commission considered all the alternatives and comments and chose the total allowable landings limit under Alternative 1 and its allocation to the commercial and recreational components of the fishery as the preferred landings limit for 2005. The overall impacts of the alternatives evaluated in this document are briefly described below.

Alternative 1 (Preferred/Status Quo/No Action Alternative) would specify a total allowable catch (TAC) of 34.215 million lb. This is the same TAC that was implemented in 2004. The 2005 TAC was recommended by the Bluefish Monitoring Committee. Adjusting the TAC for bluefish discards would yield a total allowable landings (TAL) of 30.853 million pounds. This TAL is near identical to the TAL implemented in 2004 (i.e., 31.850 million pounds). Under this alternative, the commercial quota would be 10.500 million lb and the recreational harvest limit (RHL) would be 20.353 million lb for 2005. Adjusting these initial values for research set-aside (RSA) would yield an adjusted commercial quota of 10.398 million pounds and an adjusted RHL of 20.157 million pounds. The specified commercial quota under this alternative is near identical to the commercial quota implemented in 2004 and the RHL is slightly below the RHL implemented that year.

The overall TAC/TAL under Alternative 1 is identical to the TAC/TAL under Alternatives 2 and 3 and would likely achieve the target F in 2005. The difference between this alternative and Alternatives 2 and 3 relates to the manner in which the overall TAL is allocated to the commercial and recreational components of the bluefish fishery.

Alternative 1 was chosen by the Council and Board because it provides the best allocation to the commercial and recreational sectors considering recent fishing practices. This alternative would provide commercial and recreational fishermen with about the same fishing opportunities in 2005 compared to 2004. This alternative (as well as Alternative 3) would present no changes in biological, economic, social, protected resources, and Essential Fish Habitat (EFH) impacts in 2005 compared to 2004.

Alternative 2 would specify a commercial quota of 5.245 million pounds and an RHL of 25.608 million pounds. Adjusting these initial values for RSA would yield an adjusted commercial quota of 5.194 million pounds and an adjusted RHL of 25.361 million pounds. Biological impacts of this alternative are expected to be positive due to the lower commercial quota (lower bluefish commercial landings) under this alternative compared to Alternatives 1 and 3. However, if bluefish commercial discards increase significantly as a consequence of the lower commercial quota then biological impacts are expected to be negative compared to Alternatives 1 and 3. Economic and social impacts of this alternative are expected to be negative compared to Alternatives 1 and 3 due to lower expected ex-vessel revenues. No impacts on protected resources or EFH are expected if this alterative is implemented in 2005 compared to 2004.

Alternative 3 would specify a commercial quota of 9.583 million pounds and an RHL of 21.270 million pounds. Adjusting these initial values for RSA would yield an adjusted commercial quota of 9.490 million pounds and an adjusted RHL of 21.065 million pounds. Overall impacts under this alternative are expected to be similar to those under Alternative 1.

Alternative 4 would specify a maximum RSA of 297,750 lb of bluefish for 2005. Even though the TAC specified under this alternative is identical to the TAC implemented for 2004, the overall TAL and associated recreational quota and RHL are different than those recommended for 2004 due to a slightly higher bluefish discard level employed to derive the overall TAL in 2005 compared to 2004. Potential biological, economic, social, protected resources, and EFH impacts of the alternatives with and without research set aside are identical. However, it is possible that the vessels that would be used by researchers to conduct the research would be vessels that have not traditionally fished for bluefish. As such, permit holders that would have landed these bluefish in a state where the quota has been reached and the fishery closed could be disadvantaged. However, the amount of the bluefish RSA is minimal, so impacts in such states would also be expected to be minimal.

In addition to the preferred measures under Alternative 1, the Council and Commission recommended that the current recreational possession limits remain in place for 2005.

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

Box ES-1. Overall qualitative summary of the expected impacts of 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.

	Environmental Dimension				
	Biological	**Economic**	**Social**	**Protected Resources**	**EFH**
Alternative 1 (Preferred/No Action/Status Quo)	0	0	0	0	0
Alternative 2	/ (?)	-	-	0	0
Alternative 3	0	0/-	0/-	0	0
Alternative 4.1 (No RSA)	0	0	0	0	0
Alternative 4.2 (Preferred; 297,750 lb RSA)	0	0/	0/	0	0

2.0 LIST OF ACRONYMS

ACFCMA	Atlantic Coastal Fisheries Cooperative Management Act
ASMFC	Atlantic States Marine Fisheries Commission or Commission
B	Biomass
CEQ	Council on Environmental Quality
DPS	Distinct Population Segment
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Endangered Species Act of 1973
F	Fishing Mortality Rate
FR	Federal Register
FMP	Fishery Management Plan
GRA	Gear Restricted Area
GRT	Gross Registered Tonnage
HPTRP	Harbor Porpoise Take Reduction Plan
IRFA	Initial Regulatory Flexibility Analysis
LOF	List of Fisheries
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
NEFMC	New England Fishery Management Council
NEFSC	Northeast Fisheries Science Center
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OY	Optimal Yield
PBR	Potential Biological Removal
PRA	Paperwork Reduction Act
PREE	Preliminary Regulatory Economic Evaluation
RHL	Recreational Harvest Limit
RIR	Regulatory Impact Review
RSA	Research Set-Aside
SAFMC	South Atlantic Fishery Management Council
SARC	Stock Assessment Review Committee
SAV	Submerged Aquatic Vegetation
SAW	Stock Assessment Workshop
SMA	Small Business Administration
SSB	Spawning Stock Biomass
SFA	Sustainable Fisheries Act
TAL	Total Allowable Landings

TL	Total Length
VECs	Valuable Environmental Components
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

The purpose of this document is to recommend annual management measures for fishing year 2005 to ensure that the annual fishing targets specified in the Fishery Management Plan (FMP) for this species are attained. The 2005 measures include commercial quotas, recreational harvest limits, and possession limit for the recreational fishery to ensure that the annual fishing targets specified in the Fishery Management Plan for the Bluefish fisheries are attained. The Council met jointly with the Commission's Bluefish Board and adopted measures at their August 2004 meeting.

The need is to continue setting the annual fishing control measures to maintain fisheries while rebuilding the bluefish stock. Without setting fishing control measures, fishing for bluefish may increase and threaten the rebuilding of the fishery.

The bluefish fisheries in U.S. waters of the western Atlantic Ocean are managed under the Bluefish FMP that was prepared cooperatively by the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (Commission). The plan was approved by the National Marine Fisheries Service (NMFS) in March 1990 and adopted by the Commission in October 1989. The FMP was amended in 1999 to bring it into compliance with the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) of 1976 as amended by the Sustainable Fisheries Act (SFA), and the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA). The SFA requires that the management measures proposed in a FMP be consistent with ten national standards for fishery conservation and management. Under ACFCMA, if a state does not implement management measures required by an FMP or amendment, the Federal government may impose a moratorium on the landing of the species covered by the FMP in that state.

Comprehensive measures enacted by Amendment 1 to the Bluefish FMP (MAFMC 1999; the final rule became effective in August 2000; 50 CFR Part 902) were designed to rebuild the bluefish stock. Amendment 1 regulations require that a commercial quota and recreational harvest limit be based on projected stock size estimates as derived from the latest stock assessment information. Estimates of stock size coupled with the target fishing mortality rate allow for a calculation of total allowable landings (TAL). Based on the historic proportion of commercial and recreational landings for the period 1981-1989, 17% of the TAL is allocated to the commercial fishery. Amendment 1 stipulates that if 17% of the TAL is less than 10.500 million lb (4.762 million kg), then the commercial quota can be increased up to 10.500 million lb (4.762 million kg) if the recreational fishery is projected to land less than 83% of the TAL for the upcoming year.

Amendment 1 also established a schedule to eliminate overfishing and rebuild the bluefish stock. For the first two years of the rebuilding plan (1999-2000), fishing mortality (F) was set at 0.51. The target F is 0.41 in years 3-5 (2001-2003) and 0.31 in years 6-9 (2004-2007). During the rebuilding period, the target F for the next fishing year would be set at the level specified in the rate reduction schedule or the level estimated for the most recent year, whichever is less. This schedule would allow for stock rebuilding to the level which would support harvests at or near MSY by the year 2007 or earlier.

The Amendment also established a Monitoring Committee which meets annually to review the best available scientific data and make recommendations regarding the TAL and other management measures in the plan. The Committee's recommendations are made to achieve the target mortality rates established in the amendment to reduce overfishing. The Committee bases its review and recommendations on best available data including, but not limited to, commercial and recreational catch/landing statistics, current

estimates of fishing mortality, stock abundance, discards for the recreational fishery, and juvenile recruitment.

Based on the recommendations of the Monitoring Committee, the Council's Bluefish Committee makes a recommendation to the Council which in turn makes a recommendation to the Regional Administrator. The Regional Administrator reviews the recommendation and may revise it if necessary to achieve FMP objectives. In addition, because the FMP is a joint plan with the Commission, the Commission's Bluefish Board (Board) adopts complementary measures.

Framework Adjustment 1 to the Bluefish FMP, which was approved by NMFS on August 10, 2001 (66 FR 42156), established a procedure through which research set-aside (RSA) amounts would be set annually as part of Council's quota-setting process. The research is to support the collection of new information that will benefit both the commercial and recreational fisheries for this species. The program encourages collaborative efforts among the public, research institutions, and the government subsidized by a percentage set-aside from the TAL of selected species, including bluefish, under management by the Council.

4.2 Management Objectives of the FMP

1) increase understanding of the stock and of the fishery;
2) provide the highest availability of bluefish to U.S. fishermen while maintaining, within limits, traditional uses of bluefish;
3) provide for cooperation among the coastal states, the various regional marine fishery management councils, and Federal agencies involved along the coast to enhance the management of bluefish throughout its range;
4) prevent recruitment overfishing;
5) reduce the waste in both the commercial and recreational fisheries.

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

* commercial quotas;
* minimum fish size and minimum mesh size;
* gear regulations;
* recreational harvest limit;
* recreational possession and size limits, and seasonal closures.

4.3 Methods of Analysis

The basic approach adopted in this analysis is an assessment of various management measures from the standpoint of determining the impacts upon the environment. In order to conduct a more complete analysis, a preliminary adjusted quota was calculated by deducting the RSA from the TAL. The NMFS Quota Report as of the week ending July 24, 2004 indicates that overall bluefish commercial landings are within the overall (coastwide quota) commercial quota for 2004. Therefore, the 2005 overall quota was not adjusted for overages. Impacts were examined relative to three commercial quota alternatives (Box 4.3.1).

The first alternative examines the commercial quota and recreational harvest limit recommended by the Council and Commission, the preferred alternative (the least restrictive commercial quota and the greatest allowed under the current FMP). The specified commercial quota under this alternative is also the status quo alternative for the commercial sector.

Box 4.3.1. Comparison (in pounds) of the alternatives of quota combinations reviewed.						
	2005 Initial TAL	2005 Initial Commercial Quota	2005 Initial Recreational Harvest Limit	2005 Research Set-Aside	2005 Adjusted Commercial Quota	2005 Adjusted Recreational Harvest Limit
Quota Alternative 1 (Status Quo/No Action)						
Council Preferred Alternative	30,853,578	10,500,000	20,353,578	297,750	10,398,671	20,157,157
Quota Alternative 2						
Projection Based Alternative	30,853,578	5,245,108	25,608,470	297,750	5,194,491	25,361,337
Quota Alternative 3						
Based on 1995 to 2000 Commercial TAL	30,853,578	9,583,000	21,270,578	297,750	9,490,520	21,065,308

The second alternative examines the impacts of the commercial quota and recreational harvest limit based on projections of stock biomass assuming no transfer to the commercial fishery (the most restrictive commercial quota).

The third alternative examines the impacts of the commercial quota and recreational harvest limit based on projections of stock biomass and yield assuming a commercial quota identical to the quota that was in place from 1995-2001, before the Council and Board recommended a 10.500 million lb (4.762 million kg) commercial quota in 2002. That is a commercial quota level of 9.583 million lb (4.346 million kg). This commercial quota level was chosen for analysis because it represents the historical allocation to the commercial sector from 1995 to 2000. Adjusting this commercial quota level for RSA would result in a preliminary adjusted commercial quota of 9.490 million lb (4.304 million kg). Potential changes in landings of the 2005 commercial quotas compared to the 2003 landings are presented in Box 4.3.2.

Box 4.3.2. Commercial quotas under each Alternative compared to 2003 landings (in pounds).			
	Adjusted Commercial TAL	Percent of 2003 Landings	Percent Change
Quota Alternative 1 (Status Quo/No Action)			
Council Preferred Alternative	10,398,671	143.65	43.65
Quota Alternative 2			
Projection Based Alternative	5,194,491	71.75	-28.24
Quota Alternative 3			
Based on 1995 to 2000 Commercial TAL	9,490,520	131.10	31.10

5.0 MANAGEMENT ALTERNATIVES

5.1 Alternative 1 - 2004 Status Quo (No Action and the 2005 Preferred Alternative)

The Council and Board recommended a coastwide 2005 TAC of 34.215 million lb (15.519 million kg). This is the same TAC that was implemented in 2004. Adjusting the TAC for bluefish discards would yield a total allowable landings (TAL) of 30.853 million pounds (13.994 million kg). This TAL is near identical to the TAL implemented in 2004 (i.e., 31.850 million lb or 14.446 million kg). The 2005 TAL is divided between the commercial and recreational components of the fishery using the historic proportion of commercial and recreational landings for the period 1981-1989; 17% of the TAL would be allocated to the commercial fishery and 83% to the recreational fishery. Using these proportions, the commercial sector

would receive 5.245 million lb (2.379 million kg) as a quota and the recreational fishery would receive 25.608 million lb (11.615 million kg) as a harvest limit.

The overall TAL under this alternative is identical to the TAL under Alternatives 2 and 3 and would likely achieve the target F in 2005. The difference between this preferred alternative and Alternatives 2 and 3 relates to the manner in which the overall TAL is allocated to the commercial and recreational components of the bluefish fishery.

Amendment 1 stipulates that if 17% of the TAL is less than 10.500 million lb (4.762 million kg), then the commercial quota could be increased up to 10.500 million lb (4.762 million kg) if the recreational fishery is projected to land less than 83% of the TAL for the upcoming year. Given recent trends in recreational landings for the past ten years, i.e., ranging from 8.253 million lb (3.743 million kg) in 1999 to 15.541 million lb (7.049 million kg) in 1994 (averaging 12.565 million lb or 5.699 million kg; Table 1), it is anticipated that the recreational fishery will harvest less than 83% of the TAL in year 2005. Furthermore, a projection based on preliminary MRFSS data from Waves 1-2 indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. As such, the Council and Board recommended that the commercial TAL in year 2005 be 10.500 million lb (4.762 million kg). That is, a transfer of 5.254 million lb (2.383 million kg) was made from the recreational sector to the commercial sector. As such, the recreational TAL for year 2005 will be 20.353 million lb (9.231 million kg). The initial commercial quota under this alternative is identical to the initial commercial quota implemented in 2004 (i.e., 10.500 million lb or 4.762 million kg). Additionally, the Council approved a RSA for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2005 are 10.398 million lb (4.716 million kg) and 20.157 million lb (9.143 million kg), respectively. This alternative would result in the highest possible landings in 2005 for the commercial sector (i.e., least restrictive alternative to commercial sector). The entire allocation process is summarized in Box 5.1.1.

Box 5.1.1. Summary table of bluefish allocation process (Alternative 1)

Bluefish TAL	30,853,578 lb (13,994,948 kg)
Commercial TAL (before transfer)	5,245,108 lb (2,379,141 kg)
Recreational TAL (before transfer)	25,608,470 lb (11,615,806 kg)
Commercial TAL (after transfer)	10,500,000 lb (4,762,720 kg)
Recreational TAL (after transfer)	20,353,578 lb (9,232,228 kg)
Adjusted Commercial TAL (after RSA)	10,398,671 (4,716,758 kg)
Adjusted Recreational TAL (after RSA)	20,157,157 (9,143,133 kg)

It is important to mention that while the proposed overall TAC and RSA under this alternative are identical to the overall TAC and RSA implemented for 2004, the adjusted 2005 commercial quota and recreational harvest limit are slightly different from the commercial quota and recreational harvest limit implemented for 2004. This is due to the fact that the bluefish discard level employed to derive the overall 2005 TAL (TAC minus discards) is higher in 2005 than the discard level employed to derive the overall 2004 TAL. Since the RSA is allocated to each fishery based on a proportion of the RSA/TAL, any change in discard level

and the proportion of RSA/TAL would make the adjusted 2005 commercial quota and recreational harvest limit slightly different compared to the 2004 limits.

5.2 Alternative 2 - Most Restrictive Alternative to the Commercial Sector

The overall TAL under Alternative 2 is identical to that under Alternative 1 except that no transfer is made to the commercial fishery. As such, the commercial quota for 2005 would be 5.245 million lb (2.379 million kg) and the recreational harvest limit would be 25.608 million lb (11.615 million kg). Additionally, the Council approved a RSA for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2005 are 5.194 million lb (2.355 million kg) and 25.361 million lb (11.503 million kg), respectively (Box 4.3.1). This alternative would result in the lowest possible landings in 2005 for the commercial sector (i.e., most restrictive alternative to commercial sector).

5.3 Alternative 3 - Second Most Restrictive Alternative to the Commercial Sector

The overall TAL under Alternative 3 is identical to that under Alternative 1, except that a transfer of 4.337 million lb (1.967 million kg) is made to the commercial fishery. This transfer would result in a commercial quota of 9.583 million lb (4.346 million kg). This commercial quota (i.e., 9.583 million lb or 4.346 million kg) represents the same commercial quota level that was in place from 1995-2001, before the Council and Board recommended a 10.500 million lb (4.762 million kg) commercial quota in 2002. The resulting recreational harvest limit would be 21.270 million lb (9.647 million kg) for year 2005. Additionally, the Council approved a RSA for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2005 are 9.490 million lb (4.304 million kg) and 21.065 million lb (9.554 million kg), respectively (Box 4.3.1). This alternative would result in a 2005 commercial quota that falls between those specified under Alternatives 1 and 2.

5.4 Research Set-Aside Alternatives

5.4.1 No Research Set-Aside (No Action)

Under this alternative no RSA would be implemented for 2005.

5.4.2 Specify a Research Set-Aside for 2005 (Preferred/Status Quo Alternative)

As part of the RSA program, one research project was submitted to NMFS that could potentially require exemptions from some of the current bluefish regulations. Under the RSA program, the Council, in consultation with the NMFS Northeast Regional Administrator, and the Commission have recommended a bluefish research project for 2005 (June 28, 2004 letter from Mears to Furlong). In order to expedite the approval and implementation of the research project, Council staff agreed to analyze the impacts of the exemptions on the environment for inclusion in the specification package for this species.

The bluefish set-aside would be for a maximum of 297,750 pounds (135,057 kg) of bluefish for 2005. This RSA amount will be deducted from the bluefish TAL (Box 4.3.1). A summary of the conditionally approved RSA project requesting bluefish for 2005 is presented in Appendix A. This description includes project name, description and duration, amount of RSA requested, and gear to be used to conduct the project. This alternative is the status quo alternative.

6.0 DESCRIPTION OF AFFECTED ENVIRONMENT AND FISHERIES

6.1 Description of the Managed Resource

6.1.1 Description of the Fisheries

The bluefish commercial and recreational fisheries are fully described in section 2.3 of Amendment 1 to the Bluefish FMP. Commercial landings of bluefish decreased 57% from 16.45 million lb (7.46 million kg) in 1981 to 7.09 million lb (3.21 million kg) in 1999. In 2000 and 2001, bluefish commercial landings increased to 8.04 million lb (3.64 million kg) and 8.69 million lb (3.94 million kg), respectively, then landings decreased in 2002 to 6.85 million lb (3.10 million kg). The 2003 commercial landings were 7.23 million lb (3.27 million kg) or 12% below the 1994-2003 average and 4% below the 1999-2003 average (Table 1).

Bluefish are very important to the recreational fisheries of the Atlantic coast of the U.S. For example, during the period 1981-1996, bluefish accounted for 29% of the Atlantic coast recreational harvest of finfish by weight (the highest of any species), ranging from 42% in 1981 to 11% in 1995. In 2003, bluefish accounted for 9% of the Atlantic coast recreational harvest of finfish by weight. MRFSS data indicate that the number of participants in the marine recreational fisheries of the Atlantic coast has remained relatively constant in the last 20 years with a modest increase in the last few years. More specifically, the number of participants in marine recreational fisheries have ranged from 3.7 million in 1999 to 5.7 million in 2003 (averaging 4.5 million for the 1984 to 2003 period). The number of trips (all modes combined) made during the same time period ranged from 32.4 million in 1990 to 51.8 million trips in 2001 (averaging 40.1 million trips for the 1984 to 2003 period). In 2003, there were 48.4 million trips along the Atlantic coast.

During the 1980s, a significant portion of these participants and trips depended upon bluefish, particularly those in the Mid-Atlantic region from the party/charter mode. For example, in 1985 party/charter boats in the Mid-Atlantic region landed a total of 22.2 million lb of fish, over half of which were bluefish (12.3 million lb). Further evidence of the reliance of the party/charter sector was provided by a survey of party/charter boats from the region (Maine through Virginia) conducted by the Council in 1990. The Council conducted a survey of charter and party boat owners from this region in which they were asked to rank each species with respect to interest they had in them and their catch rate success on a scale of 1-5. For party boats, bluefish was the second most desired species and ranked first in the catch reported by party boat owners. For charter boats, bluefish ranked third in terms of desirability and second in terms of success rate. As the abundance of bluefish has declined since then, the contribution of bluefish to the catch from this mode has declined. In 1990 anglers fishing from party/charter boats in the Mid-Atlantic region landed a total of 15.9 million lb (all species), 23.5% of which were bluefish. For the 1990 to 2003 period, the contribution of bluefish to the total amount of fish landed by party/charter boats ranged from 4% in 1997 to 41% in 1992 (averaging 18%). In 2003, the contribution of bluefish to the total amount of fish landed by party/charter boats in the Mid-Atlantic region was 11%.

6.1.2 Status of the Stock

The status of the bluefish stock is re-evaluated annually. The 2003 assessment of the bluefish stock indicated that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. This assessment indicated that the stock was overfished but overfishing was not occurring (Lee 2003). The 2002 fishing mortality rate for bluefish was below the target of 0.41 for 2003 and the target of 0.31 for 2004. This assessment indicated that the status of the stock was improving as of 2002 to a level close to the biomass threshold. More specifically, the total stock biomass for 2002 was estimated at 51,550 mt (113.648 million lb) or 96% of the biomass threshold (i.e., $\frac{1}{2}B_{msy}$ = 53,750 mt or 118.498 million lb) relative to Amendment 1 overfishing definitions.

A stock projection was conducted using a fishing mortality rate of 0.184 (Lee 2003). Projection results indicated that the bluefish stock would increase from an estimated biomass of 58,680 mt (129.367 million lb) in 2003 to 75,230 mt (165.853 million lb) in 2004 and 94,250 mt (207.785 million lb) in 2005. This biomass had an associated yield of 15,520 mt (34.215 million lb) in 2004.

The ASMFC created a bluefish stock assessment technical committee to evaluate and revise the surplus production model currently used to annually assess the status of the bluefish stock and investigate

alternative assessment methods. The ASMFC technical committee was able to develop a revised surplus production model which was presented to the SARC review panel. The revised production model developed by the ASMFC technical committee was identical to the surplus production model previously used, except that the recreational CPUE was modified. The SARC review panel rejected the results for the following reasons: 1) the use of the NEFSC trawl survey is inappropriate in the biomass dynamic model because it is not representative of the bluefish population (because it only catches mostly juvenile bluefish); 2) the calculation of the recreational CPUE contains severe bias because live discards (B2's) have increased significantly in recent years; and 3) potential time series correlation in the model that may need to be corrected. Since the SARC review panel rejected the revised production model developed by the ASMFC, the status of the stock is unknown at the present time. The SARC review panel recommended continuing the 2004 landings level in 2005. However, the panel also noted that the stock may not be recovering and may be below B_{msy}.

A revised stock assessment will be completed by June of 2005. In the interim, the Council and Commission adopted the same TAC for 2005 as they did for 2004. The best information available indicates that this TAC (34.215 million lb or 15,520 mt) could achieve the target fishing mortality rate in 2005.

6.1.3 Stock Characteristics and Ecological Relationships

A full description of stock characteristics and ecological relationships of bluefish is found in section 2.1.3 of Amendment 1.

The 2003 assessment of the bluefish stock indicates the existence of strong year classes recruited in 1981, 1984, and 1989, and poor recruitment occurring thereafter. General trends of biomass index increased in late 1970s and declined from the early 1980s to low levels in 1993, then increased slightly in 1995, 1996, and 1999, then decreasing in 2000 and subsequently increasing in 2001 and 2002. Trends of the fisheries catch per unit effort (CPUE) peaked in 1982 and declined to low levels in 1993 and 1994, with a moderate increase in recent years (Lee 2003).

6.2 Habitat (Including Essential Fish Habitat)

6.2.1 Description of the Physical Environment

According to Section 600.815(a)(2)(i)(A) an initial inventory of available environmental and fisheries data sources relevant to the managed species should be used in describing and identifying essential fish habitat (EFH). This inventory on the physical and biological characteristics of the environment in the mid-Atlantic Subregion is found in sections 2.2 and 2.2.1 of Amendment 1. An additional inventory of the physical and biological characteristics of specific habitats found within the jurisdiction of the Northeast Region can be found in “The Effects of Fishing on Marine Habitats of the Northeastern United States” (NMFS 2001 draft).

Bluefish spawning occurs in offshore areas principally from April to May in southern waters and June through August in the middle-Atlantic Bight. Eggs are pelagic and highly buoyant with hatching and early larval development occurring in oceanic waters. Larvae are strongly associated with the surface and have been sampled during every season of the year in offshore waters from Cape Cod, Massachusetts to Palm Beach, Florida. Young-of-year bluefish move inshore with estuaries serving as the chief habitat during the juvenile life stage. In general, adult bluefish travel northward in spring and summer, and southward in fall and winter. Tagging studies indicate that the southerly migration route may be closer to shore than the northerly migration in spring and both migration periods are characterized by some offshore-inshore movement. Estuarine and near shore waters are important habitat for juvenile and adult bluefish from Florida to Maine.

Specific habitats that are designated as bluefish EFH are detailed in section 2.2.2 of Amendment 1. Bluefish are a predominantly pelagic species (Fahay 1998). Life history data show that there are only loose associations of bluefish with any particular substrate or submerged aquatic vegetation (SAV; Fahay 1998). Juveniles are the only life stage which spatially and temporally co-occur on a regular basis with SAV. Bluefish juveniles and adults commonly occur in estuarine areas during the period of the year when eelgrass is present and prey on species which are associated with SAV. Some degree of linkage with SAVs is likely, but given the extent to which the life cycle of bluefish occurs offshore outside the range of SAV, it is probably less than for other species (Laney 1997).

6.2.1.1 Other Species Potentially Impacted by the Action

Any species that could potentially be impacted by these actions is considered part of the affected environment. Species that could be potentially impacted by the action include prey species (section 2.2.6 of Amendment 1), species with overlapping EFH (section 6.2.1.1.1 of this EA), bycatch species of this fishery (3.1.3.9 of Amendment 1), and protected species (section 5.1.3.1 of Amendment 1 and section 6.3 of this EA). Additionally, general faunal assemblages specific to North and Mid-Atlantic habitat types are identified in "The Effects of Fishing on Marine Habitats of the Northeastern United States" (NMFS 2001 draft).

6.2.1.1.1 EFH for Species Overlapping With This FMP

Bluefish EFH is designated as the pelagic waters along the continental shelf from Maine through Florida. The specific identification and description of bluefish EFH is detailed in section 2.2.2 of Amendment 1. These areas include bottom habitats and/or pelagic waters identified as EFH for most of the MAFMC managed species including surfclams/ocean quahogs, squid/mackerel/butterfish, and dogfish, as well as the New England Fishery Management Council (NEFMC) 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 (SAFMC) have EFH identified in areas also identified as EFH for bluefish.

