2004 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

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EXECUTIVE SUMMARY

The Fishery Management Plan for the Atlantic Bluefish Fishery (FMP) requires annual management measures to be specified for each fishing year to ensure that the annual fishing targets specified in the FMP are attained. The purpose of the environmental analysis (EA) is to recommend annual management measures for fishing year 2004 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 address the allocation of the TAL into a commercial quota and a recreational harvest limit.

Measures being specified for 2004 are specified to achieve a fishing mortality rate of 0.184. Projection results indicate that the bluefish stock will increase from an estimated biomass of 129.367 million lb in 2003 to 165.853 million lb in 2004. This biomass can produce a total allowable catch (TAC) of 34.215 million lb in 2004 at F=0.184. The TAL for 2004 is derived from this value by subtracting estimated discards from the TAC. Discards in 2004 are estimated to be 2.365 million lb, equal to the average recreational discards for 1998-2002. This results in a TAL for 2004 of 31.850 million lb.

In their final deliberations, the Council and Commission considered all the alternatives and comments and adopted the TAL recommendation of 31.850 million lb. Under Alternative 1 (Preferred Measures) the TAL is further allocated into a 10.401 million lb adjusted commercial quota and a 21.150 million lb adjusted recreational harvest limit. This alternative was chosen by the Council and Board because it provides the best allocation to the commercial and recreational sectors considering recent fishing practices. They also recommended that the current recreational possession limit should remain in effect for 2004.

The TAL recommendation is unchanged under Alternatives 2 and 3, as it is the TAL that would achieve the target F in 2004. The difference between the 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. Under Alternative 2 the TAL of 31.850 million lb is further allocated into a 5.363 million lb adjusted commercial quota and a 26.188 million lb adjusted recreational harvest limit. Under Alternative 3 the TAL of 31.850 million lb is further allocated into a 9.493 million lb adjusted commercial quota and a 22.058 million lb adjusted recreational harvest limit.

Table ES-1 presents a qualitative summary of the impacts of the various alternatives. The environmental impacts of the proposed measures were analyzed and the anticipated level of significance of these impacts is discussed in accordance with the NEPA and 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 environment, a “Finding of No Significant Impact” is determined.

Table 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)	0	0	0	0	0
Alternative 2	+/-	-	-	0	0
Alternative 3	0	0/-	0/-	0	0

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ENVIRONMENTAL ASSESSMENT

1.0 Annual Specification Process

1.1 Introduction

The bluefish fisheries in U.S. waters of the western Atlantic Ocean are managed under the Bluefish Fishery Management Plan (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 an 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 (Amendment 1; 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 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 amendments 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.

An update on the status of the bluefish stock (Lee 2003) indicates that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2002 fishing mortality rate for bluefish is below the target of 0.41 for 2003 and 0.31 for 2004. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 96% of the total biomass threshold

relative to Amendment 1 overfishing definition (i.e., ½ B_{msy} = 118.50 million lb or 53.75 million kg). A stock projection (using a constant fishing mortality rate F=0.184 -- equal to the 2002 rate) indicates that the bluefish stock will increase from an estimated 2003 biomass of 129.37 million lb (58.68 million kg) to 165.85 million lb (75.23 million kg) in 2004.

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 amounts would be set annually as part of Council's quota-setting process. The intent of the program is to support the collection of new information that will benefit both the commercial and recreational fisheries for this species. Collaborative efforts between the public, research institutions, and the government will be subsidized by a percentage set-aside from the TAL of selected species, including bluefish, under management by the Council.

1.2 Purpose and Need

The purpose of the environmental analysis (EA) is to recommend annual management measures for fishing year 2004 to ensure that the annual fishing targets specified in the Fishery Management Plan for this species are attained.The purpose of the environmental analysis (EA) is to recommend annual management measures for fishing year 2004 to ensure that the annual fishing targets specified in the Fishery Management Plan for this species are attained. These 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, 2003 meeting.

The need is to continue 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.

1.3 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.

2.0 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 research set-aside from the TAL. The NMFS Quota Report as of the week ending December 27, 2003 indicates that overall bluefish

commercial landings are within the overall (coastwide quota) commercial quota for 2003. Therefore, the 2004 overall quota was not adjusted for overages. Impacts were examined relative to three commercial quota alternatives (Table 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 highest allowed under the current FMP). The commercial quota in the preferred alternative is also the status quo alternative for the commercial sector.