6.2.1.2 Baseline Impact of the Bluefish Fishery on EFH

6.2.1.2.1 Statutory Requirements

The EFH Final Rule [50 CFR Section 600 (a)(2)(i)] indicates that:

"Each FMP must contain an evaluation of the potential adverse effects of fishing on EFH designated under the FMP, including effects of each fishing activity regulated under the FMP or other FMPs. This evaluation should consider the effects of each fishing activity on each type of habitat found within each FMP. FMPs must describe each fishing activity, review and discuss all available relevant information (such as information regarding the intensity, extent, and frequency of any adverse effect on EFH; the type of habitat within EFH that may be affected adversely; and the habitat functions that may be disturbed), and provide conclusions regarding whether and how each fishing activity adversely affects EFH."

The EFH Final Rule also states that "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.

Since the gear impact sections of Amendment 1 were disapproved by NMFS, NMFS determined that the baseline condition of the bluefish fishery had to be established in order to determine the impacts of this action on bluefish EFH and EFH of other species.

6.2.1.2.2 Evaluation of the Baseline Impact of the Bluefish Fishery on EFH

The bluefish measures should not result in any negative impacts on other fisheries. Bluefish is primarily a recreational fishery. NMFS unpublished vessel trip report (VTR) data indicate that gillnets, bottom otter trawls, and handlines account for the majority of the commercial fishing trips that caught bluefish in 2001. The impacts of these gear (described below) are considered the baseline habitat impacts of the commercial bluefish fishery. However, when describing the impacts of alternatives on EFH relative to the status quo in sections 7.1.2, 7.2.2, 7.3.2, and 7.4.1.2, and 7.4.2.2 impacts are described relative to the management measures currently in place.

In October 2001, NMFS, NEFMC, and MAFMC convened a fishing gear impacts workshop, hereafter referred to as the "gear workshop" (NMFS 2002), to assist NEFMC and MAFMC with: 1) evaluating the existing scientific research on the effects of fishing gear on benthic habitats; 2) determining the degree of impact from various gear types on benthic habitats in the Northeast; 3) specifying the type of evidence that is available to support the conclusions made about the degree of impact; 4) ranking the relative importance of gear impacts on various habitat types; and 5) providing recommendations on measures to minimize those adverse impacts. The workshop only focused on benthic habitat and gear types that are managed under MSFCMA, with the inclusion of lobster pots because of their widespread use. The following descriptions of impacts of fishing gear are summarized from the report titled "The Effects of Fishing on Marine Habitats of the Northeastern United States" (NMFS 2001 draft) and the "gear workshop" (NMFS 2002).

Bottom otter trawls: Existing information presented in NMFS (2001 draft), indicates that bottom otter trawls can impact EFH. Bottom otter trawls were the most widely used gear from Maine through Cape Hatteras, from 1995 to 2000. Studies in the Northeast Region indicate that the impacts of bottom otter trawls include ecological and physical impacts. The ecological impacts are exposure of prey and attraction of predators. The physical impacts are the loss of diatom mats, the reduction of total organic carbon and nitrogen in the sediment-water interface, and the reduction of mud and epifauna in a boulder habitat. Similar biological and physical impacts were observed in national and international studies. The panel from the "gear workshop" (NMFS 2002) concluded that "the greatest impacts from otter trawls occur in low and high energy gravel habitats and in hard clay outcroppings (Table 5 [of NMFS 2002]). In gravel, the greatest effects were determined to be on major physical features, and physical and biological structure of the habitat.

The panel did not reach consensus on the degree to which otter trawls affect physical and biological structure in soft mud habitats. However, most panelists agreed that impacts to biological structure (including worm tubes and burrows) and physical structure were moderate. Panelists agreed that these impacts would be expected to last from months to years.

There was no consensus on the degree of impact to biological or physical structure, or to benthic prey, in high and low energy [sand] environments. However, with one exception, the panelists agreed that these impacts were moderate. Trawl induced changes to physical structure in high energy sand were rated as low. Recovery times for biological structure and prey were considered to range from months to years, and for physical structure from days to months.

There was a general consensus that the acute impacts of bottom trawls (i.e., impacts caused by a single tow) on physical and biological structure are less severe than for a scallop dredge, but the chronic impacts resulting from repeated tows are more severe for trawls because a greater bottom area is affected by trawling than is affected by scallop dredging. Additionally, otter trawls are towed repeatedly in the same

locations, much more so than scallop dredges and clam dredges. One panel member pointed out that the only part of a trawl that disturbs the bottom in the same manner as a scallop dredge is the door - the rest of the trawl behaves very differently. Another panel member reiterated that there are a large variety of trawls in use in the Northeast U.S. Some (squid nets, high rises) are very light trawls that barely contact the bottom at all, whereas others (flatfish nets) "hit hard" which makes it difficult to generalize the impacts associated with this gear."

A different study on the lobster fishery in the Connecticut waters of the Long Island Sound (Smith *et al.* 1985) draws the following conclusions regarding trawling impacts to benthic habitats: 1) minor disturbance to surface sediment (less than 1" in depth) because of "light contact with the bottom" (a study of heavily rigged gear in the UK reported similar results); 2) a possible increase in sea floor productivity due to sediment disturbance related to "wake turbulence" which suspended epifauna and flocculent material, rather than direct physical contact with the bottom, resulting in a "chumming effect that attracted motile predators;" 3) "notable" evidence of trawl passage was limited to 4-10" wide, and 2-6" deep trawl door depressions; 4) furrows created by trawls doors in soft mud substrate did not cause habitat loss and "may increase excavation sites for formation of mud lobster shelters or 'burrows'"; 5) minor alteration of mud burrows which "appeared easily reconstructable by resident lobsters." Smith *et al.* (1985) concluded that the success of trawling for lobster was dependent upon the soft sediment substrate in Long Island Sound rather than "any special gear modifications that result in a disruption or extraction for the sea bed." Smith *et al.* (1985) and others observed no evidence of mortality to lobsters or crabs by the net path or trawl riggings.

> *Baseline Impact:* VTR data indicate that bottom otter trawls accounted for 43 percent of the commercial fishing trips that caught bluefish in 2001 (Table 2). However, these data also indicate that only 12 percent of all of the trips that used bottom otter trawls from Maine to North Carolina caught bluefish, indicating that the intensity of the bluefish fishery is low relative to other trawl fisheries. Additionally, few (8%) of the 4,426 otter trawl trips that caught bluefish were targeting bluefish assuming a directed bluefish trip is a trip where bluefish is greater than 50% of the catch. This information indicates that the intensity with which bluefish are fished with trawls is low, relative to other trawl fisheries from Maine through North Carolina. As such, the use of trawls to catch bluefish is not expected to adversely effect EFH.

Gillnets: NMFS (2001 draft) indicates that gillnets are vertical walls of netting normally set out in a straight line. Different types of gillnets used throughout the western North Atlantic (WNA) include sink and anchor gillnets, stake gillnets, and drift gillnets. A complete description of the different types of gillnets can be found in NMFS (2001 draft). The following information on the impact of gillnets was taken directly from NMFS (2001 draft).

"The majority of research concerning impacts of gillnets focus on effects on populations resulting from ghost fishing by lost gear; few studies have examined adverse effects of gillnets on habitat. A few studies have noted that, upon retrieval, gillnets can become entangled in hard bottom areas, and snag and break coral (Breen 1990, Ohman 1993, Jennings and Polunin 1996, Kaiser et al. 1996c, Erzini et al. 1997, ICES 2000). Lost gillnets, in particular, often get caught on and damage or cover hard bottoms and reefs. However, these nets are quickly covered by encrusting epifauna, and eventually blend into the background habitat (Carr et al. 1985, Cooper et al. 1988, Erzini et al. 1997, ICES 2000). Erzini et al. (1997) observed that lost gillnets became incorporated into the reef and provided a complex habitat which was attractive to many organisms. Carr and Milliken (1998) noted that in the Gulf of Maine, cod reacted to lost gillnets as if they were part of the seafloor. Thus, other than damage to coral reefs, effects on habitat by gillnets are thought to be minimal (ICES 1991, 1995, ASMFC 2000)."

The effects of gillnets were also discussed at the "gear workshop" (NMFS 2002). "It was noted that both gears are dragged over the bottom when they are retrieved. In addition, gill nets move around to some

extent while they are on the bottom and longlines can be moved back and forth across the bottom if there is enough current or when hooked fish pull on the mainline...direct effects could include alteration of physical structure and injury or death of emergent epifauna, while indirect effects could include alterations of benthic assemblages toward species that provide less cover or prey for demersal fish. ...the amount of damage will depend on the frequency and duration of sets, and the amount and type of structure present. Mr. Carr, who has done research on lost or abandoned gill nets in New England, observed damage to bottom habitats caused by trapped schools of dogfish dragging the nets across the bottom."

It was also noted at the "gear workshop" (NMFS 2002) "that in order to fully evaluate the significance of the habitat impacts of these two gear types [gillnets and longlines] in the Northeast region, the types of gear used and how they are used need to be matched up with the types of habitat where they are used. Two other factors to consider are the amount of gear used and the total area affected."

"Except for observations of "ghost" gill nets, there are no studies of the habitat impacts of either of these gear types in the Northeast region. However, in the opinion of Dr. DeAlteris, studies from other areas could be applied to the Northeast, as long as the gear was used in the same type of habitat."

"The panel concluded that sink gill nets and longlines cause some low degree impacts in mud, sand and gravel habitats (Table 7 [of NMFS 2002]). In mud the impacts to biological structure could last for months to years. Duration of impacts to physical structure could be days to months on soft muds, and permanent if impacts were on hard bottom clay structures found in deep water on the continental slope. Impacts to physical structure in mud would be caused by lead lines and anchors used with sink gill nets, not by longlines. In the panel's judgement, impacts in sand would be limited to biological structure and would last days to months. The panel's evaluations of impacts in mud and sand habitats were based on professional judgement alone. Impacts in gravel would also be to biological structure, and the duration could be months to permanent (the latter if the damage involved corals), as indicated by peer review and gray literature, as well as professional judgement."

"The panel agreed that better information is needed on the distribution of habitats that are sensitive to alteration from sink gill nets or bottom longlines, and recommended that sensitive habitats be protected through closures. It was also pointed out that there are areas where emergent epifauna would naturally grow, but has been removed by mobile bottom gear. The panel also suggested that gill net and longline vessels should have observers to record bycatch of benthic structural material."

> *Baseline Impact:* VTR data indicate that gillnets accounted for 43 percent of the commercial fishing trips that caught bluefish in 2001 (Table 2). However, these data also indicate that only 27 percent of the trips that used gillnets from Maine to North Carolina caught bluefish, indicating that the intensity of the bluefish fishery is low relative to other gillnet fisheries. VTR data indicate that there were more directed bluefish trips by fishermen using gillnets compared to otter trawls in 2001, assuming a directed bluefish trip is a trip where bluefish is greater than 50% of the catch. However, it is likely that the majority of the trips that caught bluefish did not target bluefish. Only 22 percent of the 4,363 gillnet trips that caught bluefish in 2001 were directed bluefish trips (Table 2). While the intensity of the gillnet fishery for bluefish is higher than the trawl fishery, VTR data indicate that the bluefish gillnet fishery is lower in intensity than other gillnet fisheries (i.e., only 27 percent of the total gillnet trips caught bluefish) from Maine through North Carolina. The "gear workshop" also indicates that the habitat impacts of gillnets that come into contact with the bottom are "low grade." As such, the use of gillnets to catch bluefish is not expected to adversely affect EFH.

Handlines: The handline is simplest form of hook and line fishing. "It consists of a line, sinker, leader and at least one hook. The line is usually stored on a small spool and rack and can vary in length from 1-10^2 m (DeAlteris 1998). The line varies in material from a natural fiber to synthetic nylon. The sinkers vary from stones to cast lead. The hooks are single to multiple arrangements in umbrella rigs. An attraction

device must be incorporated into the hook, usually a natural bait and artificial lure. There are both recreational and commercial hand line fisheries in the U.S. In fact, although this is a technologically sophisticated fishery with fish finding and navigation electronics, it is still conducted by individual or pairs of fishermen in small boats (< 10m), so it may be considered an artisanal fishery. Operationally, hand lines offered a high degree of efficiency, so that the fisherman is able to feel the fish bite the bait, and then set the hook. Hand lines can be used as a fixed or static gear or towed as a mobile gear. Hand lines are usually a passive gear because the fisherman attracts the target, and the fish then voluntarily takes the hook. However, in certain cases, if the hand line is equipped with a treble or ripper hook, then the hand line becomes an active device, as the hook snags the prey. Although not typically associated with bottom impacts, this gear can be fished in such as manner so as to hit bottom and bounce or be carried by currents until retrieved."

NMFS (2001 draft) indicates that almost no information exists on the effects of handlining and very little information exists on longlining on benthic habitat. The two types of gear are similar and would likely result in similar impacts to habitat. The following is taken from NMFS (2001 draft) regarding longlining:

"The principal components of the longline that can produce seabed effects are the anchors or weights, hooks and the mainline (ICES 2000). During submersible dives off southeast Alaska, NMFS scientists observed the following regarding halibut longline gear (NPFMC 1992): "Setline gear often lies slack on the seafloor and meanders considerably along the bottom. During the retrieval process, the line sweeps the bottom for considerable distances before lifting off the bottom. It snags on whatever objects are in its path, including rocks and corals. Smaller rocks are upended, hard corals are broken, and soft corals appear unaffected by the passing line. Invertebrates and other light weight objects are dislodged and pass over or under the line. Fish, notably halibut, frequently moved the groundline numerous feet along the bottom and up into the water column during escape runs disturbing objects in their path. This line motion was noted for distances of 50 feet or more on either side of the hooked fish."

While longlines and sink gillnets were discussed at the "gear workshop" (NMFS 2002) "other types of bottom static gear (e.g., stake gill nets, handlines, electric or hydraulic reels) were not covered because they are not used extensively in Federal waters."

> *Baseline Impact:* VTR data indicate that handlines accounted for 10 percent of the commercial fishing trips that caught bluefish in 2001 (Table 2). However, these data also indicate that only 10 percent of the trips that used handlines from Maine to North Carolina caught bluefish. VTR data indicate that only 7 percent of the 1,020 handline trips that caught bluefish were directed bluefish trips, assuming a directed bluefish trip is a trip where bluefish is greater than 50% of the catch. VTR data indicate that the bluefish handline fishery is lower in intensity than other handline fisheries (i.e., only 10 percent of the total handline trips caught bluefish) from Maine through North Carolina. Additionally, there is no information on the impact of handlines on habitat. Judging by the nature of this gear, the impacts to habitat would be minimal to non-existent. As such, the use of handlines to catch bluefish is not expected to adversely effect EFH.

The above evaluation on the use of bottom otter trawls, gillnets, and handlines to catch bluefish indicates that the baseline impact of the bluefish fishery is minimal and temporary in nature. As such, it can be concluded that the bluefish fishery has no adverse effect on EFH.

6.3 Endangered and Other Protected Species

There are numerous species which inhabit the environment within the management unit of the Bluefish 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). Sixteen are classified as endangered or threatened under the ESA, while the remainder are protected by the provisions of the MMPA. The Council has determined that the following list of species protected either

by the ESA, the MMPA, or the Migratory Bird Act of 1918 may be found in the environment utilized by bluefish:

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 B.

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 B. A description of Atlantic bottlenose dolphins is presented below because of the potential interaction between this species and gear used to commercially harvest summer flounder.

Description of Species of Concern which inhabit the management unit of the FMP

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, (35.23^{o}N-40.5^{o}N), 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 unit was calculated by Waring *et al.* (2002) according to the Potential Biological Removal (PBR) Guidelines (Wade and Angliss 1997): NMIN= $N/\exp(0.842\times[\ln(1+[CV(N)]2)]½)$. It was recognized that these estimates may be negatively biased because they do not include corrections for g(0) and, for some of the management units, do not include the entire spatial range of the unit during that season. The strip transect surveys compensate for some of the abundance omitted during line-transect survey; nonetheless, for some management units the entire range was not covered. There are insufficient data to determine the population trend for this stock (Waring *et al.* 2002).

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

PBR is the product of the minimum population size, one-half the maximum productivity rate, and a "recovery" factor (Wade and Angliss 1997). The "recovery" factor is assumed to be 0.50, which is 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.

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 gear 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 summer 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).

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).

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 exceed 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.

Fishery Classification under Section 114 of Marine Mammal Protection Act

Under section 114 of the MMPA of 1972, NMFS must publish, and annually update, the LOF which places all U.S. commercial fisheries in one of three categories based on the level of incidental serious injury and mortality of marine mammals in each fishery (arranging them according to a two tiered classification system). The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The classification criteria consists of a two tiered, stock-specific approach that first addresses the total impact of all fisheries on each marine mammal stock (Tier 1) and then addresses the impact of the individual fisheries on each stock (Tier 2). If the total annual mortality and serious injury of all fisheries that interact with a stock is less than 10% of the PBR for the stock then the stock is designated as Tier 1 and all fisheries interacting with this stock would be placed in Category III. Otherwise, these fisheries are subject to categorization under Tier 2. Under Tier 2, individual fisheries are subject to the following categorization:

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

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

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

Under Category I, there is documented information indicating a "frequent" incidental mortality and injury of marine mammals in the fishery. In Category II, there is documented information indicating an "occasional" incidental mortality and injury of marine mammals in the fishery. In Category III, there is information indicating no more than a "remote likelihood" of an incidental taking of a marine mammal in the fishery or, in the absence of information indicating the frequency of incidental taking of marine mammals, other factors such as fishing techniques, gear used, methods used to deter marine mammals, target species, seasons and areas fished, and species and distribution of marine mammals in the area suggest there is no more than a remote likelihood of an incidental take in the fishery. "Remote likelihood" means that it is highly unlikely that any marine mammal will be incidentally taken by a randomly selected vessel in the fishery during a 20-day period.

The 2003 LOF indicates that most gillnets, which catch a majority of bluefish, are listed as Category II or Category I fisheries, and trawls and handlines are listed as Category III fisheries. Bluefish are a component of the Mid-Atlantic coastal gillnet fishery and the Northeast sink gillnet fishery which are listed as Category I fisheries. NMFS believes the long-term survival of Atlantic coastal bottlenose dolphins could be compromised because of interactions with several types of commercial fishing gear, including: Mid-Atlantic coastal gillnet; North Carolina inshore gillnet; Southeast Atlantic gillnet; Mid-Atlantic haul/beach seine; North Carolina long haul seine; and Virginia pound net. Bluefish are taken in each of these fisheries. All fishing gear are required to meet gear restrictions under the Large Whale Take Reduction Plan, Harbor Porpoise Take Reduction Plan, MMPA, and the ESA.

Prior to 2001, the North Carolina inshore gillnet fishery was classified as a Category III fishery. This change resulted from an evaluation of NMFS Sea Sampling data which demonstrated that the gillnet gear incidentally injured and killed Atlantic bottlenose dolphin (WNA stock) during 1993-1997. Based on data presented in the proposed list of fisheries for 2001, of the 12 Atlantic bottlenose dolphins which died as a result of fishery interactions, 8 bore evidence of possible gill net interactions. Further evaluation of these data resulted in the conclusion that serious injury and mortality of bottlenose dolphin from the North Carolina inshore gillnet fishery is estimated to be between 1 and 50 percent of the PBR level. As such, this fishery was placed under Category II.

NMFS is currently developing a take reduction plan to reduce injuries and deaths to Atlantic bottlenose dolphins caused by fishing gear in Federal waters of the Mid- and South Atlantic. A Bottlenose Dolphin Take Reduction Team was convened in November of 2001 under authority of the MMPA. The team consists of more than 40 stakeholders including those in the commercial and recreational fishing industry, the conservation community, Federal and state governments, academic and scientific organizations, fishery management councils, and interstate fisheries commissions. The team was formed to develop recommendations to reduce deaths and injuries to bottlenose dolphins. Category II fisheries under the MMPA received a high priority with respect to observer coverage and consideration for measures under the Atlantic Bottlenose Dolphin Take Reduction Plan.

6.4 Fishery and Socioeconomic Environment

6.4.1 Economic and Social Environment

A detailed description of historical fisheries for bluefish is presented in section 2.3 of Amendment 1. The information presented in this section is intended to briefly summarize historic fisheries trends and to characterize recent fisheries changes.

6.4.1.1 Commercial

In 2003, the value of bluefish landings was approximately $2.1 million. Average ex-vessel price of bluefish was $0.29 per pound in 2003. On average (1985-1994), the ex-vessel value of bluefish commercial landings from state waters was about twice that from the Exclusive Economic Zone (EEZ) waters.

Bluefish comprised 0.20% and 0.46% of the total ex-vessel value and pounds landed of all finfish and shellfish species landed along the Atlantic coast of the U.S. in 2002, respectively. The contribution of bluefish to the total value of all finfish and shellfish vary by state, ranging from less than 0.01% in South Carolina and Georgia to over 1% in New York. The contribution of bluefish to the total pounds landed of all finfish and shellfish vary by state, ranging from less than 0.01% in South Carolina and Georgia to 3.81% in New York. Relative to total landings by state, bluefish were most important in New York, North Carolina, and New Jersey contributing with the largest percentage of ex-vessel value of all commercial landings in those states (Table 3). It is not expected that this contribution had change considerably from 2002 to 2003.

The economic impact of the commercial bluefish fishery relative to employment and wages is difficult to determine. According to NMFS, commercial fishermen in the western Atlantic landed approximately 1.5 billion lb (0.7 billion kg) of fish and shellfish in 2002. Those landings have been valued at approximately $1.2 billion. Total landed value ranged from $37 thousand in Pennsylvania to $297 million in Massachusetts. However, it can be assumed that only a small amount of the region's fishing vessel employment, wages, and sales are dependent on bluefish since the relative contribution of bluefish to the total value and poundage of all finfish and shellfish is very small.

6.4.1.2 Recreational

MRFSS catch data by mode indicates that 49% of bluefish were caught by private and rental boats during the period 1994-2003 (Table 4). Private vessels range in size and value from small inshore skiffs to large offshore yachts. It is not possible to determine the percentage of each type of vessel used for bluefish fishing or the cost expenditures by sub-class of vessel. It is probable that most of the private vessels used are larger than skiffs and therefore involve sizable expenditures for procurement and maintenance, thus contributing greatly to measures of economic impact. However, it is likely that private vessels are also used to fish for species other than bluefish and for several non-fishing purposes. Therefore, any expenditure and/or cost data attributed to bluefish fishing would have to be prorated to account for this multi-purpose use. In addition to private and rental boats, 45% of bluefish were caught from shore and 7% from party and charter boats (Table 4) during the 1994-2003 period.

Because of the importance of bluefish to recreational anglers, a short-term decline in expenditures by these anglers as a result of bluefish management measures would impact the sales, service, and manufacturing sectors of the recreational fishing industry. The number of fishing trips as reported by anglers in the intercept survey (estimates are not expanded) indicating that the primary species sought was bluefish in the Atlantic coast has decreased from 5.8 million in 1991 to 1.3 million in 2000, the lowest value in the 1991-2002 time series. In 2001 and 2002 anglers reported approximately 1.9 million trips targeting bluefish on both years (Table 5).

The total value recreational anglers place on the opportunity to fish can be divided into actual expenditures and a non-monetary benefit associated with satisfaction. In other words, anglers incur expenses to fish (purchases of gear, bait, boats, fuel, etc.), but do not pay for the fish they catch or retain nor for the enjoyment of many other attributes of the fishing experience (socializing with friends, being out on the water, etc.). Despite the obvious value of these fish and other attributes of the experience to anglers, no direct expenditures are made for them, hence the term "non-monetary" benefits. In order to determine the magnitude of non-monetary benefits, a demand curve for recreational fishing must be estimated. In the case of bluefish, as with many recreationally sought species, a demand curve is not available. Part of the problem in estimating a demand curve is due to the many and diverse attributes of a recreational fishing experience: socializing, weather, ease of access and site development, catch rates, congestion, travel expenditures, and costs of equipment and supplies, among others. A recreational angler's willingness-to-pay for bluefish must be separated from the willingness-to-pay for other attributes of the experience. Holding all other factors constant (expenditures, weather, etc.), a decrease in the catch (or retention rate) of bluefish would decrease demand and an increase in the catch (or retention rate) should increase demand. Each change will have an associated decrease/increase in expenditures and non-monetary benefits.

Recreational fishing contributes to the general well being of participants by affording them opportunities for relaxation, experiencing nature, and socializing with friends. The potential to catch and ultimately consume fish is an integral part of the recreational experience, though studies have shown that non-catch related aspects of the experience are often as highly regarded by anglers as the number and size of fish caught. Since equipment purchase and travel related expenditures by marine recreational anglers have a positive effect on local economies, the maintenance of healthy fish stocks is important to fishery managers.

6.4.1.2.1 Economic impact of the recreational fishery

Anglers' expenditures generate and sustain employment and personal income in the production and marketing of fishing-related goods and services. In 1998, saltwater anglers from Maine through Virginia spent an estimated $903.3 million on trip-related goods and services (Table 6; Steinback and Gentner 2001). Private/rental boat fishing comprised the majority of these expenditures ($561.8 million), followed by shore fishing ($259.8 million) and party/charter fishing ($81.7 million). Survey results indicate that the average trip expenditure 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. Adjusted average expenditures in 2003 dollars are $75.77 for party/charter boat trips, $53.53 for private/rental boat trips, and $36.66 for shore trips.[1] Trip-related goods and services included expenditures on private transportation, public transportation, food, lodging, boat fuel, party/charter fees, access/boat launching fees, equipment rental, bait, and ice. Unfortunately, estimates of trip expenditures specifically associated with bluefish were not provided in the study. However, if average trip expenditures are assumed to be constant across fishing modes, estimates of the expenditures associated with bluefish can be determined by multiplying the proportion of total trips that targeted bluefish by mode (expanded estimates; Table 7) by the total estimated trip expenditures from the Steinback and Gentner study. According to this procedure, anglers fishing for bluefish from Maine through Virginia spent an estimated $76.63 million on trip-related goods and services in 2003. Approximately $31.3 million was spent by anglers fishing aboard private/rental boats, $40.3 million by those fishing from shore, and $5.0 million by anglers fishing from party/charter boats. Apart from trip-related expenditures, anglers also purchase fishing equipment and other durable items that are used for many trips (i.e., rods, reels, clothing, boats, etc.). Although some of these items may be purchased with the intent of targeting/catching specific species, the fact that these items can be used for multiple trips creates difficulty when attempting to associate durable expenditures with particular species. Therefore, only trip-related expenditures were used in this assessment.

The bluefish expenditure estimates can be used to reveal how anglers' expenditures affect economic activity such as sales, income, and employment from Maine through Virginia. During the course of a fishing trip, anglers fishing for bluefish purchase a variety of goods and services, spending money on transportation, food, boat fuel, lodging, etc. The sales, employment, and income generated from these transactions are known as the direct effects of anglers' purchases. Indirect and induced effects also occur because businesses providing these goods and services also must purchase goods and services and hire employees, which in turn, generate more sales, income, and employment. These ripple effects (i.e., multiplier effects) continue until the amount remaining in a local economy is negligible. A variety of analytical approaches are available for determining these impacts, such as input-output modeling. Unfortunately, a model of this kind was not available. Nonetheless, the total sales impacts can be approximated by assuming a multiplier of 1.5 to 2.0 for the Northeast Region. Given the large geographical area of the Northeast Region, it is likely that the sales multiplier falls within those values. As such, the total estimated sales generated from anglers that targeted bluefish in 2003 was likely to be between $114.95 million ($76.63 million * 1.5) and $153.26 million ($76.63 million * 2.0) from Maine through Virginia. A similar procedure could be used to calculate the total personal income, value-added, and employment generated from bluefish anglers' expenditures, but since these multiplier values have been quite variable in past studies, no estimates were provided here.

6.4.1.2.2 Value of the fishery to anglers

Behavioral models that examine travel expenditures, catch rates, accessibility of fishing sites, and a variety of other factors affecting angler enjoyment can be used to estimate the "non-monetary" benefits associated with recreational fishing trips. Unfortunately, a model of this kind does not exist specifically for bluefish. Data constraints often preclude researchers from designing species-specific behavioral models. However, a recent study by Hicks, *et. al.* (1999) estimated the value of access across states in the Northeast region (that is, what people are willing to pay for the opportunity to go marine recreational fishing in a particular state in the Northeast) and the marginal value of catching fish (that is, what people are willing to pay to catch an additional fish). Table 8 shows, on average, the amount anglers in the Northeast states (except for North Carolina which was not included in the study) are willing to pay for a one-day fishing trip. The magnitude of the values in Table 8 reflect both the relative fishing quality of a state and the ability of anglers to choose substitute sites. The willingness to pay is generally larger for

[1]The 1998 estimate of expenditures by mode were adjusted to its 2003 equivalent by using the Bureau of Labor Statistics Consumer Price Index.

larger states, since anglers residing in those states may need to travel significant distances to visit alternative sites. Several factors need to be considered when examining the values in Table 8. First, note that Virginia has relatively high willingness to pay estimates given its relative size and fishing quality characteristics. In this study, Virginia defines the southern geographic boundary for a person's choice set, a definition that is arbitrary in nature. For example, an angler in southern Virginia is likely to have a choice set that contains sites in North Carolina. The regional focus of the study ignores these potential substitutes and therefore the valuation estimates may be biased upward (Hicks, *et. al.* 1999). Second, the values cannot be added across states since they are contingent upon all of the other states being available to the angler. If it were desirable to know the willingness to pay for a fishing trip within Maryland and Virginia, for example, the welfare measure would need to be recalculated while simultaneously closing the states of Maryland and Virginia.

Assuming the average willingness to pay values shown in Table 8 are representative of trips that targeted bluefish, these values can be multiplied by the number of trips that targeted bluefish by state to derive welfare values for bluefish. Table 9 shows the aggregate estimated willingness to pay by state for anglers that targeted bluefish in 2003 (i.e., the value of the opportunity to go recreational fishing for bluefish). New York, New Jersey, and Massachusetts were the states with the highest estimated aggregate willingness to pay for bluefish day trips. Once again, note that the values cannot be added across states since values are calculated contingent upon all of the other states being available to the angler.

In the Hicks *et. al.* (1999) study, the researchers also estimated welfare measures for a one fish change in catch rates for 4 different species groups by state. One of the species groups was "small game," of which bluefish is a component. Table 10 shows their estimate of the welfare change associated with a one fish increase in the catch rate of all small game by state. For example, in Massachusetts, it was estimated that all anglers would be willing to pay $3.84 (the 1994 value adjusted to its 2003 equivalent) extra per trip for a one fish increase in the expected catch rate of all small game. The drawback to this type of aggregation scheme is that the estimates relate to the marginal value of the entire set of species within the small game category, rather than for a particular species within the grouping. As such, it is not possible to estimate the marginal willingness to pay for a one fish increase in the expected catch rate of bluefish from the information provided in Table 10.

However, it is possible to calculate the aggregate willingness to pay for a 1 fish increase in the catch rate of small game across all anglers. Assuming that anglers will not adjust their trip taking behavior when small game catch rates at all sites increase by one fish, the estimated total aggregate willingness to pay for a one fish increase in the catch rate of small game in 2003 was $100.34 million (total trips (27.95 million) x average per trip value ($3.59)). This is an estimate of the total estimated welfare gain (or loss) to fishermen of a one fish change in the average per trip catch rate of all small game. Although it is unclear how much of this welfare measure would be attributable to bluefish, the results show that small game in general, in the Northeast, are an extremely valuable resource.

Although not addressed here, recreational fishing participants and nonparticipants may also hold additional intrinsic value out of a desire to be altruistic to friends and relatives who fish or to bequeath a fishery resource to future generations. A properly constructed valuation assessment would include both use and intrinsic values in the estimation of total net economic value. Currently, however, there have been no attempts to determine the altruistic value (i.e., non-use value) of bluefish in the Northeast.

6.4.1.2.3 Marine recreational descriptive statistics

In 1994, sportfishing surveys were conducted by NMFS in the Northeast Region (Maine through Virginia) to obtain demographic and economic information on marine recreational fishing participants from Maine through 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. 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 anglers were younger than Mid-Atlantic 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 indicate 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.

On average, it was found that New England anglers spent more on boat fees, lodging, and travel expenses than Mid-Atlantic anglers. "During the follow-up telephone portion of the survey, anglers that fished from a party/charter boat or a private/rental boat were asked how much they personally spent on boat fees for the trip in which they were interviewed. Boat fees averaged $61.00 per trip in New England and $51.00 in the Mid-Atlantic." Two categories of lodging expenses were obtained. "The first category (Lodging (>0)) is an estimate of the mean lodging expense per night for those anglers who indicated they spent at least one night away from their residence and personally incurred a lodging cost. Subsequently, the second category (Lodging (all)) is an estimate of mean lodging expenses across all overnight anglers, regardless of whether an angler incurred a lodging expense. Per night costs were estimated by dividing total lodging costs for the trip by the number of days the angler was away from his/her residence on the trip." Anglers that personally incurred lodging expenses spent $58.00 on average per night in New England and $47.00 per night in the Mid-Atlantic. "Across all overnight anglers, per night lodging expenses in New England averaged $29.00 and in the Mid-Atlantic, $21.00." Anglers expenditures also included money spent on gas, travel fares, tolls, and ferry and parking fees. "One-way travel expenditures averaged $11.00 in New England and $8.00 in the Mid-Atlantic per trip. Therefore, if arrival costs are tantamount to departure costs, average round-trip travel expenses would approximate $22.00 in New England and $16.00 in the Mid-Atlantic."

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 11. 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 12, 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 13). "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."

6.4.2 Description of the Areas Fished

The baseline impact of the bluefish commercial fishery on the environment is fully described in 6.2.1.2 of this EA.

NMFS VTR data indicate that a total of 12,574 trips caught 4.5 million pounds of bluefish from Maine to North Carolina in 2003. Four major gear types accounted for over 99.7% of the total catch. The majority of the trips and catch were made by gillnets (38 percent of trips, 78 percent of catch), followed by bottom otter trawls, fish (42 percent of trips, 16 percent of catch), and handlines (15 percent of trips, 3 percent of catch). There were eight statistical areas which, individually, accounted for greater than 5 percent of the bluefish catch in 2003 (Table 14). Collectively, these eight areas accounted for 91 percent of the bluefish catch and 78 percent of the trips that caught bluefish. There were five statistical areas which, individually, accounted for greater than 5 percent of the trips which caught bluefish in 2003 (Table 14). Collectively, these five areas accounted for 72 percent of the trips that caught bluefish and 38 percent of the 2003 bluefish catch.

6.5 Human Environment

6.5.1 Port and Community Description

The ports and communities that are dependent on bluefish are fully described in the 2002 Bluefish Specification Document (section 4.3; MAFMC 2001).

To examine recent landings patterns among ports, 2003 NMFS dealer data are used. The top commercial landings ports for bluefish by pounds landed are shown in Table 15. A "top port" is defined as any port that landed at least 100,000 pounds of bluefish. Eleven ports reported bluefish landings of more than 100,000 pounds ranging from over 2.5 million pounds in Wanchese, North Carolina to over 150,000 in Chatham, Massachusetts. Related data for the recreational fisheries are shown in Table 16. New Jersey ranked as the state with the highest bluefish harvesting (in pounds and number) and catch (number) in 2003. On the other hand, Georgia ranked as the state with the lowest bluefish landings (both pounds and value) in 2003. However, due to the nature of the recreational database (MRFSS), it is inappropriate to disaggregate to less than state levels. Thus port-level recreational data are not shown.

6.5.2 Analysis of Permit Data

Federally Permitted Vessels

Analysis of the Northeastern Federal permit data indicates that there were 4,191 vessels with a commercial and/or recreational 2003 Federal Northeast bluefish permit. A total of 3,370 and 821 Federal commercial and party/charter permits, respectively, had been issued to Northeast region fishing vessels in the 2003 permit year. In addition, 450 vessels in the bluefish fishery had both commercial and recreational permits.

Dealers

According to NMFS dealer landings data, there were 204 dealers who bought bluefish in 2003 from Maine through North Carolina. They were distributed by state as indicated in Table 17. Employment data for these specific firms are not available. In 2003 these dealers bought $1.9 million worth of bluefish.

7.0 ENVIRONMENTAL CONSEQUENCES – ANALYSIS OF (DIRECT AND INDIRECT) IMPACTS

7.1 Impacts of Alternative 1 on the Environment (Preferred/Status Quo/No Action Alternative)

7.1.1 Biological Impacts

The Council and the Board recommended a coastwide TAC of 34.215 million lb (15.519 million kg) for 2005. This is the same TAC that was implemented for 2004. The derivation of the TAL and its allocation to the commercial and recreational sectors are fully described in section 5.0 of the EA. The preferred alternative would set the TAL at 30.853 million lb (13.994 million kg). This limit is 3% lower than the 2004 limit.

This alternative includes a preliminary adjusted commercial quota of 10.398 million lb (4.716 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 20.157 million lb (9.143 million kg), and a RSA of 297,750 pounds (135,057 kg) for 2005.

The 2003 assessment of the bluefish stock indicated that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. This assessment indicated that the stock was overfished but overfishing was not occurring (Lee 2003). The 2002 fishing mortality rate for bluefish was below the target of 0.41 for 2003 and the target of 0.31 for 2004. This assessment indicated

that the status of the stock was improving as of 2002 to a level close to the biomass threshold. More specifically, the total stock biomass for 2002 was estimated at 113.648 million lb (51.550 million kg) or 96% of the biomass threshold (i.e., $\frac{1}{2}B_{msy}$ = 118.498 million lb or 53.750 million kg) relative to Amendment 1 overfishing definitions.

The bluefish measures should not result in any negative impacts on other fisheries. Bluefish is primarily a recreational fishery caught by hook and line. The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines. This fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, and spiny dogfish. Given the mixed species nature of the bluefish fishery, incidental catch of other species does occur. The preliminary adjusted commercial quota for 2005 (adjusted for RSA) is less than 1% lower than the 2004 commercial quota. The NMFS Quota Report as of the week ending July 24, 2004 indicates that overall bluefish commercial landings are within the overall commercial quota for 2004. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2005. As such, an increase in effort in the directed commercial bluefish fishery is not expected; thus, the incidental catch rates of other species will likely not change.

The Council and Board decided to set the 2005 commercial allocation equal to the largest amount allowed by Amendment 1 regulations (section 5.0 of the EA). In the absence of a quota transfer, the commercial fishery would receive a 5.194 million lb (2.355 million kg; section 5.0 of the EA) adjusted quota for 2005. This would represent a reduction of 28% from the 2003 landings (7.239 million lb or 3.283 million kg) and a 50% reduction from the 2004 adjusted quota (10.354 million lb or 4.696 million kg). As indicated in section 5.1 of the EA, the commercial quota allocation under this alternative incorporates a transfer 5.254 million lb (2.383 million kg) from the recreational sector to the commercial sector.

A significant portion of bluefish commercial landings are bycatch (MAFMC 1990). If the transfer from the recreational fishery to the commercial fishery was not made, large quantities of bluefish would be discarded by commercial fishermen. Therefore, the mortality of bluefish would not be reduced and fish would be wasted.

A recreational harvest limit was established for the first time in 2000 with the implementation of Amendment 1. A recreational harvest limit of 20.157 million lb (9.143 million kg) in 2005 would be approximately 44% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 5% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that have occurred since 2000. Since it is likely that landings will not exceed the recreational harvest limit under the preferred alternative, the preferred alternative is likely to result in additional positive impacts on the bluefish stock.

The overall bluefish TAL includes a RSA of 297,750 pounds (135,057 kg). The results of the research conducted through the RSA program would benefit both the bluefish stock and the bluefish fishery. The exemptions required under the research projects are analyzed in section 7.4. The positive biological impacts of the RSA are expected to be similar across all the alternatives evaluated in this document.

The overall TAC/TAL under this alternative were recommended by the Monitoring Committee and are likely to achieve the target F in 2005. Overall this alternative is not expected to adversely affect the bluefish stock or the stocks of other species.

7.1.2 Habitat Impacts

The preferred bluefish alternative (status quo) includes a preliminary adjusted commercial quota of 10.398 million lb (4.716 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 20.157 million lb (9.143 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. The bluefish measures should not result in any negative impacts on EFH. Bluefish is primarily a recreational fishery caught by hook and line. The principal commercial gears used to harvest bluefish include bottom otter trawls, gillnets, and handlines. The nature of impacts by these gear on the ocean bottom habitat is described in section 6.2.1.2 of the EA. It was concluded in section 6.2.1.2 of the EA that the bluefish fishery does not have an adverse impact on EFH. In order to judge the impact of the alternatives it can be assumed that the extent of impacts to habitat is related to changes in fishing effort, relative to the status quo.

The 2005 preferred alternative is the status quo commercial quota. It is difficult to predict whether the retention of the 2004 quota results in a change in fishing effort on EFH. Several possibilities exist that would influence fishing effort. Potentially, the identical commercial quota could result in the same number of fishing trips, resulting in no change in habitat impacts. Conversely, an increase in species abundance could result in an increased catch-per-unit-effort. States could also establish higher trip limits, which would result in a lower number of fishing trips landing a larger volume of fish. Since it was concluded that the bluefish fishery does not result in any baseline impacts to EFH, fishing effort remaining the same or decreasing should have no impact on EFH, relative to the status quo. Table 18 represents the range of potential habitat impacts that could occur under each of the various quota alternatives.

Since the preferred commercial quota meets the FMP objective of increasing yields while ensuring that overfishing does not occur, and due to the lack of evidence to suggest that fishing effort on bottom habitats will actually increase due to this action, this action minimizes the adverse effects of fishing on EFH to the extent practicable, pursuant to section 305 (a)(7) of the MSFCMA.

7.1.3 Impacts on Endangered and Other Protected Species

Commercial capture of bluefish occurs predominately with gillnets, bottom otter trawls, and handlines. All of these are listed as Category III fisheries as defined in the NMFS 2003 list of fisheries (68 FR 41725, July 15, 2003) with the exception of the gillnet fishery. Category III fisheries are not associated with any documented serious injuries or mortality of marine mammals. All fishing gear are required to meet gear restrictions under the Atlantic Large Whale Take Reduction Plan, Harbor Porpoise Take Reduction Plan, MMPA, and the ESA.

Bluefish landings recorded in the dealer weighout data as coming from gillnets may be harvested through the Mid-Atlantic coastal or Northwest sink gillnet fisheries. These fisheries are classified as Category I. Marine mammals species injured or killed by Mid-Atlantic coastal gillnets include humpback whale, minke whale, bottlenose dolphin, harbor porpoise, harbor seal, harp seal, long-finned pilot whale, short-finned pilot whale, white-sided dolphin, and common dolphin. Marine mammals species injured or killed by Northeast sink gillnets include North Atlantic right whale, humpback whale, minke whale, killer whale, white-sided dolphin, bottlenose dolphin, harbor porpoise, harbor seal, gray seal, common dolphin, fin whale, spotted dolphin, false killer whale, and harp seal.

Prior to 2001, the North Carolina inshore gillnet fishery was classified as a Category III fishery. This change resulted from an evaluation of NMFS Sea Sampling data which demonstrated that the gillnet gear incidentally injured and killed Atlantic bottlenose dolphin (WNA stock) during 1993-1997. Based on data presented in the proposed list of fisheries for 2001, of the12 Atlantic bottlenose dolphins which died as a result of fishery interactions, 8 bore evidence of possible gill net interactions. Further evaluation of these data resulted in the conclusion that serious injury and mortality of bottlenose dolphin from the North

Carolina inshore gillnet fishery is estimated to be between 1 and 50 percent of the PBR level. As such, this fishery was placed under Category II.

Protected species are discussed in section 6.3 of the EA. The range of these species overlaps with bluefish. As such, a potential for incidental catch always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammals or abundances of endangered species, and NMFS has concluded in previous consultations that implementation of this FMP will not have any adverse impact upon these populations.

The measures under this alternative do not contain major changes to existing management measures. As such, overall fishing effort should not change or decrease (Table 18). Therefore, this alternative is not expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries, and will have no adverse impact on marine mammals or other protected resources.

7.1.4 Socioeconomic Impacts

The overall TAL under this alternative is identical to the TAL under Alternatives 2 and 3 and would likely achieve the target F in 2005. The difference between this alternative and Alternatives 2 and 3 relates to the manner in which the overall TAL is allocated to the commercial and recreational components of the bluefish fishery (section 5.0 of the EA).

This alternative includes a preliminary adjusted commercial quota of 10.398 million lb (4.716 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 20.157 million lb (9.143 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. Under this alternative, the allocation to the commercial and recreational fisheries are less than 1% and 5% lower than the commercial quota and recreational harvest limits for 2004, respectively.

The commercial quota allocation under this alternative would provide commercial fishermen with the same fishing opportunities in 2005 compared to 2004. Stable or increased landings from one year to the next are desirable from both a management and industry perspective. Drastic reductions in the quota from one year to the next could lead to increased levels of noncompliance by both commercial and recreational fishermen. A stable landings pattern would allow fishermen, processors, party/charter boat operators, equipment and bait suppliers to make business decisions.

As indicated in section 5.0 of the EA, the commercial quota allocation under this alternative incorporates a transfer 5.254 million lb (2.383 million kg) from the recreational sector to the commercial sector. In the absence of a quota transfer, the commercial fishery would receive a 5.194 million lb (2.355 million kg) adjusted quota for 2005. This would represent a reduction of 28% from the 2003 landings (7.239 million lb or 3.283 million kg) and a 50% reduction from the 2004 adjusted quota (10.354 million lb or 4.696 million kg). Table 1 indicates that for the 1994 to 2003 period, recreational landings have ranged from 8.253 million lb (3.743 million kg) to 15.541 million lb (7.049 million kg; averaging 12.565 million lb or 5.699 million kg). In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in recreational landings it is expected that the recreational sector will land less than 83% of the recreational harvest limit for 2005. As such, the Council and Board decided to allow for a transfer and to set the 2005 commercial allocation equal to the largest amount allowed by Amendment 1 regulations.

New quotas alone have relatively limited social impacts. The changes in social structure and cultural fabric that may have occurred under implementation of limited access are already largely in place. The major impact of quota reductions is on profitability. Only where there is a significant reduction in net revenues or in the ability to meet costs are substantial social impacts likely. The 2005 commercial quota under the preferred alternative will be allocated as indicated in Table 19.

A description of ports and communities is found in the 2002 Bluefish Specifications Document. The "top ports" that landed bluefish in 2003 are identified in section 6.5.1 of the EA. McCay and Cieri (2000) did not report considerable or widespread gear specialization for bluefish. Gear that contributed to bluefish landings included handlines, drift and sink gillnets, beach seines, and various other gear. However, the value of bluefish to total port landings was small in 1998 (4.6% in Freeport, NY; 4.2% in Mattituck and Greenport, NY; 2.1% in Montauk, NY; 5.2% in Shinnecock and Hampton Bay, NY; 0.2% in Cape May, NJ; less than 2% in Wildwood, NJ; less than 0.1% in Cumberland County, NJ; 0.2% in Delaware; 0.3% in Ocean City, MD; 0.1% in Chesapeake, Bay; 0.7% in Virginia Beach and Lynhaven, VA; 0.4% in Hampton and Seaford, VA; 0.6% in Northampton County, VA; 0.5% in Accomack County, VA; 6.4% in Dare County, NC). McCay and Cieri (2000) also report landings for bluefish in Ammagansett, NY; Brooklyn, NY; Belford and Point Pleasant, NJ; Barnegat Light, NJ; Cape May County, NJ; York County, VA; Carteret County, NC; Hyde County, NC; Halifax County, NC; and Columbus County, NC.

Commercial Impacts

Vessels affected under the 2005 recommended commercial quota harvest levels (Least restrictive commercial alternative; Preferred Alternative)

The analysis of the harvest levels under this alternative indicates that the economic impacts ranged from no change in revenue for 548 vessels to revenue losses of more than 5% for 50 vessels. More specifically, 13 vessels were projected to incur in revenue losses of 5-9%, 11 vessels of 10-19%, 4 vessels of 20-29%, and 22 vessels of 30-39%. In addition, 255 vessels were projected to incur in revenue losses of less than 5% (Table 20). Since there is a number of vessels that could experience substantial revenue reductions under this alternative, additional analysis regarding these vessels is presented below (e.g., evaluation of permit status, geographic distribution of permitted vessel). A detailed description of how economic impacts were estimated is presented in sections 3.1 and 5.0 of the RIR/IRFA.

Of the 50 vessels projected to have revenue reductions of more than 5%, 45 (90%) hold some combination of Federal permits (Table 21). It is possible that the remaining 5 (10%) vessels that do not show having any Federal permits in 2003 have opted for fishing in state waters only and as such, did not renew their Federal permits in 2003, or have ceased business.

Many of these vessels hold permits in various fisheries (Table 22) -- especially commercial permits for multispecies, squid-mackerel-butterfish, dogfish, herring, and monkfish. As a result, they have access to some alternative fisheries, although some like multispecies and dogfish are already under heavy regulation and are likely to have increasingly stringent catch limits in the near future.

The majority of the 45 impacted vessels with Federal permits have home port in New York. The principal ports of landing for these vessels are also located in New York (Table 23).

Although the bluefish quota is allocated to the individual states, vessels are not necessarily constrained to land in their home state. It is useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. Table 23 indicates that 100% of these vessels are likely to land in their home port state. This information is important because impacts will occur both in the community of residence and in the community where the vessel's catch is landed and sold. The average length of these vessels by principal port is 32 feet and the GRT is 13 (Table 23). Larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes of product to remain profitable.

Most commercial vessels showing revenue reductions of more than 5% in New York state are located in Suffolk county, with the port of Montauk showing a large vessel concentration (Table 24). If communities

having larger numbers of impacted vessels also have a larger total numbers of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole. In addition to the economic analysis presented above, South Atlantic Trip Ticket Report data were evaluated to further assess the economic impacts associated with the change in revenue due to the proposed quota level in 2005 compared to landings in 2003. This evaluation indicated that on average, reduction in revenues due to potential change in the landings level are expected to be small for fishermen that land bluefish in North Carolina (less than 1%). No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state. A detailed analysis of the potential impacts to bluefish participants is presented in section 5.1 of the RIR/IRFA.

As explained in section 5.1 of the RIR/IRFA, the changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

Recreational Impacts

Under Alternative 1, the bluefish 2005 recreational harvest limit would be 20.157 million lb (9.143 million kg). This limit would be approximately 44% above the above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 5% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that have occurred since 2000.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the fishing regulations. However, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will have any negative effects on recreational fishermen or affect the demand for party/charter boat trips. This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit. As such, the transfer is not expected to affect recreational landings in 2005.

Other Impacts

Effects of the research set-aside

The economic analysis regarding changes in the commercial TALs for the bluefish fishery conducted under this alternative, as well as the other alternatives analyzed, incorporated adjustments for the quota specifications for 2005 (Alternative 7.4.2). That is, the RSA for bluefish was deducted from the initial overall TAL for 2005 to derive adjusted 2005 quotas. Therefore, the threshold analyses conducted under each alternative have accounted for overall reductions in fishing opportunities in 2005 available to all vessels typically participating in this fishery due to RSA. This methodology would overestimate potential revenue losses for vessels participating in these fisheries, as the overall TAL for the fishery was adjusted downward due to RSA that will be available only to vessels participating in RSA projects (i.e., specifically

for vessels fishing in states where the quota have constrained landings in the last few years). Since the bluefish RSA is made available to vessels participating in the RSA projects only, and these vessels have the opportunity to harvest bluefish under the RSA projects as well as under the normal TALs for this species as well, it is possible that the projected revenue losses under the alternatives evaluated could potentially be smaller for some vessels participating in the 2005 RSA projects. This would be particularly true under the assumption that 2005 allocations to a particular state represent harvest constraints to the commercial fishery.

Overall Impacts

The proper management of the bluefish stock through implementation of the management measures described in this specification package will be beneficial to the commercial and recreational fishing communities of the Atlantic coast. By preventing overfishing and allowing stock rebuilding, benefits to the fishing communities will be realized through increased bluefish abundance and subsequent harvests. Although overall there is little port reliance on bluefish commercially, it can be expected that the regulatory measures will have a positive long-term impact on the communities and local economies of these ports. The measures will reduce the chance that the bluefish fishery will be overfished. This will provide long-term benefits to the ports and communities who depend in part on bluefish for employment and income. While some individual fishermen and their families may find the final management measures for 2005 to have significant impacts, the larger communities and towns in which they live will not.

7.2 Impacts of Alternative 2 on the Environment

7.2.1 Biological Impacts

The derivation of the TAL and its allocation to the commercial and recreational sectors for Alternative 2 are fully described in section 5.0 of the EA. The TAL under this alternative is identical to Alternative 1 except that no transfer is made to the commercial fishery.

Alternative 2 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 5.194 million lb (2.355 million kg), a preliminary adjusted recreational harvest limit of 25.361 million lb (11.503 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. As stated under section 7.1.1 of the EA, this TAL is likely to achieve the target F for 2005, and it would have a positive impact on the bluefish stock.

The bluefish measures should not result in any negative impacts on other fisheries. Bluefish is primarily a recreational fishery caught by hook and line. The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines, and a significant portion of commercial landings are bycatch (MAFMC 1990). The bluefish fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, and spiny dogfish. Given the mixed species nature of the bluefish fishery, incidental catch of other species does occur. However, the preliminary adjusted commercial quota for 2005 (adjusted for RSA) under this alternative is 5.207 million lb (2.361 million kg) or 50% below the adjusted commercial quota for 2004 (10.354 million lb or 4.969 million kg). The commercial quota for 2005 would decrease overall commercial bluefish landings by approximately 2.044 million lb (0.927 million kg) compared to 2003 landings (7.239 million lb or 3.283 million kg). In addition, this adjusted commercial quota under this alternative is 5.204 million lb (2.360 million kg) or 50% lower than the preferred adjusted commercial quota (Alternative 1; status quo). This 2005 commercial quota would allow commercial fishermen to land fewer bluefish compared to the status quo commercial alternative (preferred/no action alternative). As such, effort in the directed bluefish fishery could decrease and the incidental catch rates of other species could also decrease.

The best information available indicates that a landings limit of 30.853 million lb (13.994 million kg) could achieve the target fishing mortality rate in 2005. However, the commercial quota allocation under this

alternative would provide commercial fishermen with a substantial decrease in fishing opportunities in 2005 compared to 2004. A significant portion of bluefish commercial landings are bycatch and as such, the lack of transfer to the commercial fishery could result in large quantities of bluefish discarded by fishermen. The mortality of bluefish would not be reduced and fish would be wasted.

A recreational harvest limit of 25.361 million lb (11.503 million kg) in 2005 would be approximately 82% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and approximately 20% higher than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that commercial bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that have occurred since 2000. Since it is likely that landings will not exceed the recreational harvest limit under this alternative, it is likely to result in additional positive impacts on the bluefish stock.

The overall TAL under this alternative would likely achieve the target F in 2005. However, this alternative was not chosen by the Council and Board because it does not provide the best allocation to the commercial and recreational sectors considering recent fishing practices. In addition, this alternative could result in more bluefish being discarded.