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 1995-2000, before the Council and Board recommended a 10.500 million lb (4.762 million kg) commercial quota in 2001. 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 research set-aside would result in a preliminary adjusted commercial quota of 9.493 million lb (4.305 million kg). Potential changes in landings of the 2004 commercial quotas compared to the 2002 landings are presented in Table 2.

Table 1. Comparison (in pounds) of the alternatives of quota combinations reviewed.

	2004 Initial TAL	**2004 Initial Commercial Quota**	**2004 Initial Recreational Harvest Limit**	**2004 Research Set-Aside**	**2004 Adjusted Commercial Quota**	**2004 Adjusted Recreational Harvest Limit**
Quota Alternative 1 (Preferred)						
Council Preferred Alternative	31,850,037	10,500,000	21,350,037	297,750	10,401,851	21,150,446
Quota Alternative 2						
Projection Based Alternative	31,850,037	5,414,506	26,435,531	297,750	5,363,894	26,188,398
Quota Alternative 3						
Based on 1995 to 2000 Commercial TAL	31,850,037	9,583,000	22,267,037	297,750	9,493,422	22,058,913

Table 2. Commercial quotas under each Alternative compared to 2002 landings (in pounds).

	Adjusted Commercial TAL	**Percent of 2002 Landings**	**Percent Change**
Quota Alternative 1 (Status Quo - Least Restrictive)			
Council Preferred Alternative	10,401,851	154.16	54.16
Quota Alternative 2 (Most Restrictive)			
Projection Based Alternative	5,363,888	79.13	-20.86
Quota Alternative 3 (1995 to 2000 commercial TAL)			
Based on 1995 to 2000 Commercial	9,493,422	140.63	40.63

3.0 Alternatives Being Considered

3.1 Alternative 1 (2003 Status Quo (No Action - status quo with allocation change to comply with F specified in FMP) and 2004 preferred alternative)

The Council and Board recommended a coastwide 2004 TAL of 31.850 million lb (14.447 million kg). The 2004 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 5.414 million lb (2.455 million kg) as a quota and the recreational fishery would receive 26.435 million lb (11.990 million kg) as a harvest limit.

The overall TAL under this alternative is identical to the TAL under Alternatives 2 and 3 and would achieve the target F in 2004. The difference between this preferred alternatives 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 9 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 12.416 million lb or 5.631 million kg; Table 3), it is anticipated that the recreational fishery will harvest less than 83% of the TAL in year 2004. A projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. As such, the Council and Board recommended that the commercial TAL in year 2004 be 10.500 million lb (4.762 million kg). That is, a transfer of 5.085 million lb (2.306 million kg) was made from the recreational sector to the commercial sector. As such, the recreational TAL for year 2004 will be 21.350 million lb (9.684 million kg). Additionally, the Council approved a research set-aside for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2004 are 10.401 million lb (4.718 million kg; status quo commercial quota) and 21.150 million lb (9.593 million kg), respectively. The entire allocation process is summarized in Table 4.

Table 3. Bluefish commercial and recreational landings (‘000 lb), 1981-2002.

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	9,455	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	8,040	10,606
2001	8,698	13,230
2002	6,778	11,437
Average 81-02	11,456	39,286
Average 93-02	8,484	13,205

Table 4. Summary table of bluefish allocation process (Alternative 1).

Bluefish TAL	31,850,037 lb (14,446,934 kg)
Commercial TAL (before transfer)	5,414,506 lb (2,455,979 kg)
Recreational TAL (before transfer)	26,435,531 lb (11,990,955 kg)
Commercial TAL (after transfer)	10,500,000 lb (4,762,720 kg)
Recreational TAL (after transfer)	21,350,037 lb (9,684,214 kg)
Adjusted Commercial TAL (after research set-aside)	10,401,851 (4,718,196 kg)
Adjusted Recreational TAL (after research set-aside)	21,150,446 (9,593,681 kg)

3.2 Alternative 2 (most restrictive alternative to 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 2004 would be 5.414 million lb (2.455 million kg) and the recreational harvest limit would be 26.435 million lb (11.990 million kg). Additionally, the

Council approved a research set-aside for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2004 are 5.363 million lb (2.432 million kg) and 26.188 million lb (11.878 million kg), respectively (Table 1). This alternative would result in the lowest possible landings in 2004 for the commercial sector.