7.2.2 Habitat Impacts

Alternative 2 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 5.194 million lb (2.355 million kg), a preliminary adjusted recreational harvest limit of 25.361 million lb (11.503 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. The bluefish measures should not result in any negative impacts on EFH. Bluefish is primarily a recreational fishery caught by hook and line. The principal commercial gears used to harvest bluefish include bottom otter trawls, gillnets, and handlines. The nature of impacts by these gear on the ocean bottom habitat is described in section 6.2.1.2 of the EA. It was concluded in section 6.2.1.2 of the EA that the bluefish fishery does not have an adverse impact on EFH. In order to judge the impact of the alternatives it can be assumed that the extent of impacts to habitat is related to changes in fishing effort, relative to the status quo.

Alternative 2 includes a lower commercial quota than the preferred alternative. It is difficult to predict whether a decrease in the commercial quota would result in a decrease in fishing effort on EFH. Several possibilities exist that would influence fishing effort. Potentially, a smaller commercial quota could result in a smaller number of fishing trips, or shorter fishing trips. Similarly, with increased species abundance, CPUE could increase which would result in the same number of tows landing a larger volume of fish. Conversely, a smaller quota could mean that states establish smaller trip limits, which would result in an equal number of fishing trips. Either way, this alternative is not expected to result in an increase in fishing effort. Since it was concluded that the bluefish fishery does not result in any baseline impacts to EFH, a reduction in fishing effort or fishing effort staying the same should have no impact on EFH, relative to the status quo. Table 18 represents the range of potential habitat impacts that could occur under each of the various quota alternatives.

The restrictive commercial quota under this alternative is likely to be more conservative than necessary to achieve the 2005 target exploitation rate. Based on the evidence that the bluefish fishery does not have an adverse effect on habitat, this action will not result in adverse effects to EFH, pursuant to Section 305 (a)(7) of the MSFCMA.

7.2.3 Impacts on Endangered and Other Protected Species

Commercial capture of bluefish occurs predominately with gillnets, bottom otter trawls, and handlines. All of these are listed as Category III fisheries as defined in the NMFS 2003 list of fisheries (68 FR 41725, July 15, 2003) with the exception of the gillnet fishery. Category III fisheries are not associated with any documented serious injuries or mortality of marine mammals. All fishing gear are required to meet gear restrictions under the Large Whale Take Reduction Plan, Harbor Porpoise Take Reduction Plan, MMPA, and the ESA.

Bluefish landings recorded in the dealer weighout data as coming from gillnets may be harvested through the Mid-Atlantic coastal or Northwest sink gillnet fisheries. These fisheries are classified as Category I. Marine mammals species injured or killed by Mid-Atlantic coastal gillnets include humpback whale, minke whale, bottlenose dolphin, harbor porpoise, harbor seal, harp seal, long-finned pilot whale, short-finned pilot whale, white-sided dolphin, and common dolphin. Marine mammals species injured or killed by Northeast sink gillnets include North Atlantic right whale, humpback whale, minke whale, killer whale, white-sided dolphin, bottlenose dolphin, harbor porpoise, harbor seal, gray seal, common dolphin, fin whale, spotted dolphin, false killer whale, and harp seal.

Prior to 2001, the North Carolina inshore gillnet fishery was classified as a Category III fishery. This change resulted from an evaluation of NMFS Sea Sampling data which demonstrated that the gillnet gear incidentally injured and killed Atlantic bottlenose dolphin (WNA stock) during 1993-1997. Based on data presented in the proposed list of fisheries for 2001, of the12 Atlantic bottlenose dolphins which died as a result of fishery interactions, 8 bore evidence of possible gill net interactions. Further evaluation of these data resulted in the conclusion that serious injury and mortality of bottlenose dolphin from the North Carolina inshore gillnet fishery is estimated to be between 1 and 50 percent of the PBR level. As such, this fishery was placed under Category II.

Protected species are discussed in section 6.3 of the EA. The range of these species overlap with bluefish. As such, a potential for incidental catch always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammal or abundances of endangered species, and NMFS has concluded in the previous consultations that implementation of this FMP will not have any adverse impact upon these populations.

NMFS is currently developing a take reduction plan to reduce injuries and deaths to Atlantic bottlenose dolphins caused by fishing gear in Federal waters of the Mid- and South Atlantic. A Bottlenose Dolphin Take Reduction Team was convened in November of 2001 under authority of the MMPA. The team consists of more than 40 stakeholders including those in the commercial and recreational fishing industry, the conservation community, Federal and state governments, academic and scientific organizations, fishery management councils, and interstate fisheries commissions. The team was formed to develop recommendations to reduce deaths and injuries to bottlenose dolphins. Category II fisheries under the MMPA received a high priority with respect to observer coverage and consideration for measures under the Atlantic Bottlenose Dolphin Take Reduction Plan.

The TAL under this alternative is identical to Alternative 1 except that no transfer is made to the commercial fishery. The measures under this alternative could result in a decrease in fishing effort (Table 18). As such, this alternative is not expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries, and will have no adverse impact on marine mammals or other protected resources.

7.2.4 Socioeconomic Impacts

The same overall discussion regarding the social impacts of quotas and characterization of the bluefish fisheries by port and community presented under Alternative 1 (section 7.1.4 of the EA) also applies here.

The overall TAL under this alternative is identical to the TAL under Alternatives 1 and 3 except that no transfer is made to the commercial fishery.

Alternative 2 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 5.194 million lb (2.355 million kg), a preliminary adjusted recreational harvest limit of 25.361 million lb (11.503 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005.

The state-by-state quota allocation for 2005 under Alternative 2 is shown in Table 19. The commercial quota allocation under this alternative would provide commercial fishermen with substantially lower (i.e., 50%) fishing opportunities in 2005 compared to 2004.

Commercial Impacts

Vessels affected under the most restrictive alternative (Alternative 2)

The analysis of the harvest levels under this alternative indicates that the economic impacts ranged from small to large revenue losses. According to Northeast dealer data, 93 vessels were projected to incur revenue losses of more than 5%. More specifically, 21 vessels were projected to incur in revenue losses of 5-9%, 16 vessels of 10-19%, 19 vessels of 20-29%, 11 vessels of 30-39%, 3 vessels of 40-49%, and 23 vessels of 50% or more. In addition, 460 vessels were projected to incur in revenue losses of less than 5% and 300 vessels were projected to have no change in revenue (Table 25). Since there is a number of vessels that could experience substantial revenue reductions under this alternative, additional analysis regarding these vessels is presented below (e.g., evaluation of permit status, geographic distribution of permitted vessel). Since Alternative 2 is the most restrictive alternative, impacts of other alternatives will be less than the impacts under this alternative. A detailed description of how economic impacts were estimated is presented in sections 3.1 and 5.0 of the RIR/IRFA.

Of the 93 vessels projected to have revenue reductions of more than 5%, 85 (91%) hold permits in other fisheries (Table 26). It is possible that the remaining 8 (9%) vessels that do not show having any Federal permits in 2003 have opted for fishing in state waters only and as such, did not renew their Federal permits in 2003, or have ceased business. In particular, most vessels have dogfish, squid-mackerel-butterfish and multispecies permits (Table 27). As a result, they have access to some alternative fisheries, although some like multispecies and dogfish are already under heavy regulation and are likely to have increasingly stringent catch limits in the near future.

The majority of the 85 vessels with Federal permits for bluefish have home ports in New York, New Jersey, and North Carolina. The principal ports of landing for these vessels are mainly located in New York (Table 28).

Although the bluefish quota is allocated to the individual states, vessels are not necessarily constrained to land in their home state. It is useful, therefore, to examine the degree to which vessels from different states make it a practice to land in states other than their home state. Thus, of the three states home-porting the highest number of vessels projected to have revenue reductions of more than 5% (New York, New Jersey, and North Carolina), vessels in those states are likely to land in their home port state (81 to 100%; Table 28). This information is important because impacts will occur both in the community of residence and in the community where the vessel's catch is landed and sold. The largest vessels are found in New Jersey and North Carolina. Larger vessels often have more options than smaller vessels, due to increased range and more deck space for alternative gear configurations. This can help them to respond to cuts in quota in particular states. They also, however, need larger volumes of product to remain profitable.

As indicated above, most commercial vessels showing revenue reductions of more than 5% are concentrated in New York, New Jersey, and North Carolina (Table 29). Within these states, the most impacted counties are: New York -- Suffolk and New York; North Carolina -- Dare; and New Jersey -- Ocean. Within these counties, some individual ports have concentrations of vessels; in other cases only one or two vessels may be found per port but the overall number in the county is large. Some individual ports with large numbers of impacted vessels are: New York and Montauk, New York; Barnegat Light, New Jersey; and Wanchese, North Carolina. If communities having larger numbers of impacted vessels also have a larger total number of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole.

To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles were constructed. Each profile is based on impacts under the most restrictive possible alternative. The most restrictive alternative is chosen to identify impacted counties because it would identify the maximum number possible and thus include the broadest possible range of counties in the analysis. Reported statistics including demographic statistics, employment, and wages for these counties is presented in section 6.1 of the RIR/IRFA. In addition, a description of important ports and communities are fully described in the 2002 Bluefish Specifications Document. Recent landings patterns among ports is examined in section 6.5.1 of the EA.

In addition to the economic analysis presented above, South Atlantic Trip Ticket Report data were evaluated to further assess the economic impacts associated with the change in revenue due to the proposed quota level in 2005 compared to landings in 2003. This evaluation indicated that on average, reduction in revenues due to potential change in the landings level is expected to be small for fishermen that land bluefish in North Carolina (6%). No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state. A detailed analysis of the potential impacts to bluefish participants is presented in section 5.2 of the RIR/IRFA.

As explained in section 5.2 of the RIR/IRFA, the changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, given that under this alternative the overall commercial quota in 2005 is substantially lower than the 2004 quota and the 2003 landings, the amount of bluefish that could potentially be transferred among states would be lower than under Alternative 1, thus providing less economic relief.

Recreational Impacts

Under Alternative 2, the bluefish 2005 recreational harvest limit would be 25.361 million lb (11.503 million kg). This limit would be approximately 82% higher than the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 20% larger than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will have any negative effects on recreational fishermen or affect the demand for party/charter boat trips. This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit. The recreational impacts under this alternative are expected to be similar to those described under Alternative 1 (section 7.1.4 of the EA).

7.3 Impacts of Alternative 3 on the Environment

7.3.1 Biological Impacts

The derivation of the TAL and its allocation to the commercial and recreational sectors for Alternative 3 are fully described in section 5.0 of the EA. The overall TAL under Alternative 3 is identical to that under Alternative 1, except that a smaller transfer is made to the commercial fishery (4.337 million lb or 1.967 million kg). This transfer would result in a commercial quota that falls between those specified in Alternatives 1 and 2.

Alternative 3 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 9.490 million lb (4.304 million kg), a preliminary adjusted recreational harvest limit of 21.065 million lb (9.554 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. As stated under section 7.1.1 of the EA, this TAL is likely to achieve the target F for 2005, and it would have a positive impact on the bluefish stock.

The preliminary adjusted commercial quota for 2005 under this alternative is 0.864 million lb less (0.391 million kg) or 8% below the adjusted commercial quota for 2004 (10.354 million lb or 4.696 million kg). In addition, this commercial quota is 0.908 million lb less (0.411 million kg) or approximately 9% lower than the preferred commercial quota (Alternative 1; status quo/no action alternative). The bluefish measures should not result in any negative impacts on other fisheries. Bluefish is primarily a recreational fishery caught by hook and line. The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines. This fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, and spiny dogfish. Given the mixed species nature of the bluefish fishery, incidental catch of other species does occur. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2005. As such, increase in effort in the directed bluefish fishery is not expected, thus, the incidental catch rates of other species will likely not change.

The best information available indicates that a landings limit of 30.853 million lb (13.994 million kg) could achieve the target fishing mortality rate in 2005. However, the commercial quota allocation under this alternative would provide commercial fishermen with a decrease in fishing opportunities in 2005 compared to the preferred alternative (Alternative 1).

The resulting recreational harvest limit would be 21.065 million lb (9.554 million kg) for year 2005. This alternative would result in a 2005 recreational harvest limit that falls between those specified under Alternatives 1 and 2. A recreational harvest limit of 21.065 million lb (9.554 million kg) in 2005 would be approximately 51% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and less than 1% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that have occurred since 2000. Since it is likely that landings will not exceed the recreational harvest limit under this alternative, this alternative is likely to result in additional positive impacts on the bluefish stock.

The overall TAL under this alternative (as well as the other alternatives evaluated in this document) would likely achieve the target F in 2005. However, this alternative was not chosen by the Council and Board because it does not provide the best allocation to the commercial and recreational sectors considering recent fishing practices. In addition, this alternative could result in more bluefish being discarded.

7.3.2 Habitat Impacts

Alternative 3 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 9.490 million lb (4.304 million kg), a preliminary adjusted recreational harvest limit of 21.065 million lb (9.554 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. The bluefish measures should not result in any negative impacts on EFH. Bluefish is primarily a recreational fishery caught by hook and line. The principal commercial gears used to harvest bluefish include bottom otter trawls, gillnets, and handlines. The nature of impacts by these gear on the ocean bottom habitat is described in section 6.2.1.2 of the EA. It was concluded in section 6.2.1.2 of the EA that the bluefish fishery does not have an adverse impact on EFH. In order to judge the impact of the alternatives it can be assumed that the extent of impacts to habitat is related to changes in fishing effort, relative to the status quo.

Alternative 3 includes a lower commercial quota than the preferred alternative. It is difficult to predict whether a decrease in the commercial quota would result in a decrease in fishing effort on EFH. Several possibilities exist that would influence fishing effort. Potentially, a smaller commercial quota could result in a smaller number of fishing trips, or shorter fishing trips. Similarly, with increased species abundance, CPUE could increase which would result in the same number of tows landing a larger volume of fish. Conversely, a smaller quota could mean that states establish smaller trip limits, which would result in an equal number of fishing trips. Either way, this alternative is not expected to result in an increase in fishing effort. Since it was concluded that the bluefish fishery does not result in any baseline impacts to EFH, a reduction in fishing effort or fishing effort staying the same should have no impact on EFH, relative to the status quo. Table 18 represents the range of potential habitat impacts that could occur under each of the various quota alternatives.

The restrictive commercial quota under this alternative is likely to be more conservative than necessary to achieve the 2005 target exploitation rate. Based on the evidence that the bluefish fishery does not have an adverse effect on habitat, this action will not result in adverse effects to EFH, pursuant to Section 305 (a)(7) of the MSFCMA.

7.3.3 Impacts on Endangered and Other Protected Species

Commercial capture of bluefish occurs predominately with gillnets, bottom otter trawls, and handlines. All of these are listed as Category III fisheries as defined in the NMFS 2003 list of fisheries (68 FR 41725, July 15, 2003) with the exception of the gillnet fishery. Category III fisheries are not associated with any documented serious injuries or mortality of marine mammals. All fishing gear are required to meet gear restrictions under the Large Whale Take Reduction Plan, Harbor Porpoise Take Reduction Plan, MMPA, and the ESA.

Bluefish landings recorded in the dealer weighout data as coming from gillnets may be harvested through the Mid-Atlantic coastal or Northwest sink gillnet fisheries. These fisheries are classified as Category I. Marine mammals species injured or killed by Mid-Atlantic coastal gillnets include humpback whale, minke whale, bottlenose dolphin, harbor porpoise, harbor seal, harp seal, long-finned pilot whale, short-finned pilot whale, white-sided dolphin, and common dolphin. Marine mammals species injured or killed by Northeast sink gillnets include North Atlantic right whale, humpback whale, minke whale, killer whale, white-sided dolphin, bottlenose dolphin, harbor porpoise, harbor seal, gray seal, common dolphin, fin whale, spotted dolphin, false killer whale, and harp seal.

Prior to 2001, the North Carolina inshore gillnet fishery was classified as a Category III fishery. This change resulted from an evaluation of NMFS Sea Sampling data which demonstrated that the gillnet gear incidentally injured and killed Atlantic bottlenose dolphin (WNA stock) during 1993-1997. Based on data presented in the proposed list of fisheries for 2001, of the12 Atlantic bottlenose dolphins which died as a result of fishery interactions, 8 bore evidence of possible gill net interactions. Further evaluation of these

data resulted in the conclusion that serious injury and mortality of bottlenose dolphin from the North Carolina inshore gillnet fishery is estimated to be between 1 and 50 percent of the PBR level. As such, this fishery was placed under Category II.

Protected species are discussed in section 6.3 of the EA. The range of these species overlap with bluefish. As such, a potential for incidental catch always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammal or abundances of endangered species, and NMFS has concluded in the previous consultations that implementation of this FMP will not have any adverse impact upon these populations.

NMFS is currently developing a take reduction plan to reduce injuries and deaths to Atlantic bottlenose dolphins caused by fishing gear in Federal waters of the Mid- and South Atlantic. A Bottlenose Dolphin Take Reduction Team was convened in November of 2001 under authority of the MMPA. The team consists of more than 40 stakeholders including those in the commercial and recreational fishing industry, the conservation community, Federal and state governments, academic and scientific organizations, fishery management councils, and interstate fisheries commissions. The team was formed to develop recommendations to reduce deaths and injuries to bottlenose dolphins. Category II fisheries under the MMPA received a high priority with respect to observer coverage and consideration for measures under the Atlantic Bottlenose Dolphin Take Reduction Plan.

The measures under this alternative do not contain major changes to existing management measures. As such, overall fishing effort should not change or decrease (Table 18). Therefore, this alternative is not expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries, and will have no adverse impact on marine mammals or other protected resources.

7.3.4 Socioeconomic Impacts

The same overall discussion regarding the social impacts of quotas and characterization of the bluefish fisheries by port and community presented under Alternative 1 (section 7.1.4 of the EA) also applies here. The overall TAL under this alternative is identical to the TAL under Alternatives 1 and 2. Under this alternative a smaller transfer is made to the commercial fishery compared to Alternative 1.

Alternative 3 would set the TAL at 30.853 million lb (13.994 million kg). This TAL includes a preliminary adjusted commercial quota of 9.490 million lb (4.304 million kg), a preliminary adjusted recreational harvest limit of 21.065 million lb (9.554 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005.

The state-by-state quota allocation for 2005 under Alternative 3 is shown in Table 19. The overall commercial quota allocation under this alternative would provide commercial fishermen with lower (i.e., 9%) fishing opportunities in 2005 compared to the preferred alternative (Alternative 1).

Commercial Impacts

Vessels affected under Alternative 3

According to Northeast dealer data, 61 vessels were projected to incur revenue losses in the range of 5 to 39%. In addition, 244 vessels were projected to incur revenue losses of less than 5% and 548 vessels were projected to have no change in revenue (Table 30). A detailed description of how economic impacts were estimated is presented in sections 3.1 and 5.0 of the RIR/IRFA.

Of the 61 vessels projected to have revenue reductions of more than 5%, 56 (92%) hold some combination of Federal permits (Table 31). It is possible that the remaining 5 (8%) vessels that do not

show having any Federal permits in 2003 have opted for fishing in state waters only and as such, did not renew their Federal permits in 2003, or have ceased business.

In addition to the economic analysis presented above, South Atlantic Trip Ticket Report data were evaluated to further assess the economic impacts associated with the change in quota levels in 2005 compared to landings in 2003. This evaluation indicated that on average, reduction in revenues due to potential change in the landings level is expected to be small for fishermen that land bluefish in North Carolina (less than 2%). No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state. A detailed analysis of the potential impacts to bluefish participants is presented in section 5.3 of the RIR/IRFA.

As explained in section 5.3 of the RIR/IRFA, the changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

Recreational Impacts

Under Alternative 3, the bluefish 2005 recreational harvest limit would be 21.065 million lb (9.554 million kg). This limit would be approximately 51% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and less than 1% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will have any negative effects on recreational fishermen or affect the demand for party/charter boat trips. This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit. The recreational impacts under this alternative are expected to be similar to those described under Alternative 1 (section 7.1.4 of the EA).

7.4 Impacts of Alternative 4 on the Environment

Framework Adjustment 1 to the Bluefish FMP established a program in which data collection projects can be funded in part through a portion of the TAL set aside for research. The purpose of this program is to support research and the collection of additional data that would otherwise be unavailable. Through the RSA program, the Council encourages collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made. Reserving a small portion of the annual harvest of a species to subsidize the research costs of vessel operations and scientific expertise is considered an important investment in the future of the nation's fisheries.

An additional benefit that is sought from this program is the assurance that new data collected by non-governmental entities will receive the peer review and analysis necessary so that data can be utilized to improve the management of public fisheries resources. The annual research set-aside amount may vary between 0 and 3% of a species' quota. For those species that have both a commercial quota and a recreational harvest limit, the set-aside calculation shall be made from the combined TAL.

7.4.1 No Research Set-Aside (No Action)

Under this alternative no RSA would be implemented for 2005.

7.4.1.1 Biological Impacts

Under this alternative there would not be a bluefish RSA implemented for 2005. Because all bluefish landings would count against the overall quota whether or not a RSA is implemented, the biological/ecological impacts would not change relative to the status quo.

7.4.1.2 Habitat Impacts

The basic fishing operations for bluefish are expected to remain the same under this alternative. It is not expected that fishing effort would increase or be redistributed by gear type under this alternative. Therefore, the overall impact to EFH is not expected to change relative to the status quo.

7.4.1.3 Impacts on Endangered and Other Protected Species

Protected species are discussed in section 6.3 of the EA. The range of these species overlaps with bluefish. As such, a potential for incidental kill always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammals or abundances of endangered species, and NMFS has concluded in previous consultations that implementation of this FMP will not have any adverse impact on these populations.

The basic fishing operations for bluefish are not expected to change under this alternative. As such, overall fishing effort should not change. This alternative is not expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries, and will have not adverse impact on marine animals or other protected resources relative to the status quo.

7.4.1.4 Socioeconomic Impacts

Under this alternative there will be no RSA deducted from the overall TAL. Therefore, the initial commercial quota and recreational harvest limit do not need to be adjusted downward as would be done under a situation when a RSA is established.

In fisheries where the entire quota would be taken and the fishery is prematurely closed (i.e., the quota is constraining), the economic and social costs of the program are shared among the non-RSA participants in the fishery. That is, each participant in a fishery that utilizes a resource that is limited by the annual quota relinquishes a share of the amount of quota retained in the RSA quota. However, in the case of bluefish, the overall quota is not constraining landings i.e., the fishery in recent years in the commercial and recreational sectors has been below the commercial TAL and recreational harvest limit, respectively. Therefore, on a coastwide basis, it is not expected that participants in these fisheries will benefit from this alternative. However, it is possible that in specific states where commercial quotas have restrained landings in recent years, the decrease in quota availability associated with a commercial quota that is adjusted downward to account for RSA would not benefit those states.

The socioeconomic discussion of the evaluated commercial quotas discussed in sections 7.1.4, 7.2.4, and 7.3.4 of the EA were based on adjusted commercial quotas that accounted for RSA (Alternative 7.4.2). More specifically, a RSA of 297,750 lb (135,057 kg) was used to derive the adjusted commercial quotas and RHLs in all evaluated alternatives.

Tables 19 and 32 show the potential impacts of the three commercial quotas evaluated for 2005. These impacts are associated with the specific changes associated with the 2005 quota compared to the 2003 landings. For example, under Alternative 1 the states of New York and North Carolina show a potential decrease in landings of 30.77% and 3.92%, respectively, when the 2005 quotas are compared to the 2003 landings. If commercial quotas not adjusted for RSA are considered, the potential decrease in landings

associated with the 2005 quotas compared to the 2003 landings would change from 30.77% to 30.10% in New York and from 3.92% to 2.99% in North Carolina. In other words, an additional 10,524 lb (4,773 kg) and 32,487 lb (14,735 kg) of bluefish would be available to non-research participants in those fisheries under Alternative 1. Therefore, since there is a small additional amount of bluefish available to non-RSA participants under this alternative compared to the status quo (Alternative 4.2), the economic impacts discussed under the commercial quota alternatives adjusted for RSA would be slightly smaller than those discussed under sections 7.1.4, 7.2.4, and 7.3.4 of the EA.

However, under this alternative the collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made will cease.

7.4.2 Specify a Research Set-Aside for 2005 (Status Quo Alternative)

The Council and Board recommended to specify a maximum bluefish RSA of 297,750 lb (135,057 kg) for 2005[2]. There is one research project submitted to NMFS requesting bluefish set-aside for 2005. If the RSA is not used, the RSA quota would be put back into the overall TAL. A summary of the conditionally approved RSA project requesting bluefish for 2005 is presented in Appendix A. This description includes project name, description and duration, amount of RSA requested, and gear to be used to conduct the project. This alternative is the status quo alternative.

7.4.2.1 Biological Impacts

Research has been proposed that would allow for landings of bluefish during a state or Federal closure. Because these landings would count against the overall quota, the biological/ecological impacts would not change relative to the status quo. Additionally, the amount of RSA relative to the overall annual TAL for bluefish is minimal. Since the implementation of Amendment 1 in 2001, commercial and recreational bluefish landings have been below the commercial quota and recreational harvest levels, respectively. In fact, on average, for the 2001-2003 period, commercial landings were 25% below the commercial quota and recreational landings were 46% below the recreational harvest limit. Since the commercial and recreational landings in recent years have been below the established quotas/recreational harvest limits, it is not expected that the RSA will have biological impacts.

However, under this alternative the collaborative efforts between the public, research institutions, and government in broadening the scientific base upon which management decisions are made will continue. The Nation would receive the benefit derived when data or other information about these fisheries is obtained for management or stock assessment purposes that would not otherwise be obtained.

7.4.2.2 Habitat Impacts

The recommended RSA level is 297,750 lb (135,057 kg) for 2005. The basic fishing operations for bluefish are expected to remain the same whether the RSA is implemented or not. In addition, the RSA specifications should not result in an increase in fishing effort or redistribute effort by gear type. Therefore, the overall impact to EFH is not expected to change.

7.4.2.3 Impacts on Endangered and Other Protected Species

Protected species are discussed in section 6.3 of the EA. The range of these species overlaps with bluefish. As such, a potential for incidental kill always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammals or abundances of endangered species, and

[2]The environmental analysis of the of the actual RSA project as a whole is addressed in the 2005 and 2006 Summer Flounder and 2005 Scup and Black Sea Bass Specifications package.

NMFS has concluded in previous consultations that implementation of this FMP will not have any adverse impact on these populations.

The provisions under the RSA will not result in major changes to existing management measures. The basic fishing operations for bluefish are expected to remain the same whether the RSA is implemented or not. As such, overall fishing effort should not change or decrease. Therefore, this alternative is not expected to negatively affect endangered and threatened species or critical habitat in any manner not considered in prior consultations on these fisheries, and will have no adverse impact on marine mammals or other protected resources.

7.4.2.4 Socioeconomic Impacts

Under this program, successful applicants receive a share of the annual quota for the purpose of conducting scientific research. The Nation receives a benefit in that data or other information about that fishery are obtained for management or stock assessment purposes that would not otherwise be obtained. In fisheries where the entire quota would be taken and the fishery is prematurely closed (i.e., the quota is constraining), the economic and social costs of the program are shared among the non-RSA participants in the fishery. That is, each participant in a fishery that utilizes a resource that is limited by the annual quota relinquishes a share of the amount of quota retained in the RSA quota. However, in the case of bluefish the overall quota is not constraining landings i.e., landings in recent years in the commercial and recreational sectors have been below the commercial TAL and recreational harvest limit, respectively. Therefore, it is not expected that negative economic or social impacts will occur. However, it is possible that in specific states where commercial quotas have restrained landings in recent years, the decrease in quota availability associated with a commercial quota that is adjusted downward to account for RSA would not benefit those states.

The socioeconomic discussion of the evaluated commercial quotas discussed in sections 7.1.4, 7.2.4, and 7.3.4 of the EA were based on adjusted commercial quotas accounting for the RSA proposed under this alternative. More specifically, a RSA of 297,750 lb (135,057 kg) was used to derive the adjusted commercial quotas and RHLs in all evaluated alternatives.

In addition, it is possible that the vessels that would be used by researchers to conduct the research would be vessels that have not traditionally fished for bluefish. As such, permit holders that would have landed these bluefish in a state where the quota has been reached and the fishery closed could be disadvantaged. However, the amount of the bluefish RSA is minimal, so impacts in such states would also be expected to be minimal.

7.5 Cumulative Impacts of Preferred Alternative on Identified VECs

The biological and socioeconomic impacts of the final specifications (preferred alternatives) for 2005 are expected to be minimal since they maintain the status quo in each fishery. The final specifications are considered the most reasonable to achieve the fishery conservation objectives while minimizing the impacts on fishing communities as per the objectives of the FMP. A summary of the environmental consequences for each of the alternatives considered is given in Box ES-1 (see Executive Summary).

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 National Environmental Policy Act (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 bluefish fisheries.

Past, Present, and Reasonably Foreseeable Future Actions

The cumulative impacts of 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 more timely, 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.

Past actions under this FMP are described in section 4.1, "History of Development of the Plan" in the FMP and section 1.1.1, "History of FMP Development" in Amendment 1. Overall, actions implemented by the FMP were to address the management objectives described in section 1.1.3 of Amendment 1. Amendment 1 implemented the current annual specifications process to set commercial quotas and recreational harvest limits. In addition, Amendment 1 addressed the new requirements of the SFA, including the new revised National Standards including bluefish overfishing definition (National Standard 1), the effects on fishing communities (National Standard 8), bycatch reduction (National Standard 9), and safety at sea (National Standard 10), and identification of EFH for bluefish. Finally, Amendment 1 added a framework adjustment procedure that allowed the Council to add or modify management measures through a streamlined public review process. The bluefish fisheries throughout the management unit are managed primarily via an annual commercial quota and a recreational harvest limit to control fishing mortality. The specification process allows for the review and modifications to the commercial quota, recreational harvest limit, and other management measurers on an annual basis. Assessment of the commercial bluefish quota indicates that overall commercial landings have been at or below the quota specifications for the last decade. In addition, since the establishment of the bluefish recreational harvest limit in 2000, recreational landings have been substantially lower than the recreational harvest limits established for those years.

The purpose of this specifications package is to examine the impacts to the environment that would result from the implementation of the 2005 management measures for the bluefish fisheries. These measures include commercial quota and recreational harvest limits and other measures that allow the target exploitation rate to be achieved on an annual basis. The annual quota setting process ensures that the rebuilding schedule for bluefish is maintained so the FMP remains in compliance with the MSFCMA as amended by the SFA.

By continuing to meet the national standards and other requirements of the SFA through future FMP amendments and actions under the annual specification process, the expectation is that the management objectives will be met and the expected benefits will not be compromised. In addition, the framework adjustment procedure added in Amendment 1 allows the Council to add or modify management measures through a streamlined public review process. As such, the Council will ensure that cumulative impacts of these actions will remain positive, both for the ports and communities that depend on these fisheries and the Nation through a sustainable bluefish fishery. Additionally, the action in this EA is not expected to result in negative or positive biological, EFH, or endangered and other protected resources impacts. However, as stated above, the purpose of the specification process in this action and future actions is expected to result in a rebuilt fishery. As such, cumulative biological impacts to the bluefish stock are expected to be positive. As the stock rebuilds it is possible that CPUE of bluefish will increase, which could result in an overall decrease in fishing effort. If this action in addition to future actions results in a

decrease in fishing effort, positive cumulative impacts will result related to non-target species, EFH, and protected resources.

Overall bluefish commercial landings have been below the commercial quotas established for that fishery since the implementation of the coastwide commercial quota system in 1994. In addition, recreational landings have also been below the recreational harvest limits first established in 2000. To compensate for any overharvest, and to preserve the conservation intent of the management regime, the FMP under which bluefish is managed includes provisions that require that any commercial landings that exceed the specifications in one year 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 would be 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 assess regularly 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.

During the 1980s, bluefish was consistently one of the top three species most frequently sought by marine recreational fishermen along the Atlantic coast of the United States. In fact, more bluefish (by weight) were landed by anglers coastwide than any other marine fish each year from 1979 to 1987. An increase in the number of marine anglers, an apparent increase in bluefish abundance, and a decline in the abundance of other desired finfish such as striped bass and weakfish during this time period may explain this predominance. Although most bluefish are harvested by sport fishermen, commercial landings have averaged about 14 million lbs per year since 1981, or approximately 20% of the total bluefish landings along the Atlantic coast in the 1980s (MAFMC 1999).

In the late 1970s, potential markets for bluefish in Africa and South America stimulated tuna purse seiners to consider harvesting bluefish. This interest prompted concerned fishermen to petition the MAFMC to develop an FMP for this species. Seven fact finding meetings were held by the Council in early 1979 to give fishermen from Virginia through New England an opportunity to present information on the bluefish fishery. Public attendance at most of these meetings was exceptional. At every meeting, the desire for the development of a Plan was strongly expressed by the recreational community. As a result, in May 1979, the Council held a scoping meeting to develop a work plan for the FMP. The work plan was adopted by the Council in July 1979 and approved by the NMFS in March 1980. Additional impetus to FMP development was provided by the 1982 harvest of bluefish by Florida fishermen using runaround gill nets in Chesapeake Bay (MAFMC 1999).

The Council, in cooperation with the NMFS, New England and South Atlantic Fishery Management Councils, and Commission, completed a Bluefish FMP in 1984. However due to technical issues, the 1984 Council bluefish plan was rejected by the Secretary of Commerce. Although the 1984 Plan was rejected, bluefish remained a major value to the nation and public concerns about bluefish overexploitation were not abated. Subsequently, the fishery management councils and the Commission agreed to proceed jointly on the development of a new bluefish management plan containing compatible management measures that could be enacted in both state and Federal waters. This cooperative venture represented a new approach for managing interjurisdictional fisheries (MAFMC 1999).

The current bluefish management plan was prepared cooperatively by the Council and the ASMFC and was implemented in 1990. The management measures adopted in the FMP included license/permit requirements, recreational possession limits, and a coastwide commercial quota. Regulations considered include trip limits, area closures or restrictions, and other measures that may be appropriate, including

gear prohibitions. The Bluefish FMP Review and Monitoring Committees annually review landing statistics to determine if commercial controls will be implemented.

In 1996, the Council and Commission began development of Amendment 1 to the 1990 Bluefish FMP. Because the Bluefish FMP has a limited number of management options to control fishing mortality, the Council and Commission identified the need to broaden the suite of management measures that could be used to reduce fishing mortality on the bluefish stock. In addition, the amendment was developed to meet the requirements of the SFA that was enacted in October 1996. Specifically, the amendment revised the overfishing definitions (National Standard 1) for bluefish 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 fish habitat for bluefish. In addition, Amendment 1 added a framework adjustment procedure that allows the Council to add or modify management measures through a streamlined public review process. Amendment 1 was partially approved on 29 July 1999.

The cumulative impacts of this FMP were last fully addressed in the Environmental Impact Statement for Amendment 1. Bluefish in the management unit 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. As noted above, the cumulative impact of this FMP and annual specification process has been positive since its implementation after passage of the Magnuson-Stevens Act. Bluefish were overfished prior to management and the status of this fishery has subsequently improved. The 2003 assessment of the bluefish stock indicated that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. This assessment indicated that the stock was overfished but overfishing was not occurring (Lee 2003). The 2002 fishing mortality rate for bluefish was below the target of 0.41 for 2003 and the target of 0.31 for 2004. This assessment indicated that the status of the stock was improving as of 2002 to a level close to the biomass threshold. More specifically, the total stock biomass for 2002 was estimated at 51,550 mt (113.648 million lb) or 96% of the biomass threshold (i.e., $\frac{1}{2}B_{msy}$ = 53,750 mt or 118.498 million lb) relative to Amendment 1 overfishing definitions. A stock projection was conducted using a fishing mortality rate of 0.184 (Lee 2003). Projection results indicated that the bluefish stock would increase from an estimated biomass of 58,680 mt (129.367 million lb) in 2003 to 75,230 mt (165.853 million lb) in 2004 and 94,250 mt (207.785 million lb) in 2005. This biomass had an associated yield of 15,520 mt (34.215 million lb) in 2004. The best information available indicates that this TAC (34.215 million lb or 15.519 million kg) could achieve the target fishing mortality rate in 2005.

Through development of the FMP and the subsequent annual specification process, the Council continues to manage this resource 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 this species and the United States fishing industry. The Council uses the best scientific information available (National Standard 2) and manages this resource throughout its 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), reduce bycatch (National Standard 9), and promote safety at sea (National Standard 10). Amendment 1 fully addresses how the management measures implemented to successfully manage this species comply with the National Standards. The fishing gear impacts to EFH are discussed in section 6.2.1.2 of this document.

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 this fishery, the Nation as a whole, and certainly for the resources.

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 from human interaction and alteration or natural disturbances. These activities are widespread and can have localized impacts to 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 bluefish management unit 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 cumulative effects of the proposed quotas will be examined for the following five areas: targeted species, non-targeted species, protected species, habitat, and communities.

7.5.2 Targeted Fishery Resources

First and foremost with this 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 this species and the United States fishing industry. Bluefish were overfished prior to management and the status of this fishery has subsequently improved. The 2003 assessment of the bluefish stock indicated that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. This assessment indicated that the stock was overfished but overfishing was not occurring (Lee 2003). The 2002 fishing mortality rate for bluefish was below the target of 0.41 for 2003 and the target of 0.31 for 2004. This assessment indicated that the status of the stock was improving as of 2002 to a level close to the biomass threshold. More specifically, the total stock biomass for 2002 was estimated at 51,550 mt (113.648 million lb) or 96% of the biomass threshold (i.e., $\frac{1}{2}B_{msy}$ = 53,750 mt or 118.498 million lb) relative to Amendment 1 overfishing definitions.

The Council manages this species only in the EEZ. Any anthropogenic activities in the EEZ that did not consider this species could impact their populations locally. 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 bluefish. Since this species occurs over wide areas of the north, mid, and south Atlantic, it is unlikely that any anthropogenic activity could currently significantly impact the population on more than simply a local level.

None of the proposed management measures (commercial quota, recreational harvest limit, recreational possession limit, and RSA) would have any significant effect on the target species by itself, or in conjunction with other anthropogenic activities.

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, efforts to achieve sustainable fisheries, and the full benefits they can provide to the Nation. First, bycatch can increase substantially 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 discards 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 legally are 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.

Bluefish is primarily a recreational fishery caught by hook and line. The commercial fishery for bluefish is primarily prosecuted with gillnets, otter trawls, and handlines. This fishery often harvests mixed species, including bonito, Atlantic croaker, weakfish, spiny dogfish, and other species. Given the mixed species nature of the bluefish fishery, incidental catch of other species does occur. These fisheries are managed principally through the specification of annual commercial quotas and recreational harvest levels.

The nature of the data makes it difficult to develop any definitive or reliable conclusions about discards for these fisheries especially during the periods or in areas where sea sampling has not occurred. As such, it is difficult for the Council and Commission to modify or add management measures to further minimize discards if the data are not available to define the nature and scope of the discard problem or the data indicate that a discard problem does not exist.

The Council recognizes the need for improved estimates of discards under this FMP. The Council has requested increased at-sea sampling intensity over a broader temporal and geographical scope than is currently available.

The lack of discard data for bluefish has hampered the ability of the Council and Commission to respond to potential discard problems in the commercial fisheries. The collection of additional data by NMFS will allow the Council and Commission to more effectively respond to discard problems by changes in management measures.

The mortality of fish released due to the recreational measures for bluefish is expected to be low. In fact, only about 15% of the fish are expected to die after release by anglers. 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 bluefish and other species caught by recreational fishermen should help to maximize the number of these species released alive. The Council believes that information and education programs relative to proper catch and release techniques for bluefish and other species caught by recreational fishermen should help to maximize the number of fish species released alive.

Current recreational management measures could affect the discards of bluefish (possession limits). The effects of the possession limit would be greatest at small limits and be progressively less at higher limits. 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 maintenance of the status quo commercial quota in 2005 would not result in an increase of effort in the bluefish commercial fishery and thus, the impact on incidental catch rates of other species in 2005 relative to 2004 would not change.

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 remainder are protected by the 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 Treaty Act of 1918 that may be found in the environment utilized by the bluefish fisheries.

Commercial capture of bluefish occurs predominately with gillnets, bottom otter trawls, and handlines. All of these are listed as Category III fisheries as defined in the NMFS 2003 list of fisheries (68 FR 41725, July 15, 2003) with the exception of the gillnet fishery. Category III fisheries are not associated with any documented serious injuries or mortality of marine mammals. All fishing gear are required to meet gear restrictions under the Large Whale Take Reduction Plan, Harbor Porpoise Take Reduction Plan, MMPA, and the ESA.

Bluefish landings recorded in the dealer weighout data as coming from gillnets may be harvested through the Mid-Atlantic coastal or Northwest sink gillnet fisheries. These fisheries are classified as Category I. Marine mammals species injured or killed by Mid-Atlantic coastal gillnets include humpback whale, minke whale, bottlenose dolphin, harbor porpoise, harbor seal, harp seal, long-finned pilot whale, short-finned pilot whale, white-sided dolphin, and common dolphin. Marine mammals species injured or killed by Northeast sink gillnets include North Atlantic right whale, humpback whale, minke whale, killer whale, white-sided dolphin, bottlenose dolphin, harbor porpoise, harbor seal, gray seal, common dolphin, fin whale, spotted dolphin, false killer whale, and harp seal.

Prior to 2001, the North Carolina inshore gillnet fishery was classified as a Category III fishery. This change resulted from an evaluation of NMFS Sea Sampling data which demonstrated that the gillnet gear incidentally injured and killed Atlantic bottlenose dolphin (WNA stock) during 1993-1997. Based on data presented in the proposed list of fisheries for 2001, of the12 Atlantic bottlenose dolphins which died as a result of fishery interactions, 8 bore evidence of possible gill net interactions. Further evaluation of these data resulted in the conclusion that serious injury and mortality of bottlenose dolphin from the North Carolina inshore gillnet fishery is estimated to be between 1 and 50 percent of the PBR level. As such, this fishery was placed under Category II.

Protected species are discussed in section 6.3 of the EA. The range of these species overlap with bluefish. As such, a potential for incidental catch always exists. Except in unique situations, such incidental catches should have a negligible impact on marine mammal or abundances of endangered species, and NMFS has concluded in the previous consultations that implementation of this FMP will not have any adverse impact upon these populations.

NMFS is currently developing a take reduction plan to reduce injuries and deaths to Atlantic bottlenose dolphins caused by fishing gear in Federal waters of the Mid- and South Atlantic. A Bottlenose Dolphin Take Reduction Team was convened in November of 2001 under authority of the MMPA. The team consists of more than 40 stakeholders including those in the commercial and recreational fishing industry, the conservation community, Federal and state governments, academic and scientific organizations, fishery management councils, and interstate fisheries commissions. The team was formed to develop recommendations to reduce deaths and injuries to bottlenose dolphins. Category II fisheries under the

MMPA received a high priority with respect to observer coverage and consideration for measures under the Atlantic Bottlenose Dolphin Take Reduction Plan.

None of the proposed 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)

Bluefish is primarily a recreational fishery caught by hook and line. The principal commercial gears used to harvest bluefish include bottom otter trawls, gillnets, and handlines. The nature of impacts by these gear on the ocean bottom habitat is described in section 6.2.1.2 of the EA. It was concluded in section 6.2.1.2 of the EA that the bluefish fishery does not have an adverse impact on EFH. Although the specific consequences for habitat are unknown, it can be assumed that the extent of trawling and dredging impacts are related to fishing effort.

The 2005 preferred alternative is the status quo quota. It is difficult to predict whether the retention of the 2004 quota results in a change in fishing effort on EFH. Several possibilities exist that would influence fishing effort. Potentially, the identical commercial quota could result in the same number of fishing trips, resulting in no change in habitat impacts. Conversely, an increase in species abundance could result in an increased catch-per-unit-effort. States could also establish higher trip limits, which would result in a lower number of fishing trips landing a larger volume of fish. In these latter instances, the proposed quota would result in either the same or reduced gear impacts to bottom habitats.

The proposed quota or other management measures would not have any significant effect on habitat individually, or in conjunction with other anthropogenic activities.

7.5.6 Community

National Standard 8 requires that management measures take into account the fishing communities. The ports and communities that are dependent on bluefish are fully described in the 2002 Bluefish Specification Document (section 4.3; MAFMC 2001). To examine recent landings patterns among ports, 2003 NMFS dealer data are used. The top commercial landings ports of bluefish are discussed in section 6.5.1 of the EA.

The commercial quota allocation under this alternative would provide commercial fishermen with the same fishing opportunities in 2005 compared to 2004. Stable or increased landings from one year to the next are desirable from both a management perspective and an industry perspective. Drastic reductions in the quota from one year to the next could lead to increased levels of noncompliance by both commercial and recreational fishermen. A stable landings pattern would allow fishermen, processors, party/charter boat operators, equipment and bait suppliers to make business decisions.

With regard to the specific quota and recreational harvest limit recommendations proposed in this document, impact to the affected biological, 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 fisheries are 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 bluefish fisheries. These benefits are addressed under the socioeconomic impacts discussion in section 7.1.4 (Preferred Alternative) of the EA.

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.

7.5.7 Conclusions

This action builds on actions taken in the original Bluefish FMP, Amendment 1, and the annual specification process for the 2004 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 2005 bluefish specifications.

8.0 ESSENTIAL FISH HABITAT ASSESSMENT

All species managed by the MAFMC, NEFMC, SAFMC, and NMFS - Highly Migratory Species, have EFH that overlap with bluefish EFH, as described in section 6.2.1.1 of this EA. The specific EFH description for bluefish is found in section 2.2.2 of Amendment 1 and a brief description of bluefish habitats is presented in section 6.2.1 of the EA. Any proposed actions that may affect the other species that have overlapping EFH with bluefish must be considered in the EFH assessment.

Fishing impacts to EFH

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.

Bluefish are a pelagic species that are primarily landed in bottom otter trawls, gillnets, and handlines. The baseline, potential impacts of otter trawls, gillnets, and handlines are described in detail and evaluated in section 6.2.1.2 of the EA. That evaluation, indicates that the baseline impact of these gear in the commercial bluefish fishery is minimal and temporary in nature. This conclusion was drawn from the low intensity with which the bluefish are fished with these gear, relative to the use of these gears to catch other species.

Additionally, the actions in this EA are necessary to achieve the target exploitation rate for bluefish in 2005 and other commercial management measures. The impact of the actions in this EA are not expected to impact EFH (section 7.1.2 of the EA).

In summary, the 2005 bluefish commercial quota is the same as that specified for 2004. As discussed in section 7.1.2 of the EA, with improving stock abundance, fishermen may be able to catch the same number of fish with less or constant fishing effort. Commercial fishing effort is not expected to increase under this action. Table 18 presents the range of potential habitat impacts that could occur under each of the various quota alternatives. Therefore, the measures in this specification package are not expected to have adverse effects on EFH. The recreational harvest limit and the non-quota setting specifications associated with this action will not have an adverse effect on EFH. As such, 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 MSFCMA.

9.0 OTHER APPLICABLE LAWS

9.1 NEPA

Findings of No Significant Impact

National Oceanic 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 the target species that may be affected by the action, as described in section 7.1.1 of the EA. The proposed quota and recreational harvest limit specifications under the preferred alternative are consistent with the best available science. This action will protect the long-term sustainability of the bluefish stock, as well as afford protection for several other stocks of fish.

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 7.1.2 of the EA is not expected to cause damage to the ocean, coastal habitats, and/or EFH as defined under the Magnuson-Stevens Act and identified in the FMP. In general, bottom-tending mobile gear, primarily otter trawls, have the potential to adversely effect EFH for the species detailed in section 6.2.1 of the EA.

Overall, the measures proposed in this action are expected to result in a reduction in the adverse effects to no more than minimal adverse impacts to any EFH associated with the fishing activities managed under the FMP.

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

This action proposes a commercial quota, a recreational harvest limit, and other management measures in 2005. None of the measures alters the manner in which the industry conducts fishing activities for the target species. Therefore, there is no change in fishing behavior that would affect safety. The overall effect of the proposed actions on these fisheries, including the communities in which they operate, will not impact adversely public health or safety. NMFS will consider comments received concerning safety and public health issues.

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?*

This action proposes a commercial quota, a recreational harvest limit, and other management measures in 2005. None of the specifications 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. It has been determined that fishing activities conducted under this proposed rule will have no adverse impacts on endangered or threatened species, marine mammals, or their critical habitat.

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 cumulative effects of the proposed actions on target and non-target species are detailed in section 7.5 of the EA. The proposed measures are not expected to alter fishing methods or activities. As such,

the proposed measures are not expected to result in any cumulative effects on 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, as discussed in section 7.1.1 of the EA.

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. This action merely revises the proposed annual commercial quotas and other management measures for the bluefish fisheries for 2005.

8. ***Are significant social or economic impacts interrelated with significant natural or physical environmental effects?***

As discussed in section 7.1 of the EA, the proposed specifications for 2005 are 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 human environment expected to be highly controversial?***

The impact of the proposed measures on the human environment are described in section 7.1.4 of the EA. The proposed action merely revises the annual commercial quota, recreational harvest limit, and other management measures for the bluefish fisheries for 2005. The measures contained in this action are not expected to be highly controversial.

FONSI Statement

Having reviewed the environmental assessment on the specifications for the 2005 bluefish fisheries, and the available information relating to the action, I have determined that there will be no significant environmental impact, individually or cumulatively, resulting from the action and that preparation of an environmental impact statement on the action is not required by section 102 (2) (c) of the NEPA or its implementing regulations.

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Assistant Administrator for Fisheries, NOAA — Date

9.2 Endangered Species Act

Sections 6.3, 7.1.3, 7.4.2.3, and 7.5.4 of the EA should be referenced for an assessment of the impacts of the proposed action on endangered or threatened species. 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, 7.1.3, 7.4.2.3, and 7.5.4 of the EA should be referenced for an assessment of the impacts of the proposed action on protected species. None of the specifications proposed in this document are expected to alter fishing methods or activities. Therefore, this action is not expected to affect protected species 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 Councils' 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 this action (2005 Specifications) 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 August 17, 2004 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 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), North Carolina (Steven Benton), South Carolina (Chris Brooks), Georgia (Stuart Stevens) and Florida (Ralph Cantral).

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 Bluefish Monitoring Committee Meeting held on July 26, 2004 and during the MAFMC meeting held on August 10-12, 2004 in Baltimore, Maryland. 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

Explain how the information product meets the standards for utility:

Is the information helpful, beneficial or serviceable to the intended user?

The proposed document includes: A description of the 2005 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 FMP's conservation and management goals consistent with the Magnuson-Stevens Act as well as all other existing applicable laws.

Is the data or information product an improvement over previously available information? Is it more current or detailed? Is it more useful or accessible to the public? Has it been improved based on comments from or interactions with customers?

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 Bluefish Monitoring Committee Meeting held on July 26, 2004 and during the MAFMC meeting held on August 10-12, 2004 in Baltimore, Maryland. In addition, the public will have further opportunity to comment on this specifications package once NMFS publishes a request for comments notice on the FR.

What media are used in the dissemination of the information? Printed publications? CD-ROM? Internet? Is the product made available in a standard data format? Does it use consistent attribute naming and unit conventions to ensure that the information is accessible to a broad range of users with a variety of operating systems and data needs?

The FR 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

Explain how the information product meets the standards for integrity:

All electronic information disseminated by National Oceanic and Atmospheric Administration (NOAA) adheres to the standards set out in Appendix III, "Security of Automated Information Resources," OMB Circular A-130; the Computer Security Act; and the Government Information Security Reform Act.

If information is confidential, it is safeguarded pursuant to the Privacy Act and Titles 13, 15, and 22 of the U.S. Code (confidentiality of census, business and financial information).

Other/Discussion (e.g., Confidentiality of Statistics of the Magnuson-Stevens Act; NOAA Administrative Order 216-100, Protection of Confidential Fisheries Statistics; 50 CFR 229.11, Confidentiality of information collected under the MMPA).

Objectivity of Information Product

Indicate which of the following categories of information products apply for this product:

Original Data
Synthesized Products
Interpreted Products

Hydrometeorological, Hazardous Chemical Spill, and Space Weather Warnings, Forecasts, and Advisories
Experimental Products
Natural Resource Plans
Corporate and General Information

Describe how this information product meets the applicable objectivity standards. (See the DQA Documentation and Pre-Dissemination Review Guidelines for assistance and attach the appropriate completed documentation to this form).

What published standard(s) governs the creation of the Natural Resource Plan? Does the Plan adhere to the published standards? (See the NOAA Sec. 515 Information Quality Guidelines, Section II(F) for links to the published standards for the Plans disseminated by NOAA).

In preparing specifications documents, the Council must comply with the requirements of the Magnuson-Stevens Act, the National Environmental Policy Act, the Regulatory Flexibility Act, the Administrative Procedure 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 12630 (Property Rights), 12866 (Regulatory Planning), 13132 (Federalism), and 13158 (Marine Protected Areas).

Was the Plan developed using the best information available? Please explain.

This specification's document has been developed to comply with all applicable National Standards, including National Standard 2. National Standard 2 states that the FMP's 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 dealer weighout, VTR, and permit Data and South Atlantic General Canvass Data for 2003 which was used to characterize the economic impacts of the management proposals and describe the bluefish fisheries. 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 bluefish fisheries. In addition, Marine Recreational Fisheries Statistics Survey data was used to further characterize the recreational fishery for this species.

Have clear distinctions been drawn between policy choices and the supporting science upon which they are based? Have all supporting materials, information, data and analyses used within the Plan been properly referenced to ensure transparency?

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 for to ensure a minimal impact on fishing communities.

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

Describe the review process of the Plan by technically qualified individuals to ensure that the Plan is valid, complete, unbiased, objective and relevant. For example, internal review by staff who were not involved in the development of the Plan to formal, independent, external peer review. The level of review should be commensurate with the importance of the Plan and the constraints imposed by legally enforceable deadlines.

The review process for this specifications package involves the MAFMC, the Northeast Fisheries Science Center, the Northeast Regional Office, and NOAA Fisheries headquarters. The Center's technical review is conducted by senior level scientists with specialties in population dynamics, stock assessment methods, coastal migratory 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. There are no changes to the existing reporting requirements previously approved under this FMP for vessel permits, dealer reporting, or vessel logbooks. This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

9.8 Impacts of the Plan Relative to Federalism/EO 13132

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

9.9 Environmental Justice/EO 12898

This EO provides that “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations. ” EO 12898 directs each Federal agency to analyze the environmental effects, including human health, economic, and social effects of Federal actions, including effects 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 bluefish fisheries. Since 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 (see section 6.4, 7.1.4, and 7.4.2.4). 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 bluefish 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 Kathy Collins. Scott Steinback (NEFSC) assisted in describing the economic environment of the recreational fishery.

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), North Carolina (Steven Benton), South Carolina (Chris Brooks), Georgia (Stuart Stevens), and Florida (Ralph Cantral).

In order to ensure compliance with NMFS formatting requirements, the advice of NMFS Northeast Region personnel, including Don Frei, Sarah Thompson, and Jennifer Anderson was relied upon during document preparation.

REGULATORY IMPACT REVIEW/INITIAL REGULATORY FLEXIBILITY ANALYSIS (RIR/IRFA)

1.0 INTRODUCTION

The NMFS requires the preparation of a Regulatory Impact Review (RIR) for all regulatory actions that either implement a new 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 EO 12866. Also included is an Initial Regulatory Flexibility Analysis (IRFA). This analysis is being undertaken in support of the 2005 specifications for bluefish.