3.3 Alternative 3 (least restrictive alternative to commercial sector)

The overall TAL under Alternative 3 is identical to that under Alternative 1, except that a transfer of 4.168 million lb (1.890 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; 4.346 million kg) represents the same commercial quota level that was in place from 1995-2000, before the Council and Board recommended a 10.500 million lb (4.762 million kg) commercial quota in 2001. The resulting recreational harvest limit would be 22.267 million lb (10.100 million kg) for year 2004. Additionally, the Council approved a research set-aside for bluefish of 297,750 pounds (135,057 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2004 are 9.493 million lb (4.305 million kg) and 22.058 million lb (10.005 million kg), respectively (Table 1). This alternative would result in a 2004 commercial quota that falls between those specified under Alternatives 1 and 2.

3.4 Research Set-aside Program

As part of the research set-aside program, one research project was submitted to NMFS that could potentially require exemptions from some of the current bluefish regulations. Under the research set-aside program, the Council, in consultation with the NMFS Northeast Regional Administrator, and the Commission have recommended this research project (August 4, 2003 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.

In the annual specification process for 2004, the Council approved a research set-aside equal to the amount requested in the project that was conditionally accepted by NMFS (August 4, 2003 letter from Mears to Furlong). The set-aside would be 297,750 pounds (135,057 kg) for bluefish. This research set-aside amount will be deducted from the bluefish TAL (Table 1).

4.0 Affected Environment

4.1 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 bouyant 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).

4.1.1 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 4.1.1.1 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 4.1.3 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).

4.1.1.1 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 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 SAFMC have EFH identified in areas also identified as EFH for bluefish.

4.1.2 Baseline Impact of the Bluefish Fishery on EFH

4.1.2.1 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.

4.1.2.2 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. 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 6.1.3, 6.2.3, and 6.3.3, 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 entitled "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 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 5). 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.

Table 5. 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.

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 5). 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

5). 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 effect 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 5). 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.

4.1.3 Protected Resources

4.1.3.1 Description of Protected Resources

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). Eleven 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

Birds

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

Critical Habitat Designations

Species	Area
Right whale	Cape Cod Bay

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 (Waring *et al.* 2002). 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 (Perry *et al.* 1999).

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).

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.

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 Potential Biological Removal (PBR).

The western North Atlantic population of right whales was estimated to be 291 individuals in 1998 (Waring *et al.* 2002). 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).

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.

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).

Potential Biological Removal (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 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 (2001) 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).

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).

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. The NMFS has designated one stock of fin whale for U.S. waters of the North Atlantic (Waring *et al.* 2002) where the species is commonly found from Cape Hatteras northward.

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 (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 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 (Draft Recovery Plan, NMFS 1998a). 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 (Draft Recovery Plan, NMFS 1998a). 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.

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* (NMFS 1998b). 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 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 (NMFS 1998b). 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 (NMFS 1998b).

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 (NMFS 1998b), 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).

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).

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.* (1993) 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 (Waring *et al.* 1993), 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).

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 and under the Convention on International Trade in Endangered Species of Flora and Fauna. 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 and USFWS 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 and USFWS 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 and 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 and 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. 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.* (1996) 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.

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 et al. (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 pot 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 took place from

1990-2000. Entanglements are also common in Canadian waters where Goff and Lien (1988) reported that 14 of 20 leatherbacks encountered off the coast of Newfoundland/Labrador were entangled in fishing gear including salmon net, herring net, gillnet, trawl line and crab pot line. It is unclear how leatherbacks become entangled in such gear. Prescott (1988) reviewed stranding data for Cape Cod Bay and concluded that for those turtles where cause of death could be determined (the minority), entanglement in fishing gear is the leading cause of death followed by capture by dragger, cold stunning, or collision with boats.

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

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

Estimated to number approximately 115,000 adult females globally in 1980 (Pritchard 1982) and only 34,500 by 1995 (Spotila *et al.* 1996), leatherback populations have been decimated worldwide, not only by fishery related mortality but, at least historically, primarily due to intense exploitation of the eggs (Ross 1979). On some beaches nearly 100% of the eggs laid have been harvested (Eckert *et al.* 1996). Eckert *et al.* (1996) and Spotila *et al.* (1996) record that adult mortality has also increased significantly, particularly as a result of driftnet and longline fisheries. Spotila *et al.* (1996) 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 nesting 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 portion of the 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 (NMFS 1998). 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 (NMFS 1998). In the Chesapeake Bay, ridleys frequently forage in shallow embayments, particularly in areas supporting submerged aquatic vegetation (Lutcavage and Musick 1985; NMFS 1998). The juvenile population in Chesapeake Bay is estimated to be 211 to 1,083 turtles (NMFS 1998).