2.0 EVALUATION OF REGULATORY IMPACT REVIEW (EO 12866) SIGNIFICANCE

2.1 Description of the Management Objectives

A complete description of the purpose and need and objectives of this 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 bluefish fisheries is presented section 6.0 of the EA. A description of ports and communities is found in the 2002 Bluefish Specifications document. Recent landings patterns among ports is examined in section 6.5.1 of the EA. An analysis of permit data is found in section 6.5.2 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 alternatives analyzed in this section and the TAL derivation process is presented in sections 4.3 and 5.0 of the EA. In addition, a brief description of each alternative is presented below for reference purposes.

2.5 Analysis of Alternatives

The action does not constitute a significant regulatory action under EO 12866 for the following reasons. First, it will not have an annual effect on the economy of more than $100 million. The measures considered in this bluefish analysis will not affect total revenues generated by the commercial sector or party/charter sector to the extent that a $100 million annual economic impact will occur in the bluefish fisheries. Based on NMFS preliminary dealer data (ME-VA) and South Atlantic General Canvass data (NC-FL east coast), the total commercial value in 2003 (Maine through Florida's east coast) was estimated at $2.1 million for bluefish. The preliminary adjusted commercial bluefish quota for 2005 is slightly lower (i.e., less than 1% lower) than the bluefish commercial quota for 2004 and approximately 44% above the commercial landings for 2003. This commercial quota would allow fishermen about the same fishing opportunities for bluefish in 2005 compared to 2004. On average, commercial bluefish landings for the 1999-2003 period are about 7.580 million lb (3.438 million kg; Table 1). Unless market

conditions change substantially in year 2005, commercial bluefish fishermen on a coastwide basis would likely land bluefish in an amount close to the 1999-2003 average. The NMFS Quota Report as of the week ending July 24, 2004 indicates that overall bluefish commercial landings are within the overall commercial quota for 2004. Therefore, the 2005 overall quota was not adjusted for overages. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2005. As such, it is expected that overall ex-vessel revenues from bluefish will not significantly change in 2005 from 2003 as a consequence of the adjusted commercial quota. In addition, increase in effort in the directed bluefish fishery is not expected.

According to MRFSS data, the number of recreational fishing trips for all modes combined in the North Atlantic, Mid-Atlantic, and South Atlantic regions in 2003 were 8.6, 19.9, and 21.3 million, respectively. Of the total number of fishing trips for all modes combined in the North Atlantic and Mid-Atlantic regions (28.4 million), 1.5 million trips or 5.3% of the total were party/charter fishing trips. In addition, there were 0.4 million charter trips in the South Atlantic region in 2003 or 1.9% of the total number of recreational fishing trips for all modes combined in that region. It is estimated that the number of party/charter fishing trips that sought bluefish as the primary species in the North Atlantic and Mid-Atlantic subregions (i.e., total effort targeting bluefish by party/charter mode) in 2003 was 66,143 (section 6.4.1.2.1 of the EA).

With the implementation of Amendment 1 a recreational harvest limit was established for the first time in 2000. An adjusted recreational harvest limit (adjusted for RSA) of 20.157 million lb (9.143 million kg) in 2005 would be approximately 44% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 5% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest established for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that occurred in 2003. At the present time there are neither behavioral or demand data available to estimate how sensitive party/charter boat anglers might be to proposed fishing regulations. However, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will affect the demand for party/charter boat trips. Overall, the final recreational management measures will not affect gross revenues of businesses providing goods and services to anglers participating in the party/charter boat, private/rental boat, and shore fisheries for bluefish.

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

The economic effects of the bluefish effort reductions were evaluated through Amendment 1. The economic analysis presented at that time was largely qualitative in nature. Assessment of the bluefish quota indicates that overall landings have been within the quota specifications since the implementation of Amendment 1. Therefore, there is a reasonable expectation that the management objectives will be met and the expected economic benefits will not be compromised.

For each alternative potential impacts on several areas of interest are discussed. The objective of this analysis is to describe clearly and concisely the economic effects of the various alternatives. The types of effects that should be considered include the following changes in landings, prices, consumer and producer benefits, harvesting costs, enforcement costs, and distributional effects. Due to the lack of an empirical model for this fishery and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was adopted. Nevertheless, quantitative measures are provided whenever possible.

A more detailed description of the economic concepts involved can be found in "Guidelines for Economic Analysis of Fishery Management Actions" (NMFS 2000), as only a brief summary of key concepts will be presented here.

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

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

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

Alternative 1 (Preferred/Status Quo/No Action Alternative)

A complete description of the derivation of the TAL and its allocation to the commercial and recreational sectors is presented in section 5.0 of the EA. Alternative 1 would set the TAL at 30.853 million lb (13.994 million kg). This alternative includes a preliminary adjusted commercial quota of 10.398 million lb (4.716 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 20.157 million lb (9.143 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005.

Commercial Fishery

For purposes of this analysis, the status quo and all other alternatives will be evaluated under the assumption that the primary measure for achieving the conservation objectives will be through changes in quota levels. This alternative as well as the other alternatives will be evaluated against a base line. The base line condition provides the standard against which all other alternative actions are compared. In this analysis, the base line condition is the bluefish landings for 2003. This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative in 2005 versus landing

that took place in 2003. Aggregate changes in fishing opportunities in 2005 (preliminary adjusted commercial quota) versus 2003 landings are shown in Table 32. The information presented in Table 32 was used to determine overall potential changes in commercial landings associated with the quota levels associated with each of the alternatives evaluated in this analysis.

Due to a lack of an empirical model for this fishery and knowledge of elasticities of supply and demand, a qualitative approach to the economic assessment was adopted. Nevertheless, quantitative measures are provided whenever possible.

Landings

Under the preferred alternative the overall commercial quota for 2005 would allow for a 44% increase in landings in 2005 compared to actual landings in 2003. However, in reality the 2003 bluefish commercial landings were not constrained by the commercial quota implemented that year (i.e., 10.460 million lb or 4.744 million kg). There is no indication that the market environment for commercially caught bluefish will substantially change in 2005 compared to 2003. As such, it is expected that bluefish commercial landings in 2005 will be similar to those that occurred in 2003.

Prices

Given that this alternative will result in the same overall landings level as in 2003 and that there is no indication that the market environment for commercially caught bluefish will change considerably in year 2005, it would be anticipated that there will be no chance in the price for this species holding all other factors constant.

Consumer Surplus

Given that no change in the price for this species under this scenario is anticipated, it is expected that consumer surplus associated with this fishery will not change.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Given that no change in the price for this species under this scenario is anticipated, it is expected that producer surplus associated with this fishery will not change.

Enforcement Costs

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

Distributive Effects

There are no changes to the quota allocation process for this species. As such, no distributional effects are identified under this alternative.

Recreational Fishery

Under Alternative 1, the bluefish 2005 recreational harvest limit would be 20.517 million lb (9.143 million kg). This limit would be approximately 44% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 5% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest established for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that occurred in 2003.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the fishing regulations. However, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will affect the demand for party/charter boat trips. Angler satisfaction is not expected to be affected in a negative manner in 2005 as a consequence of this alternative. As such, the transfer is not expected to affect recreational landings in 2005. In addition, the recreational possession limit remains unchanged from 2004.

Alternative 2

The same assumptions regarding landings relative to the base line and changes in fishing opportunities discussed under Alternative 1 also apply here. Alternative 2 would set the TAL at 30.853 million lb (13.994 million kg). This alternative includes a preliminary adjusted commercial quota of 5.194 million lb (2.355 million kg), a preliminary adjusted recreational harvest limit of 25.361 million lb (11.503 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005.

Commercial Fishery

Landings

Under this alternative aggregate landings for bluefish in 2005 are expected to be 28% lower in 2005 when compared to 2003 landings.

Prices

Given that this alternative will result in lower 2005 landings compared to the overall 2003 landings, it would be anticipated that there will be an increase in the price for this species holding all other factors constant.

Consumer Surplus

Given the anticipated potential increase in the price for this species under this scenario, it is expected that consumer surplus associated with this fishery may decrease.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer Surplus

Given the potential increase in the price for this species under this scenario is anticipated, it is expected that producer surplus associated with this fishery will change. The magnitude of the PS change will be associated with the price elasticity of demand for the species in question.

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

For example, an increase in the ex-vessel price of bluefish may increase PS. A decrease in the ex-vessel price of bluefish may also increase PS if we assumed that the demand for bluefish is moderate to highly elastic. However, the magnitude of these changes cannot be entirely assessed without knowing the exact shape of the market demand curve for this species.

Enforcement Costs

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

Distributive Effects

There are no changes to the quota allocation process for this species. As such, no distributional effects are identified under this alternative.

Recreational Fishery

Under Alternative 2, the bluefish 2005 recreational harvest limit would be 25.361 million lb (11.503 million kg). This limit is approximately 82% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 20% higher than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002

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

recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest established for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that occurred in 2003.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the fishing regulations. However, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will have any negative effects on recreational fishermen or affect the demand for party/charter boat trips. This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit.

Alternative 3

The same assumptions regarding landings relative to the base line and changes in fishing opportunities discussed under Alternative 1 also apply here. Alternative 3 would set the TAL at 30.853 million lb (13.994 million kg). This alternative includes a preliminary adjusted commercial quota of 9.490 million lb (4.304 million kg), a preliminary adjusted recreational harvest limit of 21.065 million lb (9.554 million kg), and an RSA of 297,750 pounds (135,057 kg) for 2005. In addition, the possession limit would remain at 15 fish.

Landings

Under this alternative the overall commercial quota for 2005 would allow for a 31% increase in landings in 2005 compared to actual landings in 2003. However, in reality the 2003 bluefish commercial landings were not constrained by the commercial quota implemented that year (i.e., 10.460 million lb; 4.744 million kg). There is no indication that the market environment for commercially caught bluefish will substantially change in 2005 compared to 2003. As such, it is expected that bluefish commercial landings in 2005 will be similar to those that occurred in 2003.

Prices

Given that this alternative will result in the same overall landings level as in 2003 and that there is no indication that the market environment for commercially caught bluefish will change considerably in year 2005, it would be anticipated that there will be no chance in the price for this species holding all other factors constant.

Consumer Surplus

Given that no change in the price for this species under this scenario is anticipated, it is expected that consumer surplus associated with this fishery will not change.

Harvest Costs

No changes in harvest costs are identified under this alternative.

Producer surplus

Given that no change in the price for this species under this scenario is anticipated, it is expected that producer surplus associated with this fishery will not change.

Enforcement Costs

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

Distributive Effects

There are no changes to the quota allocation process for this species. As such, no distributional effects are identified under this alternative.

Recreational Fishery

Under Alternative 3, the bluefish 2005 recreational harvest limit would be 21.065 million lb (9.554 million kg). This limit would be approximately 51% above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and less than 1% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest established for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that occurred in 2003.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the fishing regulations. However, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that this management measure will affect the demand for party/charter boat trips. Angler satisfaction is not expected to be affected in a negative manner in 2005 as a consequence of this alternative. As such, the transfer is not expected to affect recreational landings in 2005. In addition, the recreational possession limit remains unchanged from 2004.

Description of Impacts of Alternatives

The overall impacts of bluefish landings on prices, consumer surplus, and consumer surplus are difficult to determine without detailed knowledge of the relationship between supply and demand factors for this fishery. In the absence of detailed empirical models for this fishery and knowledge of elasticities of supply and demand, a qualitative approach was employed to assess potential impacts of the management measures.

The impact of each the regulatory alternatives relative to the base year was discussed above. The analysis conducted in this section was based on the evaluation of potential fishing opportunities associated with each quota alternative in 2005 compared to overall landings in 2003.

The preferred alternative (Alternative 1; status quo alternative) and Alternative 2, are expected to have no impacts on prices, consumer surplus, or producer surplus in the commercial sector. Alternative 2 show a potential increase in price, a decrease in consumer surplus, and a potential increase in producer surplus (assuming the demand for bluefish is moderate to highly elastic).

No changes in the competitive nature of these fisheries is expected to occur if any of these management measures were implemented. All the alternatives would maintain the competitive structure of the fishery,

that is, there are no changes in the manner the quotas are allocated by region or state from the base year. However, large reductions in quota levels from year to year may affect vessels differently due to their capability to adjust to quota changes.

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

Since empirical models describing the elasticities of supply and demand for this species is not available, we cannot determine with certainty the impact of changes in landings on prices, consumer surplus, or producer surplus. Therefore, in order to assess the potential net benefits of each alternative, changes in overall ex-vessel gross revenues associated with each alternative were estimated. More specifically, changes in landings for bluefish in 2005 compared to the 2003 base year were derived to assess the potential changes in fishing opportunities between these two time periods. Potential changes in landings (i.e., fishing opportunities) for bluefish were then multiplied by the overall 2003 ex-vessel price for bluefish to derive potential changes in overall net revenues which are used as a proxy for changes in net benefits. Preliminary NMFS dealer data from Maine through Virginia and South Atlantic General Canvass data were used to derive the ex-vessel price for bluefish from Maine through Florida's east coast. The ex-vessel price for bluefish in 2003 was estimated at $0.29/lb. The aggregate change in landings in 2005 compared to the base year landings (2003) is expected to be nil under Alternatives 1 and 2. Therefore, no overall change in revenues are expected under these two alternatives. However, due to the potential decrease in landings associated with the Alternative 2 quota in 2005 compared to landings in 2003, an overall decrease in revenue of $0.6 million is expected under that alternative.

The changes in gross revenues estimated above assumed static prices (i.e., 2003) for bluefish. However, if prices for this species decrease or increase as a consequence of changes in landings, then the associated revenue decreases could be different than those estimated above. Furthermore, these changes in revenues also assume that overall bluefish landings in 2005 will be similar to those in 2003.

The changes in gross revenues indicate that Alternatives 1 and 2 will provide the largest commercial net benefits followed by Alternative 2. However, Alternative 1 provides the best allocation to the commercial and recreational sectors considering recent fishing practices. Stable or increased landings from one year to the next are desirable from both a management and industry perspective. Drastic reductions in the quota from one year to the next could lead to increased levels of noncompliance by both commercial and recreational fishermen. A stable landings pattern would allow fishermen, processors, party/charter boat operators, equipment and bait suppliers to make business decisions.

Given the level of the recreational harvest limit for 2005 and recreational landings in recent years it is not anticipated that these management measures will affect the demand for party/charter boat trips. Angler satisfaction is not expected to be affected in a negative manner since the recreational harvest limit for 2005 is substantially higher than the 2003 landings and 2004 projected recreational landings. In addition, the recreational possession limit remains unchanged from 2004.

It is important to mention that although the measures that are evaluated in this specification package are for the 2005 fisheries, the annual specification process for these fisheries could have potential cumulative impacts. The extent of any cumulative impacts from measures established in previous years is largely dependent on how effective those measures were in meeting their intended objectives and the extent to which mitigating measures compensated for any quota overages. To date, the management measures implemented in the commercial and recreational fisheries have the intended recovery objective of the FMP and in the period from 2000 though 2003 overall commercial and recreational landings were below the commercial TALs and recreational harvest limits implemented those years. While the overall commercial quota was not taken in 2000-2003, one or two states were constrained by the initial quota in those years. As the result of increased landings, those states received transfers of bluefish from other states, however the overall commercial quota was not taken. The NMFS Quota Report as of the week

ending July 24, 2004 indicates that overall bluefish commercial landings are within the overall commercial quota for 2004. The 2003 assessment of the bluefish stock indicated that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. This assessment indicated that the stock was overfished but overfishing was not occurring (Lee 2003). The 2002 fishing mortality rate for bluefish was below the target of 0.41 for 2003 and the target of 0.31 for 2004. This assessment indicated that the status of the stock was improving as of 2002 to a level close to the biomass threshold. More specifically, the total stock biomass for 2002 was estimated at 51,550 mt (113.648 million lb) or 96% of the biomass threshold (i.e., $½B_{msy}$ = 53,750 mt or 118.498 million lb) relative to Amendment 1 overfishing definitions.

3.0 INITIAL REGULATORY FLEXIBILITY ANALYSIS

3.1 Introduction and Methods

The Regulatory Flexibility Act (RFA) requires the Federal rulemaker to examine the impacts of proposed and existing rules on small businesses, small organizations, and small governmental jurisdictions. When an agency publishes a general notice of proposed rulemaking for any proposed rule, the agency is required to prepare an IRFA describing the impacts of the proposed rule on small entities. Agencies also are required to prepare a FRFA when they promulgate a final rule. However, agencies may forgo the preparation of a regulatory flexibility analysis if they can certify that the rule would not have a significant economic impact on a substantial number of small entities. Although overall negative economic impacts are not anticipated as a result of this action due to the fact that the overall commercial quota in 2005 is not anticipated to restrict the overall commercial bluefish fishery under the Preferred Alternative, the IRFA was prepared to further evaluate the economic impacts of the three quota alternatives on small business entities.

3.1.1 Description of the Reasons Why Action by the Agency is being Considered

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

3.1.2 The Objectives and legal basis of the Proposed Rule

A complete description of the objectives of this proposed rule is found under section 4.2 of the EA. This action is taken under the authority of the Magnuson-Stevens Act and regulations at 50 CFR part 648.

3.1.3 Estimate of the Number of Small Entities

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

3.1.4 Reporting Requirements

This action does not contain any new collection of information, reporting, or record-keeping requirements.

3.1.5 Conflict with Other Federal Rules

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

A description of the bluefish fisheries is presented in section 6.0 of the EA and section 2.3 of Amendment 1 to the Bluefish FMP. A description of ports and communities is found in the 2002 Bluefish Specifications Document. Recent landings patterns among ports is examined in section 6.5.1 of the EA. An analysis of permit data is found in section 6.5.2 of the EA. A full description of the three alternatives analyzed in this

section and the TAL derivation process is presented in sections 4.3 and 5.0 of the EA. In addition, a brief description of each alternative is presented below for reference purposes.

The Small Business Administration (SBA) defines a small business in the commercial fishing and recreational fishing activity, as a firm with receipts (gross revenues) of up to $3.5 and $5.0 million, respectively. This rule could affect any vessel that fish for bluefish in Federal or state waters. The final measures regarding the 2005 quotas could affect any vessel holding an active Federal permit for bluefish as well as vessels that fish for this species in state waters.

An active participant in the commercial sector was defined as being any vessel that reported having landed one or more pounds of bluefish the dealer data during calendar year 2003. This data covers activity by unique vessels. Of the active vessels reported in 2003, 856 known vessels landed bluefish from Maine through North Carolina. The dealer data does not cover vessel activity in the South Atlantic. The dealer data indicate that 70 federally permitted vessels landed bluefish in North Carolina in 2003. However, the North Carolina landings data for bluefish may be incomplete is this data system. South Atlantic Trip Ticket Report data indicate that 871 vessels landed bluefish in North Carolina in 2003 (Alan Bianchi, NC Division of Marine Fisheries, pers. comm., 2004). Some of these vessels may by included in the 70 vessels identified as landing bluefish in the dealer data. As such, double counting is possible. In addition, up to 413 vessels may have landed bluefish in Florida's east coast in 2003 (Steve Brown, Fla Fish and Wildlife Conservation Commission, pers. comm., 2004). Bluefish landings in South Carolina and Georgia were very small in 2003 (i.e., only a few hundred pounds combined), representing a negligible proportion of the total bluefish landings along the Atlantic coast in 2003. As such, it was assumed that no vessel activity for those two states. In addition, it was estimated that in recent years approximately 2,063 party/charter vessels may have been active and/or caught bluefish.

Not all landings and revenues reported through the dealer data can be attributed to a specific vessel. Vessels with no Federal permits are not subject to any Federal reporting requirements with which to corroborate the dealer reports. Similarly, dealers that buy exclusively from state waters only vessels and have no Federal permits, are also not subject to Federal reporting requirements. Thus, it is possible that some vessel activity cannot be tracked with the landings and revenue data that are available. Thus, these vessels cannot be included in the threshold analysis, unless each state were to report individual vessel activity through some additional reporting system - which currently does not exist. This problem has two consequences for performing threshold analyses. First, the stated number of entities subject to the regulation is a lower bound estimate. Second, the portion of activity by these uncounted vessels may cause the estimated economic impacts to be over- or underestimated.

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

Procedurally, the economic effects of the commercial quota alternatives were estimated as follows. First, the Northeast dealer data were queried to identify all vessels that landed at least one or more pounds of bluefish in calendar year 2003 in the North Atlantic region. Note that the States of Connecticut and Delaware report canvas (summary) data to NMFS, so landings and revenues by individual vessels cannot be included. Thus, vessels that land exclusively in those states cannot be analyzed. Vessels that land in these, plus other states, are analyzed - but landings and revenues represent only that portion of business conducted in states other than Connecticut and Delaware. It is presumed that the impacts on vessels that cannot be identified will be similar to the participating vessels that are analyzed herein. Recent South Atlantic Trip Ticket Report data was also used to identify the vessels that landed bluefish in North Carolina and Florida's east coast.

The second step was to estimate total revenues from all species landed by each vessel during calendar year 2003. This estimate provides the base from which subsequent quota changes and their associated effects on vessel revenues were compared. Since 2003 is the last full year from which data are available (partial year data could miss seasonal fisheries), it was chosen as the base year for the analysis. That is, partial landings data for 2004 were not used in this analysis because the year is not complete. Since the South Atlantic Trip Ticket Report data system does not provide information at the trip level, averages were used to describe the contribution of bluefish to total landings and values for those entities. As such, steps 3 and 4 below were conducted for averages for vessels under the South Atlantic Trip Ticket Report data.

The third step was to deduct or add, as appropriate, the expected change in vessel revenues (associated with the potential landings associated with the 2005 quota compared to the 2003 landings). The NMFS Quota Report as of the week ending July 24, 2004 indicates that overall bluefish commercial landings are within the overall commercial quota for 2004. Therefore, the 2005 overall quota was not adjusted for overages.

The fourth step was to compare the estimated 2005 revenues from all species to the base year for every vessel due to the proposed quota changes. For each quota alternative a summary table was constructed that report the results of the threshold analysis. These results were further summarized by home state as defined by permit application data when applicable.

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

To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles are typically constructed. Each profile are based on impacts under the most restrictive possible alternative. The most restrictive alternative is chosen to identify impacted counties because it would identify the maximum number possible and thus include the broadest possible range of counties in the analysis. The following criteria was employed to derive the range of counties profiled: the number of vessels with revenue losses exceeding 5% per county was either greater than 4, or all vessels with losses exceeding 5% in a given state were from the same home county. It is expected that this system will allow for a county profile that may include a wide range of potentially affected areas.

Based on these criteria, a total of 6 counties were identified: Dare County, NC; Ocean County, NJ; New York, Suffolk, Nassau, and Kings Counties, NY (section 6.1 of the RIR/IRFA). Counties not included in this analysis (e.g., Hancock, ME; Brunswich County, NC; Monmouth and Cape May Counties, NJ; Providence County, RI) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county. In fact, most of these counties only had one or two affected vessel.

It should be noted that the county profiles are intended to characterize the relative importance of commercial fishing and fishing related industries in the home counties. As such, the county profiles provide a link to the socioeconomic analysis presented for each alternative in the EA but are not intended to be a substitute for that analysis. The target counties were identified based on the county associated with the vessels home port as listed in the owner's 2003 permit application.

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

4.0 DESCRIPTION OF QUOTA ALTERNATIVES

All quota alternatives considered in this analysis are based on various commercial harvest levels for bluefish (a high, medium, and low level of harvest). Table 19 shows the commercial quotas under the three alternatives evaluated in this analysis and their state-by-state distribution. Table 32 shows the percentage change of the 2005 allowable commercial landings (adjusted for RSA) relative to the 2003 landings. Note that the overall changes in fishing opportunity in 2005 compared to 2003 are 43.65% and 31.10% increase for Alternatives 1 and 3 and a 28.24% decrease for Alternative 2. While most states show a similar directional changes in fishing opportunities as the overall change in fishing opportunity in 2005 compared to 2003 under quota Alternatives 1 and 3, the state of New York and North Carolina show a reduction in fishing opportunity between these two time periods. This is due to the fact that those states landed a substantially higher amount of bluefish in 2003 compared to their commercial quotas that year. The same occurrence is evident for these two states (New York and North carolina) under Alternative 3. However, under Alternative 2, while the overall commercial 2005 quota would allow for a decrease in bluefish landings of 28.24% compared to 2003, most states show that under the 2005 quota they could land more bluefish that in 2003 if they wish to do so.

All quota alternatives considered in this IRFA are based on a TAL of 30.853 million lb (13.994 million kg) in 2005. This overall TAL would likely achieve the target F in 2005. The difference among the three alternatives described in this document relates to the manner in which the overall TAL is allocated to the commercial and recreational components of the fishery. A complete description of the derivation of the TAL and its allocation to the commercial and recreational sectors is presented in sections 5.0 of the EA. In addition, the final management measures are also briefly described in section 2.5 of the RIR/IRFA

5.0 ANALYSIS OF IMPACT OF ALTERNATIVES

For the purpose of analysis under the following alternatives, several assumptions were made. Participation and revenue changes noted in this analysis were made using the Northeast dealer and South Atlantic Trip Ticket Report data. That is all vessels that landed at least one or more pounds bluefish in calendar year 2003 were identified. Total revenues from all species landed by each vessel during calendar year 2003 were estimated using the dealer data. Since the dealer data only provides information from Maine to North Carolina, Trip report data was used to generate average revenues from all species landed by during calendar year 2003. These estimates provided the base from which to compare the effects of the 2005 final quota compared to the 2003 landings and associated potential changes in revenues.

The proposed bluefish quota for 2005 would allow fishermen to land an additional 3.159 million lb (1.432 million kg) of bluefish compared to 2003. However, on average, bluefish landings for the 1999-2003 period are about 7.580 million lb (3.438 million kg; Table 1). Unless market conditions change substantially in year 2005, commercial bluefish fishermen would likely have bluefish landings close to the 2003 landings or 1999-2003 average. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2005. As such, for states that show a 2005 quota allocation greater than their 2003 landings, it is assumed that 2005 landings would be equal to the 2003 landings. However, for states that show a 2005 quota allocation smaller than their 2003 landings, the 2005 allocation is considered for analysis purposes.

It is most likely that the percent of revenue reduction for impacted vessels varied considerably based on permits it held (i.e., based on the fisheries in which it was able to participate) and species it landed. Diversity in the fleet, perhaps, helps to balance loss in one fishery with revenue generated from other fisheries. For example, if 90% of a vessel's revenue was derived from bluefish in the base year, then a small decrease in the bluefish quota or landings level would be expected to have a large proportional reduction in the revenue of that vessel compared to one that only generates 10% of it's revenue from bluefish. Lastly, it is important to keep in mind that while the analyses based on landings for federally permitted vessels only (dealer data), those vessels may be permitted to, and frequently do, fish in state waters for a species of fish for which it does not hold a Federal permit.

The overall contribution of bluefish to the total value of all fish and shellfish from North Carolina to Florida's east coast is small. In 2002, the contribution of bluefish to the total value of all fish and shellfish landed in North Carolina, South Carolina, Georgia, and Florida was 0.63%, less than 0.01%, less than 0.01%, and 0.10%, respectively. It is not expected that this contribution had change considerably from 2002 to 2003.

5.1 Quota Alternative 1

To analyze the economic effects of this alternative, the total harvest limits specified in section 5.0 of the EA were employed. Under this alternative, the allocation to the commercial and recreational fisheries are approximately 44% higher than the commercial and recreational landings for 2003.

Even though the overall commercial allocation for 2005 is higher than the 2003 landings, when this allocation is distributed to the states, all states except New York and North Carolina show a 2005 quota level which is higher than their 2003 landings (Table 19). Under Amendment 1, states would be allowed to trade or combine quotas and the states could impose trip limits or other measures to manage their quotas. The system is the same as that operating under the Summer Flounder FMP. In most cases, quotas are transferred among states when fishing fleets follow migration routes of valuable fish stocks. Such is the case in the summer flounder fishery. For example, if summer flounder is present in the northern part of the Atlantic ocean at a specific time of the year and a vessel from a southern state harvests and lands summer flounder in a northern state, then a quota transfer from the southern state can be made to the northern state. This allows vessels to land in a port close to where they are fishing and avoid returning to their home state or principal port to offload their catch. This is of special importance when you have valuable species that have to enter the market in a timely fashion, or have species that may have shorter shelf live. It is not expected that commercial vessels will travel large distances to catch bluefish. However, quota transfers in the bluefish fishery have been made to allow states that have harvested their quota levels (i.e., that have been constrained by the initial quota) to continue to fish for bluefish in previous years. It is possible that bluefish quota could be transferred among states and that the New York and North Carolina initial quotas be increased as a result of such transfers. This could potentially decrease negative impacts to affected vessels.