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 20EC isotherms (NMFS 1998). 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 8E 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 8E 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). Additional 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 are perilously small with total run sizes of approximately 150 spawners occurring in 1999 (Baum 1997). 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 mackerel, squid and butterfish fisheries.

Seabirds

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. 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 and recreational fishing gear. The interaction has not been quantified in the recreational fishery, but impacts are not considered significant. Human activities such as coastal development, habitat degradation and destruction, and the presence of organochlorine contaminants are considered the major threats to some seabird populations.

4.1.3.2 Fishery Classification under Section 114 of Marine Mammal Protection Act

Under section 114 of the of the Marine Mammal Protection Act (MMPA) of 1972, NMFS must publish, and annually update, the List of Fisheries (LOF) which places all U.S. commercial fisheries in one of three categories based on the level of incidental serious injury and mortality of marine mammals in each fishery (arranging them according to a two tiered classification system). The categorization of a fishery in the LOF determines whether participants in that fishery may be required to comply with certain provisions of the MMPA, such as registration, observer coverage, and take reduction plan requirements. The classification criteria 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 Potential Biological Removal (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 which 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 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.

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.

4.2 Human Environment

4.2.1 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, 2002 NMFS dealer data are used. The top commercial landings ports for bluefish by pounds landed are shown in Table 6. A “top port” is defined as any port that landed at least 100,000 pounds of bluefish. Related data for the recreational fisheries are shown in Table 7. 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.

Table 6. Top ports of bluefish landings (in pounds), based on NMFS 2002 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	1,711,992	84
LONG BEACH/BARNEGAT LIGHT, NJ	667,855	38
HAMPTON BAY, NY	569,463	66

POINT JUDITH, RI	425,221	119
PT. PLEASANT, NJ	385,761	35
GREENPORT, NY	357,821	15
MONTAUK, NY	234,647	116
AMMAGANSETT, NY	153,730	14
HATTERAS, NC	145,974	24
BELFORD, NJ	140,058	16
CAPE MAY, NJ	102,697	35

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

Table 7. MRFSS preliminary estimates of 2002 recreational harvest and total catch (in numbers of fish) for bluefish.

State	Harvest (A+B1)		Catch (A+B1+B2)
	Pounds	Number	Number
CT	1,257,786	569,340	1,231,659
DE	178,740	116,616	551,774
FL	1,012,782	758,610	2,150,574
GA	2,147	1,980	27,577
ME	126,749	24,163	65,916
MD	523,180	198,527	775,130
MA	1,294,146	228,530	856,715
NH	137,765	19,147	33,113
NJ	2,606,089	1,321,223	3,489,495
NY	2,375,992	750,577	1,767,943
NC	746,255	777,396	2,387,200
RI	896,287	324,557	1,125,936
SC	72,633	78,625	241,269
VA	140,931	130,898	512,895

4.2.2 Analysis of Permit Data/Human Environment

Federally Permitted Vessels

Analysis of the Northeastern federal permit data indicates that there were 1,453 vessels with a commercial and/or recreational 2002 federal Northeast bluefish permit. A total of 1,169 and 284 federal commercial and party/charter permits, respectively, had been issued to Northeast region fishing vessels in

the 2002 permit year. In addition, 145 vessels in the bluefish fishery had both commercial and recreational permits.

Dealers

According to NMFS dealer landings data, there were 197 dealers who bought bluefish in 2002. They were distributed by state as indicated in Table 8. Employment data for these specific firms are not available. In 2002 these dealers bought $2.3 million worth of bluefish.

Table 8. Dealers reporting buying bluefish by state (from NMFS commercial dealer landings database).

Number of Dealers	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC
	1	2	49	33	2	45	21	2	3	16	23

5.0 Description of Fisheries

5.1 Status of the Stock

The status of the bluefish stock is re-evaluated annually. The most recent assessment, completed in July, 2003 indicates that the bluefish stock is overfished, but overfishing is not occurring with respect to the overfishing definition. The fishing mortality rate declined from 0.718 in 1987 to 0.184 in 2002. The 2002 F is less than the threshold F of 0.40, and the target F of 0.36. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 96% of the total biomass threshold relative to Amendment 1 overfishing definition (i.e., ½ B_{msy} = 118.50 million lb or 53.75 million kg). The complete assessment is detailed in: “Assessment and projections of the Atlantic coast bluefish stock using a biomass dynamic model” (Lee 2003).