5.1.1 Commercial Impacts

5.1.1.1 Threshold Analysis for Participating Vessels

The results of the threshold analysis from dealer data are reported in Table 20. A total of 50 vessels were projected to be impacted by revenue losses of 5% or greater. The economic range from expected revenue losses range from losses on the order of 30 to 39 percent for a total of 22 vessels to revenue losses of less than 5% for 255 vessels. In addition, 548 vessels were projected to have no change in revenue relative to 2003. The revenue loss under this alternative occur in spite of the fact that the overall proposed quota under Scenario 1 is higher than the total 2003 landings. This is primarily due to the fact that the New York and North Carolina quotas in 2005 are smaller than the actual landings in those states in 2003.

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 21). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of impacted vessels (revenue reduction 5%) by home state ranged from 1 vessel in each Maine and New Jersey to 41 in New York. Most states had no vessels impacted with revenue reduction 5%. The larger number of impacted vessels in New York is related to the fact that New York's allocation for 2005 is lower than the their 2003 landings by over 30%. Additional descriptive statistics regarding these vessels is presented in section 7.1.4 of the EA.

The threshold analysis presented in Table 21 is based on Northeast dealer data and represents potential impacts on vessels participating in the fisheries on the North Atlantic region. In order to further assess the impacts of the commercial 2005 quota measure on commercial vessels participating in the bluefish fishery in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 871 vessels (258 vessels <=18 ft; 488 vessels between 19-38 ft; and 125 vessels =>39 ft) landed bluefish in North Carolina in 2003. On average, these vessels generated 12.41% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 9.68% for vessel <=18 ft; 16.02% for vessels 19-38 ft; and 10.36% for vessels =>39 ft. Of the 871 vessels that landed bluefish in North Carolina in 2003, approximately 1% (9 vessels) landed bluefish only and 99% (871) of the vessels landed bluefish as well as other species. Under this alternative, landings are projected to decrease as a consequence of the 2005 allocation when compared to 2003 landings by approximately 4% in North Carolina (Table 32). On average, reduction in revenues due to the potential decrease in landings associated with the 2005 quota compared to the 2003 landings are expected to be minimal for fishermen that land bluefish in that state (i.e., 0.5%). No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

The changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

5.1.2 Recreational Impacts

Under Alternative 1, the bluefish 2005 recreational harvest limit would be 20.157 million lb (9.143 million kg). This limit would be approximately 44% above the above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 5% lower than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. Bluefish recreational landings for the 2000-2003 period have been substantially lower than the RHLs established for those years. For example, in 2002 recreational bluefish landings were 31% below the RHL established for that year and in 2000 landings were 59% below that year's limit. In addition, a projection based on preliminary MRFSS data from Waves 1-2, indicates that recreational bluefish landings in 2004 will be 22% lower than the recreational harvest for 2004. Given recent trends in bluefish recreational landings, it is expected that landings in 2005 will be substantially lower than the recreational harvest limit for 2005 and similar to those that occurred in 2003.

There is very little information available to empirically estimate how sensitive the affected party/charter boat anglers might be to the fishing regulations. However, given the level of the recreational harvest limit

for 2005 and recreational landings in recent years, it is not anticipated that this management measure will have any negative effects on recreational fishermen or affect the demand for party/charter boat trips. This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit. As such, the transfer is not expected to affect recreational landings in 2005.

Effects of research set-aside quota

The Council approved an RSA amount of 297,750 pounds (135,057 kg) for 2005 (Alternative 5.4 below). A research project as part of the RSA program was submitted to NMFS that would require an exemption from some of the current bluefish regulations. The impacts of these exemptions are described in sections 7.4 of the EA and 5.4 below.

The economic analysis regarding changes in the commercial TALs for the bluefish fisheries conducted under this alternative, as well as the other alternatives analyzed, incorporated adjustments for the quota specifications for 2005. That is, the RSA for bluefish was deducted from the initial overall TAL for 2005 to derive adjusted 2005 quotas. Therefore, the threshold analyses conducted under each alternative has accounted for overall reductions in fishing opportunities to all vessels typically participating in this fishery due to RSA. A detailed description of the potential impacts of the RSA are presented in section 5.4 below.

5.1.3 Summary of Impacts

In sum, Alternative 1 would result in a commercial and recreational allocation that is approximately 44% higher than the commercial and recreational landings for 2003.

Under this scenario, a total of 50 of the 853 commercial vessels were projected to incur revenue losses of 5% or greater according to dealer data. The affected entities are mostly smaller vessels that landed bluefish in New York. In addition, given recent South Atlantic Trip Ticket Report data, the impact of the quota reductions in North Carolina is expected to be minimal on average (0.5%). No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels. In addition, if quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005 to states that are constrained by the 2005 allocation, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

There should be no adverse economic or social impacts associated with the RSA.. The RSAs are expected to yield important long-term benefits associated with improved data upon which to base management decisions.

This alternative was chosen by the Council and Board because it provides the best allocation among the commercial and recreational sectors considering recent fishing practices and is consistent with the objectives of the FMP. Stable or increased landings from one year to the next are desirable from both a management and industry perspective. Drastic reductions in the quota from one year to the next could lead to increased levels of noncompliance by both commercial and recreational fishermen. A stable landings pattern would allow fishermen, processors, party/charter boat operators, equipment and bait suppliers to make business decisions. In addition, this alternative may maximize commercial revenues when compared to Alternatives 2 and 3.

5.2 Quota Alternative 2

To analyze the economic effects of this alternative, the total harvest limits specified in section 5.0 of the EA were employed. Under this alternative, the allocation to the commercial fishery is 28% below the 2003 landings and the allocation to the recreational fishery is 82% higher than recreational landings for 2003.

Even though the overall commercial allocation for 2005 is lower than the 2003 landings, when this allocation is distributed to the states, all states except Rhode Island, New York, New Jersey, North Carolina, and Georgia show a 2005 quota level which is higher than their 2003 landings (Table 19). Therefore, these landings in these states (Rhode Island, New York, New Jersey, North Carolina, and Georgia) will be constrained by the 2005 quota when compared to landings in 2003.

As stated before (section 5.1 of the RIR/IRFA), under Amendment 1, states would be allowed to trade or combine quotas and the states could impose trip limits or other measures to manage their quotas. These quota transfers have allowed states that have been constrained by their initial quota levels to harvest additional bluefish in previous years. It is possible that bluefish quota could be transferred among states and that the initial quotas for the states with constraining 2005 quotas be increased by the amounts transferred. However, given that under this alternative the overall commercial quota in 2005 is substantially lower than the 2004 quota and the 2003 landings, the amount of bluefish that could potentially be transferred among states would be lower than under Alternative 1, thus providing less economic relief.

5.2.1 Commercial Impacts

5.2.1.1 Threshold Analysis for Participating Vessels

The results of the threshold analysis from dealer data are reported in Table 25. A total of 93 vessels were projected to incur revenue losses of more than 5%. More specifically, 21 vessels were projected to incur in revenue losses of 5-9%, 16 vessels of 10-19%, 19 vessels of 20-29%, 11 vessels of 30-39%, 3 vessels of 40-49%, and 23 vessels of 50% or more. In addition, 460 vessels were projected to incur in revenue losses of less than 5% and 300 vessels were projected to have no change in revenue relative to 2003.

Impacts of the quota provision were examined relative to a vessel's home state as reported on the vessel's permit application (Table 26). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of vessels with revenue reduction of less than 5% by home state ranged from 1 in New Hampshire to 125 in New York. The number of vessels with revenue reduction of 5% or more ranged from none in Connecticut, Massachusetts, Maryland, New Hampshire, and Virginia to 49 in New York. In addition, 8 vessels of unknown home port are also impacted with revenue reduction of 5% or more. The larger number of impacted vessels with revenue reduction of 5% or more in New York, New Jersey, and North Carolina may be due to a relatively higher dependence on bluefish. Additional descriptive statistics regarding these vessels is presented in section 7.2.4 of the EA.

The threshold analysis presented in Table 26 is based on Northeast dealer data. Thus, represents potential impacts on vessels participating in the fisheries on the North Atlantic region. In order to further assess the impacts of the commercial 2005 quota measure on commercial vessels participating in the bluefish fishery in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 871 vessels (258 vessels <=18 ft; 488 vessels between 19-38 ft; and 125 vessels =>39 ft) landed bluefish in North Carolina in 2003. On average, these vessels generated 12.41% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 9.68% for vessel <=18 ft; 16.02% for vessels 19-38 ft; and 10.36% for

vessels =>39 ft. Of the 871 vessels that landed bluefish in North Carolina in 2003, approximately 1% (9 vessels) landed bluefish only and 99% (871) of the vessels landed bluefish as well as other species. Under this alternative, landings are projected to decrease as a consequence of the 2005 allocation when compared to 2003 landings by approximately 52% in North Carolina (Table 32). On average, reduction in revenues due to the potential decrease in landings associated with the 2005 quota compared to the 2003 landings are expected to be 6.45% for fishermen that land bluefish in that state. No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

The changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, since the overall quota in 2005 is substantially lower than the 2004 quota and the 2003 landings, the amount of bluefish that could potentially be transferred among states would be lower than under Alternative 1, thus providing less economic relief.

5.2.2 Recreational Impacts

Under Alternative 2, the bluefish 2005 recreational harvest limit would be 25.361 million lb (11.503 million kg). This limit would be approximately 82% above the above the recreational landings for 2003 (13.961 million lb or 6.332 million kg) and 20% higher than the recreational harvest limit for 2004 (21.150 million lb or 9.593 million kg). The possession limit would remain at 15 fish. The recreational impacts under this alternative are expected to be similar to those described under Alternative 1 (section 5.1.2 of the RIR/IRFA).

5.2.3 Summary of Impacts

In sum, Alternative 2 would result in a 28% decrease the commercial bluefish landings in 2005 compared to 2003 landings. The 2005 recreational harvest limit is 82% higher than the recreational landings in 2003.

Under this alternative, according to dealer data, a total of 93 of the 853 commercial vessels reporting landings in 2003 were projected to incur revenue losses in the 5% or more. Furthermore, 460 vessels were projected to incur in revenue losses of less than 5%. In addition, given recent South Atlantic Trip Ticket Report data, 871 vessels in North Carolina could potentially lose, on average, 6.45% of their total ex-vessel revenue. No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

This alternative is not expected to affect angler satisfaction nor expected to result in landings in excess of the recreational harvest limit.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels.

This alternative was not chosen by the Council and Board because it does not provide the best allocation among the commercial and recreational sectors considering recent fishing practices. The commercial losses associated with this alternative are the largest among all alternatives evaluated.

5.3 Quota Alternative 3

To analyze the economic effects of this alternative, the total harvest limits specified in section 5.0 of the EA were employed. Under this alternative, the allocation to the commercial and recreational fisheries are approximately 31 and 51% higher than the commercial and recreational landings for 2003, respectively.

As with Alternative 1, even though the overall commercial allocation for 2005 is higher than the 2003 landings, when this allocation is distributed to the states, all states except New York and North Carolina show a 2005 quota level which is higher than their 2003 landings (Table 19).

As stated before (section 5.1 of the RIR/IRFA), under Amendment 1, states would be allowed to trade or combine quotas and the states could impose trip limits or other measures to manage their quotas. These quota transfers have allowed states that have been constrained by their initial quota levels to harvest additional bluefish in previous years. It is possible that bluefish quota could be transferred among states and that the initial quotas for the states with constraining 2005 quotas be increased by the amounts transferred.

5.3.1 Commercial Impacts

5.3.1.1 Threshold Analysis for Participating Vessels

The results of the threshold analysis from dealer data are reported in Table 30. The economic range from expected revenue losses range from losses on the order of 5 to 39% for a total of 61 vessels of the 853 commercial vessels reporting landings in 2003. In addition, 244 vessels were projected to incur in revenue losses of less than 5%.

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 31). "Home state" indicates the state where a vessel is based and primarily ported, and is presumed to reflect to where the costs and benefits of management actions return. However, home state is self-reported at the time an individual applies for a Federal permit and may not necessarily indicate where the vessel subsequently conducts most of its activity. The number of impacted vessels with revenue reduction in the 5 to 39% by home state ranged from zero for most states to 44. In addition, 5 vessels of unknown home port are also impacted with revenue reduction of 5% or more. The larger number of impacted vessels with revenue reductions in the 5 to 39% range in New York and North Carolina may be due to a relatively higher dependence on bluefish.

The threshold analysis presented in Table 31 is based on Northeast dealer data. Thus, represents potential impacts on vessels participating in the fisheries on the North Atlantic region. In order to further assess the impacts of the commercial 2005 quota measure on commercial vessels participating in the bluefish fishery in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 871 vessels (258 vessels <=18 ft; 488 vessels between 19-38 ft; and 125 vessels =>39 ft) landed bluefish in North Carolina in 2003. On average, these vessels generated 12.41% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 9.68% for vessel <=18 ft; 16.02% for vessels 19-38 ft; and 10.36% for vessels =>39 ft. Of the 871 vessels that landed bluefish in North Carolina in 2003, approximately 1% (9 vessels) landed bluefish only and 99% (871) of the vessels landed bluefish as well as other species. Under this alternative, landings are projected to decrease as a consequence of the 2005 allocation when compared to 2003 landings by approximately 12% in North Carolina. On average, reduction in revenues due to the potential decrease in landings associated with the 2005 quota compared to the 2003 landings are expected to be small (1.53%) for fishermen that land bluefish in that state. No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

The changes described above are based on the potential changes in landings associated with the 2005 quotas versus 2003 landings. Amendment 1 implemented a transfer provision as a tool to mitigate the adverse economic impacts of prematurely closing a fishery when surplus quota exists. In fact, under the Interstate Management Plan for Atlantic Bluefish, states have been very cooperative in transferring commercial bluefish quota when needed to states that are running a deficit. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

5.3.2 Recreational Impacts

Under Alternative 3, the bluefish 2005 recreational harvest limit would be 21.065 million lb (9.554 million kg). This limit would be approximately 51% above the recreational landings for 2003 and less than 1% lower than the recreational harvest limit for 2004. The possession limit would remain at 15 fish. The recreational impacts under this alternative are expected to be similar to those described under Alternative 1 (section 5.1.2 of the RIR/IRFA).

5.3.3 Summary of Impacts

In sum, under this alternative, the allocation to the commercial and recreational fisheries are approximately 31 and 51% higher than the commercial and recreational landings for 2003, respectively.

Under this alternative, according to dealer data, a total of 244 of the 853 commercial vessels reporting landings in 2003 were projected to incur revenue losses of less than 5% and 61 vessels were projected to incur revenue losses in the 5 to 39%. Furthermore, given recent South Atlantic Trip Ticket Report data, 871 vessels in North Carolina could potentially lose, on average, 1.53% of their total ex-vessel revenue. No revenue reduction is expected for vessels that land bluefish in Florida as a consequence of the proposed 2005 quota compared to 2003 landings in that state.

It is important to stress that these changes represent merely the potential, i.e., based on available data. Actual changes in revenue will likely vary. This variation would occur for several reasons, including impacts undetermined for unidentifiable vessels. In addition, if quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2005 to states that are constrained by the 2005 allocation, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

There should be no adverse economic or social impacts associated with the RSA.. The RSAs are expected to yield important long-term benefits associated with improved data upon which to base management decisions.

5.4 Research Set-Aside Alternatives

Framework Adjustment 1 to the Bluefish FMP established a program in which data collection projects can be funded in part through a portion of the TAL set aside for research. The purpose of this program is to support research and the collection of additional data that would otherwise be unavailable. Through the RSA program, the Council encourages collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made. Reserving a small portion of the annual harvest of a species to subsidize the research costs of vessel operations and scientific expertise is considered an important investment in the future of the nation's fisheries.

An additional benefit that is sought from this program is the assurance that new data collected by non-governmental entities will receive the peer review and analysis necessary so that data can be utilized to improve the management of public fisheries resources. The annual research set-aside amount may

vary between 0 and 3% of a species' quota. For those species that have both a commercial quota and a recreational harvest limit, the set-aside calculation shall be made from the combined TAL.

5.4.1 No Research Set-Aside (No Action)

Under this alternative there will be no RSA deducted from the overall TAL. Therefore, the initial commercial quota and recreational harvest limit does not need to be adjusted downward as it would be done under a situation when a RSA is established. No adverse economic impacts are expected for vessels that land bluefish under this alternative. However, under this alternative the collaborative efforts among the public, research institutions, and government in broadening the scientific base upon which management decisions are made will cease.

5.4.2 Specify a Research Set-Aside for 2005

The Council and Board recommended to specify a maximum bluefish RSA of 297,750 lb (135,057 kg) for 2005. There is one research project submitted to NMFS requesting bluefish set-aside for 2005. If the RSA is not used, the RSA quota would be put back into the overall TAL. A summary of the conditionally approved RSA project requesting bluefish for 2005 is presented in Appendix B. This description includes project name, description and duration, amount of RSA requested, and gear to be used to conduct the project. This alternative is the status quo alternative.

Under this program, successful applicants receive a share of the annual quota for the purpose of conducting scientific research. The Nation receives a benefit in that data or other information about that fishery is obtained for management or stock assessment purposes that would not otherwise be obtained. In fisheries where the entire quota would be taken and the fishery is prematurely closed (i.e., the quota is constraining), the economic and social costs of the program are shared among the non RSA participants in the fishery. That is, each participant in a fishery that utilizes a resource that is limited by the annual quota relinquishes a share of the amount of quota retained in the RSA quota. However, in the case of bluefish the overall quota is not constraining landings i.e., landings in recent years in the commercial and recreational sectors have been below the commercial TAL and recreational harvest limit, respectively. Therefore, it is not expected that overall negative economic or social impacts will occur. It is possible that the vessels that would be used by researchers to conduct the research would be vessels that have not traditionally fished for bluefish. As such, permit holders that would have landed these bluefish in a state were the quota has been reached and the fishery closed could be disadvantaged. Furthermore, it is possible that in specific states where commercial quotas have restrained landings in recent years, the increased quota availability associated with a commercial quota that is not adjusted downward to account for RSA would benefit those states.

The economic discussion of the evaluated commercial quotas and recreational harvest limits discussed in sections 5.1, 5.2, and 5.3 of the RIR/IRFA were based on adjusted commercial quotas accounting for the RSA proposed under this alternative. More specifically, a RSA of 297,750 lb (135,057 kg) was used to derived the adjusted commercial quotas and RHLs in all evaluated alternatives.

Tables 19 and 32 show the potential impacts of the three commercial quotas evaluated for 2005. These impacts are associated with the specific changes associated with the 2005 quota compared to the 2003 landings. For example, under Alternative 1 the states of New York and North Carolina show a potential decrease in landings of 30.77% and 3.92%, respectively, when the 2005 quotas are compared to the 2003 landings. If commercial quotas not adjusted for RSA are considered, the potential decrease in landings associated with the 2005 quotas compared to the 2003 landings would change from 30.77% to 30.10% in New York and from 3.92% to 2.99% in North Carolina. In other words, an additional 10,524 lb (4,773 kg) and 32,487 lb (14,735 kg) of bluefish would be available to non-research participants in those fisheries (Under Alternative 1).

Changes in the recreational harvest limit due to the RSA would be nil; the limit changes from 20.353 million lb (9.231 million kg) to 20.157 million lb (9.143 million kg) in the bluefish recreational harvest level. This represents less than 1 percent change in the harvest level as a consequence of the RSA. In addition, given the level of the recreational harvest limit for 2005 and recreational landings in recent years, it is not anticipated that the RSA will affect angler satisfaction or recreational demand for bluefish.

6.0 OTHER IMPACTS

6.1 County Impacts

For the reasons specified in section 3.1 of this RIR/IRFA, the economic impacts on vessels of a specified home port were analyzed on a county wide basis. As stated in section 3.1, this profile of impacted counties was based on impacts under various alternatives evaluated. Counties included in the profile had to meet the following criteria:
- the number of vessels with revenue loss exceeding 5% per county was either greater than 4, or
- all vessels with revenue loss exceeding 5% in a given state were from the same home county.

The results of these analyses are summarized below. The following counties were identified as impacted under Alternative 2 (most restrictive): Dare County, NC; Ocean County, NJ; New York, Suffolk, Nassau, and Kings Counties, NY. Counties not included in this analysis (e.g., Hancock, ME; Brunswich County, NC; Monmouth and Cape May Counties, NJ; Providence County, RI) did not have enough impacted vessels to meet the criteria specified, i.e., there were less than 4 impacted vessels per county, or all impacted vessels in a state were not home ported within the same county. In fact, most of these counties only had one or two affected vessel.

Table 33 details population, employment personal income and the contribution of commercial fishing and sea food processing to total personal income for selected counties. Counties presented in Table 33 correspond to the counties identified as impacted (>= 4 vessels with revenue loss exceeding 5% per county) due to the management measures evaluated (i.e., as described in the above paragraph). Data presented in Table 33 were obtained from data bases supplied by the Minnesota IMPLANT Group for the calendar year 2001.

Of the 6 counties identified in Table 33, the percentage of total personal income derived from commercial fishing sales and from seafood processing was less than 1% for all counties. These data indicate that each of the identified counties in Table 33 are not substantially dependent upon sales of commercial fishing products to sustain the county economies. Population in these counties ranged from 31 thousand in Dare County to 2.4 million in Kings County.

Table 1. Bluefish commercial and recreational landings ('000 lb), 1981-2003.

Year	Commercial Landings	Recreational Landings
1981	16,454	95,288
1982	15,430	83,006
1983	15,799	89,122
1984	11,863	67,453
1985	13,501	52,515
1986	14,677	92,887
1987	14,504	76,653
1988	15,790	48,222
1989	10,341	39,260
1990	13,779	30,557
1991	13,581	32,997
1992	11,477	24,275
1993	10,122	20,292
1994	9,495	15,541
1995	8,009	14,307
1996	9,301	11,746
1997	9,063	14,302
1998	8,247	12,334
1999	7,085	8,253
2000	8,036	10,606
2001	8,689	13,230
2002	6,850	11,371
2003	7,239	13,961
Average 81-03	11,275	38,182
Average 94-03	8,201	12,565
Average 99-03	7,580	11,484

Table 2. Fishing effort of the bluefish fishery, relative to other fisheries by gear type, from Maine through North Carolina, in 2001 (VTR data).

	Bottom Otter Trawls	Gillnets	Handlines	Other	Total
Total Number of Trips	37,804	16,343	10,135	62,660	126,942
Number of Trips That Caught Bluefish	4,426	4,363	1,020	412	10,221
% of Total Trips That Caught Bluefish	43	43	10	4	100
% of Total Trips by Gear Type That Caught Bluefish	12	27	10	1	9
% of Directed Bluefish Trips[a]	8	22	7	6	14

[a]A directed bluefish trip is a trip where bluefish is greater than 50% of the catch.

Table 3. The percentage contribution of bluefish to the total landings and value of all species combined from Maine through East Coast of Florida, 2002.

State	Pounds of Bluefish as a Percentage of all Species	Value of Bluefish as a Percentage of all Species
ME	0.00%	0.00%
NH	0.02%	0.02%
MA	0.17%	0.07%
RI	0.54%	0.28%
CT	0.34%	0.06%
NY	3.81%	1.06%
NJ	0.82%	0.50%
DE	0.78%	0.18%
MD	0.21%	0.08%
VA	0.11%	0.11%
NC	1.41%	0.63%
SC	<0.01%	<0.01%
GA	<0.01%	<0.01%
FL (East Coast)	0.38%	0.10%
Total	0.46%	0.20%

Source: NMFS pers. comm., Silver Spring, MD, 2003 and preliminary South Atlantic General Canvass data.

Table 4. The percentage (%) of bluefish caught and landed by recreational fishermen for each mode, Maine through Florida, 1994-2003.

Mode	Catch (Number A+B1+B2)	Landing (Weight A+B1)
Shore	45	19
Party/Charter	7	24
Private/Rental	49	57

Source: MRFSS.

Table 5. Number of bluefish recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2005.

Year	Number of Fishing Trips[a]	Recreational Harvest Limit ('000 lb)	Recreational Landings ('000 lb)[b]
1991	5,811,446	None	32,997
1992	4,261,811	None	24,275
1993	3,999,487	None	20,292
1994	3,414,337	None	15,541
1995	3,409,966	None	14,307
1996	2,523,984	None	11,746
1997	2,021,713	None	14,302
1998	1,838,525	None	12,334
1999	1,316,939	None	8,253
2000	1,279,035	25,745	10,606
2001	1,914,480	28,258	13,230
2002	1,880,539	16,365	11,371
2003	N/A	26,793[c]	13,961
2004	N/A	21,150[c]	N/A
2005	-	20,157[c]	-

[a]Number of fishing trips as reported by anglers in the intercept survey indicating that the primary species sought was bluefish, North Atlantic, Mid-Atlantic, and South Atlantic regions combined. Estimates are not expanded. MRFSS Data.
[b]Atlantic coast from Maine through Florida's east coast.
N/A = Data not available.
[c]Adjusted for RSA.
Source: MRFSS.

Table 6. Total angler trip expenditures ('000 $) by mode and state in 1998.

State	Party/Charter	Private/Rental	Shore
CT	1,707	28,132	11,032
DE	2,190	18,272	17,609
ME	189	7,656	13,401
MD	15,468	70,297	48,753
MA	10,686	73,391	51,829
NH	1,231	4,394	4,429
NJ	28,785	143,130	33,430
NY	12,055	102,358	24,138
RI	4,191	15,944	16,586
VA	5,190	98,208	38,634
Total	81,692	561,782	259,841

Table 7. Angler effort that targeted bluefish in 2003, Maine thought Virginia.

Mode	Total MRFSS Effort	Total Effort Targeting Bluefish[a]	Percent Targeting Bluefish
Party/Charter	1,481,693	66,143	4.46%
Private/Rental	15,434,147	584,464	3.79%
Shore	11,034,911	1,110,152	9.97%
Total	27,950,751	1,750,759	6.26%

[a]Total effort targeting bluefish as primary species.

Table 8. Average willingness to pay for a one-day fishing trip, by state.

State	Mean 1994 ($'s)	Adjusted to 2003 ($'s)[a]
ME	6.4	7.95
NH	0.85	1.06
MA	8.38	10.40
RI	4.23	5.25
CT	3.07	3.81
NY	21.58	26.79
NJ	14.12	17.53
DE	1.43	1.78
MD	12.09	15.01
VA	42.33	52.56

[a]Prices were adjusted using the Bureau of Labor Statistics Consumer Price Index.

Table 9. Aggregate willingness to pay for anglers that indicated they were targeting bluefish in 2003.

State	Total Effort Targeting Bluefish	Willingness to Pay ($'s)
ME	17,791	141,438
NH	7,022	7,443
MA	206,509	2,147,694
RI	176,095	924,499
CT	218,061	830,812
NY	570,395	15,280,882
NJ	471,635	8,267,762
DE	34,822	61,983
MD	30,185	453,077
VA	18,244	958,905

Table 10. Willingness to pay for a one fish increase in the catch rate of small game per trip, Maine through Virginia.

State	Mean 1994 ($'s)	Adjusted to 2003 ($'s)[a]
ME	3.74	4.64
NH	3.25	4.04
MA	3.09	3.84
RI	3.13	3.89
CT	3.29	4.08
NY	2.43	3.02
NJ	2.69	3.34
DE	3.00	3.72
MD	3.44	4.27
VA	2.46	3.05
All States	2.89	3.59

[a]Prices were adjusted using the Bureau of Labor Statistics Consumer Price Index.

Table 11. 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 12. 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 13. 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 14. Statistical areas that accounted for at least 5 percent of the bluefish catch and/or trips in 2003, NMFS VTR data. (A map showing the location of these statistical areas is presented in Figure 1).

Statistical Area	Catch (percent)	Trips (percent)
635	34.9	4.5
613	11.5	16.1
611	10.8	26.9
612	8.5	10.9
636	7.2	0.4
615	6.8	2.5
614	6.0	4.2
539	5.2	12.6
521	2.0	5.1

Table 15. Top ports of bluefish landings (in pounds), based on NMFS 2003 dealer data. Since this table includes only the "top ports," it may not include all of the landings for the year.

Port	Pounds	# Vessels
WANCHESE, NC	2,525,390	59
HAMPTON BAY, NY	487,628	52
LONG BEACH/BARNEGAT LIGHT, NJ	431,353	36
GREENPORT, NY	369,193	14
POINT PLEASANT, NJ	344,110	36
AMMAGANSETT, NY	279,042	9
POINT JUDITH, RI	266,509	104
MONTAUK, NY	189,653	108
HATTERAS, NC	178,768	16
BELFORD, NJ	166,714	22
CHATHAM, MA	150,310	69

Note: Ports or port groups with less than 3 vessels were omitted due to confidentiality of data.

Table 16. MRFSS preliminary estimates of 2003 recreational harvest and total catch for bluefish.

State	Harvest (A+B1)		Catch (A+B1+B2)
	Pounds of Fish	Number of Fish	Number of Fish
ME	47,692	13,784	36,207
NH	50,342	7,603	24,286
MA	1,329,118	368,541	1,374,082
RI	973,465	328,831	1,246,297
CT	2,193,769	450,237	983,079
NY	2,824,924	1,110,054	2,417,402
NJ	3,805,565	1,539,627	3,416,731
DE	160,909	87,643	204,440
MD	433,797	214,939	723,490
VA	333,732	167,904	501,055
NC	803,380	939,199	2,323,334
SC	26,497	32,059	181,307
GA	1,596	1,200	23,599
FL	976,038	626,157	1,223,654

Table 17. Dealers reporting buying bluefish by state IN 2003 (from NMFS commercial dealer landings database).

Number of Dealers	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC
	1	3	46	30	5	53	24	2	3	14	23

Table 18. Comparison of habitat impacts and considerations for selecting alternatives.

Alternative	Commercial Quota in mill lb.	Potential Change in CPUE and Habitat Impacts	Considerations for Selecting Alternative
Alternative 1 (Preferred - Status Quo)	10.398	Based upon species abundance, habitat impacts may remain the same as existing, or decrease. If abundance increases, increased CPUE will tend to lead toward stable or decreased impacts to habitat.	Maximizes commercial landings to greatest extent, expected to achieve the target exploitation rate, no expected habitat impacts, no increase or decrease in financial benefit to industry.
Alternative 2 - (Most Restrictive)	5.245	Based upon species abundance, habitat impacts may remain the same as existing, or decrease. If abundance increases, increased CPUE will tend to lead toward stable or decreased impacts to habitat. The potential for maintaining or decreasing impacts is greatest with this alternative	Does not maximize commercial landings, reduced short-term yields, potential decreased impacts on habitat, decrease in financial benefit to industry.
Alternative 3	9.490	Based upon species abundance, habitat impacts may remain the same as existing, or decrease. The potential for impacts to habitat is less than Alternative 1 and more than Alternative 2.	Does not maximize commercial landings, reduced short-term yields, potential decreased impacts on habitat, potential decrease in financial benefit to industry.

Table 19. The 2005 state-by-state commercial bluefish quota[a] and the 2003 commercial landings by state.

State	% of Quota	2005 Commercial Quota Alternative 1	2005 Commercial Quota Alternative 2	2005 Commercial Quota Alternative 3	2003 Landings
ME	0.6685	69,515	34,725	63,444	634
NH	0.4145	43,102	21,531	39,338	8,430
MA	6.7167	698,448	348,898	637,450	328,358
RI	6.8081	707,952	353,646	646,124	417,824
CT	1.2663	131,678	65,778	120,178	9,466
NY	10.3851	1,079,912	539,453	985,600	1,559,991
NJ	14.8162	1,540,688	769,626	1,406,134	1,011,579
DE	1.8782	195,308	97,563	178,251	30,670
MD	3.0018	312,147	155,928	284,886	52,906
VA	11.8795	1,235,310	617,080	1,127,426	250,599
NC	32.0608	3,333,897	1,665,395	3,042,737	3,470,008
SC	0.0352	3,660	1,828	3,341	141
GA	0.0095	988	493	902	851
FL	10.0597	1,046,075	522,550	954,718	97,674
Total	100.0001	10,398,681	5,194,496	9,490,529	7,239,131

[a]2005 quota adjusted for RSA.
Source: 2003 landings are from NMFS preliminary dealer data ME-VA (as of May 10, 2004) and preliminary South Atlantic General Canvass data, NC-FL (as of May 4, 2004) .

Table 20. Threshold analysis of revenues for participating vessels under Alternative 1, based on dealer data.

Quota Alternative 1 (Preferred)		No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by ≥ 5% Reduction		<5	5-9	10-19	20-29	30-39	40-49	50
853	50	548	255	13	11	4	22	0	0

Table 21. Review of revenue impacts under quota Alternative 1, by home port state.

State	Participating Vessels	Number of Vessels Impacted ≥5%	No Change in Revenue (number	Number of Impacted Vessels by Reduction Percentile (percent)						
				<5	5-9	10-19	20-29	30-39	40-49	50
CT	12	0	12	0	0	0	0	0	0	0
MA	234	0	229	5	0	0	0	0	0	0
MD	15	0	15	0	0	0	0	0	0	0
ME	6	1	5	0	0	0	0	1	0	0
NC	99	0	11	88	0	0	0	0	0	0
NH	19	0	19	0	0	0	0	0	0	0
NJ	101	1	98	2	0	1	0	0	0	0
NY	177	41	11	125	10	10	2	19	0	0
PA	3	0	3	0	0	0	0	0	0	0
RI	100	0	100	0	0	0	0	0	0	0
VA	39	0	21	18	0	0	0	0	0	0
OTHER[a]	4	2	2	0	0	0	0	20	0	0
NOT KNOWN[b]	44	5	22	17	3	0	2	0	0	0
Total	853	50	548	255	13	11	4	22	0	0

[a]States with fewer than 3 vessels were aggregated (DE and FL).
[b]Vessels have shown landings of bluefish in 2003, but do not hold any commercial Federal permits in 2003. These vessels may be fishing exclusively in state waters fisheries for bluefish, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

Table 22. Federal permits held by the 50 commercial vessels (holding any Federal fishing permit in 2003) projected to have revenue reductions of more than 5% under the least restrictive alternative (Alternative 1).

	Northeast Region Permit Status		Number of Vessels	Percent of Permitted Vessels
Commercial	Multispecies	Limited Access	8	16
	Multispecies	Open Access	26	52
	Atl. Sea Scallop	Open Access	16	32
	Surfclam	Open Access	4	8
	Ocean Quahogs	Open Access	2	4
	Herring, VMS	Open Access	24	48
	Lobster, Non-trap	Limited Access	2	4
	Lobster, Trap	Limited Access	4	8
	Bluefish	Open Access	35	70
	Tilefish (Full-time/Tier 2)	Limited Access	16	32
	Summer Flounder	Limited Access	8	16
	Scup	Limited Access	22	44
	Loligo/*Illex*/Mackerel/ Butterfish	Open Access	32	64
	Black Sea Bass	Limited Access	19	38
	Dogfish	Open Access	28	56
	Monkfish	Limited Access	4	8
	Monkfish	Open Access	22	44
	Skate	Open Access	24	48
	Atl. Deep-Sea Red Crab	Open Access	8	16
Recreational (Party/Charter)	Multispecies	Open Access	11	22
	Bluefish	Open Access	18	36
	Summer Flounder	Open Access	17	34
	Scup	Open Access	14	28
	Squid/Mackerel/ Butterfish	Open Access	14	28
	Black Sea Bass	Open Access	16	32

Table 23. Descriptive information for the 50 commercial vessels (holding any Federal fishing permit in 2003) projected to have revenue reductions of more than 5% under the least restrictive alternative (Alternative 1). Based on 2003 descriptive data from NMFS permit files - No vessel characteristics data are reported for states with fewer than 3 permits.

	NY	Other
# Permits by Home Port State	43	2
# Permits by Principal Port State	43	2
# Permits by Mailing Address State	43	2
Avg. Length in Feet by Principal Port	32	0
Avg. GRT by Principal Port	13	0
% of Vessels where Home Port State = Principal Port State	100	100

Table 24. Distribution of the 50 commercial vessels (holding any Federal fishing permit in 2003) projected to have a revenue reductions of more than 5% under the least restrictive alternative (Alternative 1). Distribution by state, county, and home port, from 2003 NMFS permit files - home ports with fewer than 3 vessels are not reported - only county-level data supplied; counties with fewer than 3 vessels are not reported.

State	County	Home Port	Number of Vessels
New York	Nassau	Freeport	3
		Other	1
	Kings	Other	4
	Suffolk	Montauk	14
		Other	6

Table 25. Threshold analysis of revenues for participating vessels under quota Alternative 2, based on dealer data.

Quota Alternative 2 (Most Restrictive)		No Change in Revenue (number	Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by ≥ 5% Reduction		<5	5-9	10-19	20-29	30-39	40-49	50
853	93	300	460	21	16	19	11	3	23

Table 26. Review of revenue impacts under quota Alternative 2, by home port state.

State	Participating Vessels	Number of Vessels Impacted ≥5%	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
				<5	5-9	10-19	20-29	30-39	40-49	50
CT	12	0	10	2	0	0	0	0	0	0
MA	234	0	204	30	0	0	0	0	0	0
MD	15	0	15	0	0	0	0	0	0	0
ME	6	1	3	2	0	0	0	0	0	1
NC	99	18	10	71	8	2	4	4	0	0
NH	19	0	18	1	0	0	0	0	0	0
NJ	101	13	3	85	4	2	7	0	0	0
NY	177	49	3	125	6	8	7	7	1	20
PA	3	1	0	2	0	0	0	0	0	0
RI	100	1	1	98	0	1	0	0	0	0
VA	39	0	20	19	0	0	0	0	0	0
OTHER[a]	4	2	2	0	0	0	0	0	0	2
NOT KNOWN[b]	44	8	11	25	3	3	0	0	2	0
Total	853	93	300	460	21	16	19	11	3	23

[a]States with fewer than 3 vessels were aggregated (DE and FL).
[b]Vessels have shown landings of bluefish in 2003, but do not hold any commercial Federal permits in 2003. These vessels may be fishing exclusively in state waters fisheries for bluefish, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

Table 27. Federal permits held by the 85 commercial vessels (holding any Federal fishing permit in 2003) projected to have revenue reductions of more than 5% under the most restrictive alternative (Alternative 2).

	Northeast Region Permit Status		Number of Vessels	Percent of Permitted Vessels
Commercial	Multispecies	Limited Access	11	13
	Multispecies	Open Access	40	47
	Atl. Sea Scallop	Open Access	30	35
	Surfclam	Open Access	9	11
	Ocean Quahogs	Open Access	8	9
	Herring, VMS	Open Access	42	49
	Lobster, Non-trap	Limited Access	4	5
	Lobster, Trap	Limited Access	4	5
	Bluefish	Open Access	71	84
	Tilefish (Full-time/Tier 2)	Limited Access	37	44
	Summer Flounder	Limited Access	12	14
	Scup	Limited Access	27	32
	Loligo/*Illex*/Butterfish	Limited Access	1	1
	Loligo/*Illex*/Mackerel/ Butterfish	Open Access	51	60
	Black Sea Bass	Limited Access	32	38
	Dogfish	Open Access	59	69
	Monkfish	Limited Access	7	8
	Monkfish	Open Access	38	45
	Skate	Open Access	38	45
	Atl. Deep-Sea Red Crab	Open Access	14	16
Recreational (Party/Charter)	Multispecies	Open Access	22	26
	Lobster, Non-trap	Limited	1	1
	Bluefish	Open Access	33	39
	Summer Flounder	Open Access	32	38
	Scup	Open Access	26	31
	Squid/Mackerel/ Butterfish	Open Access	25	29
	Black Sea Bass	Open Access	29	34

Table 28. Descriptive information for the 85 commercial vessels (holding any Federal fishing permit in 2003) projected to have revenue reductions of more than 5% under the most restrictive alternative (Alternative 2). Based on 2003 descriptive data from NMFS permit files - No vessel characteristics data are reported for states with fewer than 3 permits.

	NC	NJ	NY	Other
# Permits by Home Port State	18	13	49	3
# Permits by Principal Port State	18	16	49	1
# Permits by Mailing Address State	18	16	49	1
Avg. Length in Feet by Principal Port	39	48	33	
Avg. GRT by Principal Port	17	36	13	
% of Vessels where Home Port State = Principal Port State	100	81	100	33

Table 29. Distribution of the 85 commercial vessels (holding any Federal fishing permit in 2003) projected to have a revenue reductions of more than 5% under the most restrictive alternative (Alternative 2). Distribution by state, county, and home port, from 2003 NMFS permit files - home ports with fewer than 3 vessels are not reported - only county-level data supplied; counties with fewer than 3 vessels are not reported.

State	County	Home Port	Number of Vessels
North Carolina	Dare	Wanchese	8
		Hatteras	3
		Other	6
New Jersey	Ocean	Barnegat Light	4
		Point Pleasant	3
		Other	5
New York	Nassau	Freeport	3
	New York	New York	12
	Suffolk	Montauk	17
		Other	8
	Kings	Other	5

Table 30. Threshold analysis of revenues for participating vessels under quota Alternative 3, based on dealer data.

Quota Scenario 3			Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by ≥ 5% Reduction	No Change in Revenue (number)	<5	5-10	10-19	20-29	30-39	40-49	50
853	61	548	244	19	14	5	23	0	0

Table 31. Review of revenue impacts under quota Alternative 3, by home port state.

State	Participating Vessels	Number of Vessels Impacted ≥5%	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
				<5	5-9	10-19	20-29	30-39	40-49	50
CT	12	0	12	0	0	0	0	0	0	0
MA	234	0	229	5	0	0	0	0	0	0
MD	15	0	15	0	0	0	0	0	0	0
ME	6	1	5	0	0	0	0	1	0	0
NC	99	8	11	80	8	0	0	0	0	0
NH	19	0	19	0	0	0	0	0	0	0
NJ	101	1	98	2	0	1	0	0	0	0
NY	177	44	11	122	8	13	3	20	0	0
PA	3	0	3	0	0	0	0	0	0	0
RI	100	0	100	0	0	0	0	0	0	0
VA	39	0	21	18	0	0	0	0	0	0
OTHER[a]	4	2	2	0	0	0	0	2	0	0
NOT KNOWN[b]	44	5	22	17	3	0	2	0	0	0
Total	853	61	548	244	19	14	5	23	0	0

[a]States with fewer than 3 vessels were aggregated (DE and FL).

[b]Vessels have shown landings of bluefish in 2003, but do not hold any commercial Federal permits in 2003. These vessels may be fishing exclusively in state waters fisheries for bluefish, and landings are indicated because of reporting requirements for their other Federal permits or they do not hold a Federal permit to participate in these fisheries any longer.

Table 32. Percentage changes associated with allowable commercial landings for various quota alternatives in 2005 (adjusted quota for RSA) relative to 2003 landings by state.

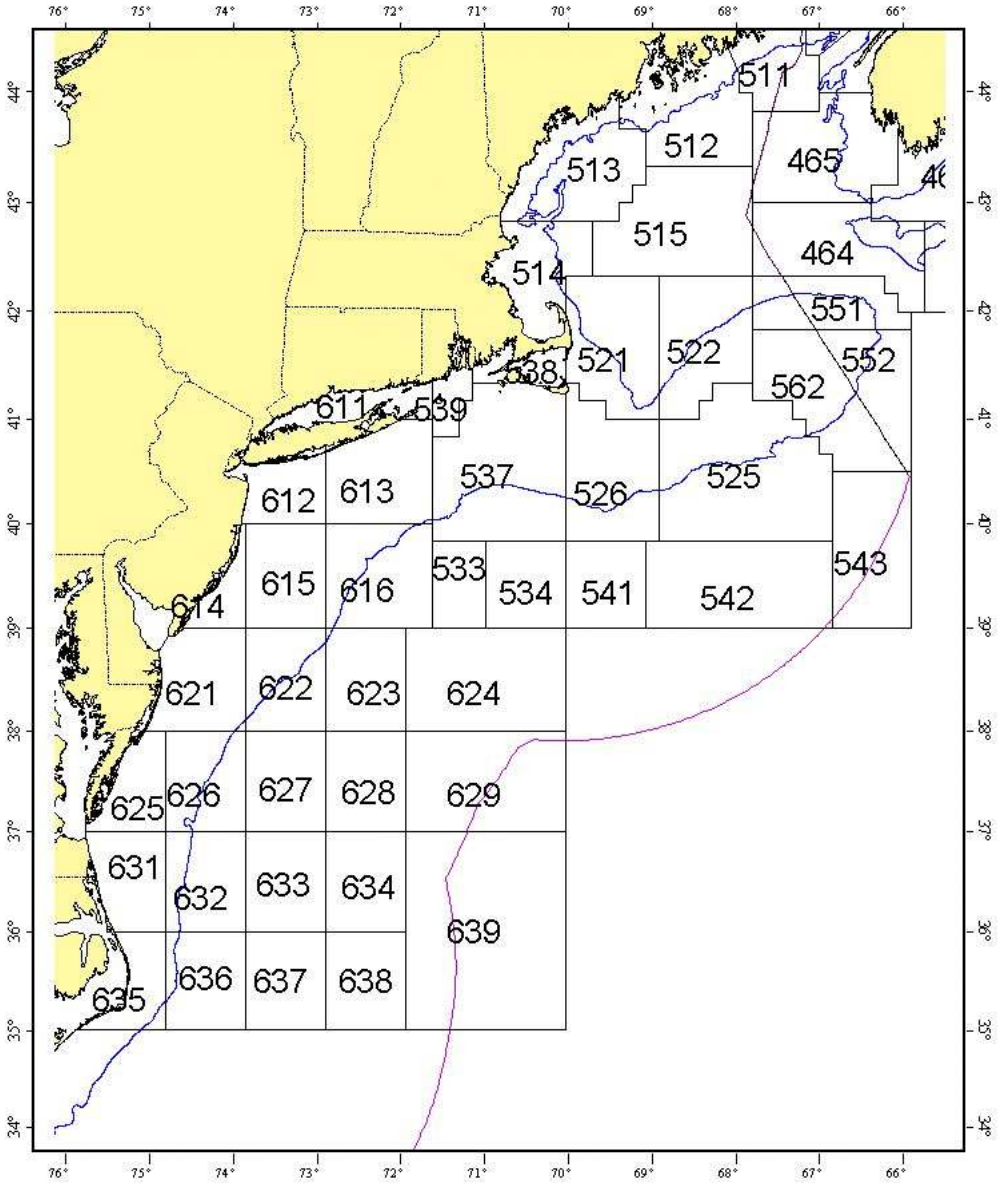
State	2005 Commercial Quota Alternative 1	2005 Commercial Quota Alternative 2	2005 Commercial Quota Alternative 3
ME	10864.53	5377.16	9906.96
NH	411.30	155.41	366.65
MA	112.71	6.26	94.13
RI	69.44	-15.36	54.64
CT	1291.07	594.89	1169.58
NY	-30.77	-65.42	-36.82
NJ	52.31	-23.92	39.00
DE	536.80	218.11	481.19
MD	490.00	194.73	438.48
VA	392.94	146.24	349.89
NC	-3.92	-52.01	-12.31
SC	2495.98	1196.78	2269.26
GA	16.08	-42.01	5.95
FL	970.99	434.99	877.45
Total	43.65	-28.24	31.10

Table 33. Counties identified as having >= 4 commercial vessels showing revenue reductions of 5% or more as a consequence of the most restrictive alternative (Alternative 2) evaluated in this document (section 3.1 the RIR/IRFA).

State	County[a]	Population[b]	Employment[c]	Total Personal Income[d] (million of $'s)	Commercial Fishing Employment	Percent of Personal Income Derived From Commercial Fishing	Fresh and Frozen Seafood Processing Employment	Percent of Personal Income Derived from Seafood Processing
NY	New York	1,541,150	2,768,774	144,033.30	*	*	23	.001%
NY	Suffolk	1,438,973	752,834	52,116.44	1,111	.01%	0	0
NY	Nassau	1,334,648	761,530	63,524.34	198	.004%	84	.003%
NY	Kings	2,465,286	621,473	61,432.10	16	.0003%	326	.03%
NJ	Ocean	527,207	187,627	15,742.25	166	.04%	0	0
NC	Dare	31,168	25,453	830.10	77	.08%	17	.01%

* = < 10 observations.
a = Data obtained from the Minnesota IMPLAN Group, Inc., IMPLAN System (data and software), 1725 Tower Drive West, Suite 140, Stillwater, MN 55082, www.implan.com, 2001.
b = Year-round population.
c = Includes both full-time and part-time workers.
d = Includes employee compensation (wage and salary payments and benefits paid by employers) and proprietary income (payments received by self-employed individuals as income).

Figure 1. NMFS Northeast statistical areas.



APPENDIX A

Mid-Atlantic Research Set-Aside Program
Requesting Bluefish for the 2005 Fishing Year
(Conditionally Approved Project)

03-RSA-003 - National Fisheries Institute, Inc., "Development of a Supplemental Finfish Survey Targeting Mid-Atlantic Migratory Species." Principal Investigator – Eric N. Powell.

Project Description: To obtain third year support for the development/refinement of a commercial-vessel based survey program in the Mid-Atlantic region that tracks the migratory behavior of selected recreationally and commercially important species. Information gathered would supplement the NMFS finfish survey databases and will include development of ways to better evaluate how seasonal migration of fish in the Mid-Atlantic influences stock abundance estimates.

RSA Amount: 192,177 lbs of summer flounder, 120,000 lbs of scup, 281,250 lbs of *Loligo*, 61,500 lbs of black sea bass, 297,750 lbs of bluefish.

Project Period: January 1 - December 31, 2005. Award Status: Pending.

Project Abstract: To obtain third year support for the development/refinement of a commercial-vessel based survey program in the Mid-Atlantic region that tracks the migratory behavior of selected recreationally and commercially important species. Information gathered from the study would supplement the National Marine Fisheries Service (NMFS) finfish survey databases. The study will include development of methods to better evaluate how seasonal migration of fish in the Mid-Atlantic influences stock abundance estimates.

RSA Amount: 192,177 lbs (87,170 kg) of summer flounder, 120,000 lbs (54,431 kg) of scup, 281,350 lbs (127,618 kg) of *Loligo* squid, 61,500 lbs (27,859 kg) of black sea bass, and 297,750 lbs (135,057 kg) of bluefish.

Project Description: This project involves collaborative efforts from NFI, Rutgers University, and the NMFS Northeast Fisheries Science Center (NEFSC). The field work will be carried out by up to two research vessels conducting a trawl survey along up to 8 offshore transects in January, March, May, and November. The transects will include 6 fixed offshore transects, one each near Alvin, Hudson, Baltimore, Poor Man's, Washington, and Norfolk Canyons, and 2 adaptive transects positioned within the Mid-Atlantic area based on a pre-cruise meeting with NFI, Rutgers, and the NEFSC.

Sampling will be conducted along each transect at depths near 40 (73 m), 50 (91m), 60 (110 m), 80 (183 m), 100 (183 m), 125 (229 m), 150 (247 m), 200 (366 m), 225 (411 m), and 250 fm (457 m), with up to five additional trawl sites added along each of the transects based on the catches of the target species. Primary target species will be summer flounder, scup, black sea bass, monkfish, silver hake, *Loligo* squid, offshore hake, and spiny dogfish, and secondary target species will be skates, yellowtail flounder, winter flounder, and lobster. One tow will be conducted at each station over a fixed distance of 1 nautical mile (1.8 km), with a tow speed of 3 to 3.2 knots (5.8 to 5.9 km/hr). Careful records will be kept of all gear descriptions so that subsequent surveys can use consistent gear. A four-seam box net will be used with a 2.4-inch (6.1- cm) mesh codend. Sampling protocol for handling the catch from the trawl survey will follow standard NOAA Fisheries survey methods. Every effort will be made to weigh the entire catch, or to put in baskets the entire catch and weigh a subsample of the baskets. Lengths will be obtained for target species. If time does not permit sampling between tows, fish sorted for length measurement will be placed in labeled containers and stored until processing can occur. Temperature and depth profiles will be taken for each tow. Pre- and post-cruise meetings will be held to confirm study logistics and conduct retrospective analysis of cruise activities. Scientific research personnel will be on board the vessel at all times when the survey is conducted.

The project will involve one or two vessels in the 75 to 100 ft (23 to 30 m) size range conducting approximately 180, 15 to 30 minute, research bottom tows. The research vessel/vessels will need exemptions from closed areas, seasonal and gear restrictions, and minimum size restrictions.

Additional, approximately 25 more vessels will be harvesting the RSA amounts allocated to the project. These vessels will need exemptions to closed seasons and trip limits for the RSA species listed under the project. The most likely ports for landings will be in Rhode Island, New York, New Jersey, and Virginia."

APPENDIX B

Description of Species Listed as Endangered 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, but 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 1966-1972, 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 take place in 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 the 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 from 1904 to 1972 total 1,995. 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 are 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.

Loggerhead Sea Turtle

The loggerhead turtle was listed as "threatened" under the ESA on July 28, 1978, but is considered endangered by the World Conservation Union (IUCN) and under the Convention on International Trade in Endangered Species of Flora and Fauna (CITES). Loggerhead sea turtles are found in a wide range of habitats throughout the temperate and tropical regions of the Atlantic. These include open ocean, continental shelves, bays, lagoons, and estuaries (NMFS& FWS 1995). In the management unit of this FMP they are most common on the open ocean in the northern Gulf of Maine, particularly where associated with warmer water fronts formed from the Gulf Stream. The species is also found in entrances to bays and sounds and within bays and estuaries, particularly in the Mid-Atlantic.

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

A Turtle Expert Working Group (TEWG 2000), conducting an assessment of the status of the loggerhead sea turtle population in the Western North Atlantic (WNA), concluded that there are at least four loggerhead subpopulations separated at the nesting beach in the WNA (TEWG 1998). However, the group concluded that additional research is necessary to fully address the stock definition question. The four nesting subpopulations include the following areas: northern North Carolina to northeast Florida, south Florida, the Florida Panhandle, and the Yucatan Peninsula. Genetic evidence indicates that loggerheads from Chesapeake Bay southward to Georgia appear nearly equally divided in origin between South Florida and northern subpopulations. Additional research is needed to determine the origin of turtles found north of the Chesapeake Bay.

The TEWG (1998) analysis also indicated the northern subpopulation of loggerheads may be experiencing a significant decline (2.5% - 3.2% for various beaches). A recovery goal of 12,800 nests

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

The most recent 5-year ESA sea turtle status review (NMFS & USFWS 1995) highlights the difficulty of assessing sea turtle population sizes and trends. Most long-term data comes from nesting beaches, many of which occur extensively in areas outside U.S. waters. Because of this lack of information, the TEWG was unable to determine acceptable levels of mortality. This status review supports the conclusion of the TEWG that the northern subpopulation may be experiencing a decline and that inadequate information is available to assess whether its status has changed since the initial listing as threatened in 1978. NMFS & USFWS (1995) concluded that loggerhead turtles should remain designated threatened but noted that additional research will be necessary before the next status review can be conducted.

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 reduced 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 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.