The assessment also provided information to develop stock projections and quota recommendations for the 2004 fishery. This information indicates that if fishing mortality rate remains at 0.184 in 2003 and 2004, then biomass is projected increase from an estimated 2003 biomass of 129.37 million lb (58.68 million kg) to 165.85 million lb (75.23 million kg) in 2004.

5.2 Stock Characteristics and Ecological Relationships

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

The updated stock assessment 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 1970's and declined from the early 1980's to low levels in 1993, then increased slightly in 1995, 1996, and 1999, then decreasing in 2002 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).

5.3 Economic and Social Environment

A detailed description for 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.

5.3.1 Commercial

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. In 2002, commercial landings decreased to 6.78 million lb (3.07 million kg), the smallest value in then1981-2002 time series. Commercial landings in 2002 were approximately 22% below the 2001 level and approximately 41% below the 1981-2002 mean (Table 3). On average (1985-1994), the ex-vessel value of bluefish commercial landings from state waters was about twice those from the Exclusive Economic Zone (EEZ) waters. In 2002, the value of bluefish landings was above $2.3 million. Average ex-vessel price of bluefish was $0.34 per pound in 2002.

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 9).

Table 9. The percentage contribution of bluefish to the total landings and value of all species combined bluefish 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..

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.

5.3.2 Recreational

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 2002, bluefish accounted for 9% of the Atlantic coast recreational harvest of finfish by weight. MRFSS data indicates 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 5.5 million in 2001 (averaging 4.5 million for the 1983 to 2002 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 39.7 million trips).

During the 1980's, 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 to 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 2001 period, the contribution of bluefish to the total amount of fish landed by party/charter boats ranged from 3% in 1998 to 41% in 1992 (averaging 16.9%). In 2001, the contribution of bluefish to the total amount of fish landed by party/charter boats in the Mid-Atlantic region was 12.6%.

MRFSS catch data by mode indicates that 47% of bluefish were caught by private and rental boats during the period 1993-2002 (Table 10). 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 10) during the 1993-2002 period.

Table 10. The percentage (%) of bluefish caught and landed by recreational fishermen for each mode, Maine to Florida, 1993-2002.

Mode	Catch (Number A+B1+B2)	Landing (Weight A+B1)
Shore	45	17
Party/Charter	7	26

Private/Rental	47	56

Source: MRFSS.

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 indicating that the primary species sought was bluefish in the Atlantic coast has decreased from 5.8 million in 1991 to 1.9 million in 2002 (Table 11).

Table 11. Number of bluefish recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2004.

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	3,403,068	None	14,307
1996	2,583,782	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	1,225,162	25,745	10,606
2001	1,914,480	28,258	13,230
2002	1,880,539	16,365	11,371
2003	N/A	26,691[c]	N/A
2004	-	21,350[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.
[b]Atlantic coast from Maine to Florida.
N/A = Data not available.
[c]Adjusted for research set-aside.
Source: MRFSS.

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.

5.3.2.1 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 to Virginia spent an estimated $903.3 million on trip-related goods and services (Table 12; 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 2002 dollars are $74.08 for party/charter boat trips, $52.34 for private/rental boat trips, and $32.85 for shore trips.[1] Trip-related good 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 13) by the total estimated trip expenditures from the Steinback and Gentner study. According to this procedure, anglers fishing for bluefish from Maine to Virginia spent an estimated $110.2 million on trip-related goods and services in 200. Approximately $53.3 million was spent by anglers fishing aboard private/rental boats, $49.6 million by those fishing from shore, and $7.2 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 to 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 in negligible. A variety of

[1]The 1998 estimate of expenditures by mode were adjusted to its 2002 equivalent by using the Bureau of Labor Statistics Consumer Price Index.

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 2002 was likely to be between $165.3 million ($110.2 million * 1.5) and $220.4 million ($110.2 million * 2.0) from Maine to 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.

Table 12. 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 13. Angler effort that targeted bluefish in 2002, ME to VA.

Mode	Total MRFSS Effort	Total effort targeting bluefish[a]	Percent targeting Bluefish
Party/charter	1,258,988	63,351	5.03%
Private/rental	14,062,631	607,380	4.32%
Shore	9,914,632	952,292	9.60%
Total	25,236,251	1,623,023	6.43%

[a]Total effort targeting bluefish as primary species.

5.3.2.2 Value of the fishery to anglers

The value that anglers place on the recreational fishing experience can be divided into actual expenditures and non-monetary benefits associated with satisfaction (consumer surplus). Anglers incur expenses for fishing (purchase of gear, bait, boats, fuel, etc.), but do not pay for the fish they catch or for the enjoyment of many other attributes of the fishing experience (socializing with friends, contact with nature, etc.). Despite the obvious value of these attributes of the experience to anglers, no direct expenditures are made for them, hence the term "non-monetary" benefits.

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 14 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 14 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 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 14. 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 was 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.

Table 14. Average willingness to pay for a one-day fishing trip, by state.

State	Mean 1994 ($'s)	Adjusted to 2002 ($'s)[a]
ME	6.4	7.77
NH	0.85	1.03
MA	8.38	10.17
RI	4.23	5.13
CT	3.07	3.73
NY	21.58	26.20
NJ	14.12	17.14
DE	1.43	1.74
MD	12.09	14.68
VA	42.33	51.38

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

Assuming the average willingness to pay values shown in Table 14 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 15 shows the aggregate estimated willingness to pay by state for anglers that targeted bluefish in 2002 (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 16 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 $3.75 (the 1994 value adjusted to its 2002 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 16.

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 2002 was $80.56 million (total trips (25.23 million) x average per trip value ($3.51)). 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.

Table 15. Aggregate willingness to pay for anglers that indicated they were targeting bluefish in 2002.

State	Total effort targeting bluefish	Willingness to pay ($'s)
ME	66,855	519,463
NH	32,003	32,963
MA	398,919	4,057,006
RI	356,912	1,830,959
CT	386,813	1,442,812
NY	644,554	16,887,315
NJ	497,639	8,529,532
DE	32,041	55,751
MD	68,616	1,007,283
VA	16,580	851,880

Table 16. Willingness to pay for a one fish increase in the catch rate of small game per trip, Maine to Virginia.

State	Mean 1994 ($'s)	Adjusted to 2002 ($'s)[a]
ME	3.74	4.54
NH	3.25	3.95
MA	3.09	3.75
RI	3.13	3.80
CT	3.29	3.99
NY	2.43	2.95
NJ	2.69	3.27
DE	3.00	3.64
MD	3.44	4.18
VA	2.46	2.99
All States	2.89	3.51

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

5.3.2.3 Marine recreational descriptive statistics

In 1994, sportfishing surveys were conducted by NMFS in the Northeast Region (Maine to Virginia) to obtain demographic and economic information on marine recreational fishing participants from Maine to Virginia. Data from the surveys were then used to access socioeconomic characteristics of these participants, as well as to identify their marine recreational fishing preferences and their perceptions of current and prospective fishery management regulations. 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 17. 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."

Table 17. 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.

"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 18, 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%).

Table 18. 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.

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 19). "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."

Table 19. 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.

5.4 Description of the Areas Fished

The baseline impact of the bluefish commercial fishery on the environment is fully described in 4.1.2.2 of this EA.

NMFS VTR data indicate that 10,222 trips, by seven major gear types, caught a total of 4.7 million lb of bluefish from Maine to North Carolina in 2001. The majority of the trips and catch were made by gillnets

(43 percent of trips, 79 percent of catch), followed by bottom otter trawls (43 percent of trips, 18 percent of catch), and handlines (10 percent of trips, 2 percent of catch). There were six statistical areas which, individually, accounted for greater than 5 percent of the bluefish catch in 2001 (Table 20). Collectively, these six areas accounted for 77 percent of the bluefish catch and 43 percent of the trips that caught bluefish. There were eight statistical areas which, individually, accounted for greater than 5 percent of the trips which caught bluefish in 2001 (Table 20). Collectively, these eight areas accounted for 75 percent of the trips that caught bluefish and 78 percent of the 2001 bluefish catch.

Table 20. Statistical areas that accounted for at least 5 percent of the summer flounder, scup, or black sea bass catch and trips in 2001, NMFS VTR data. (A map showing the location of these statistical areas is presented in Appendix Figure A1).

Statistical Area	Catch (percent)	Trips (percent)
635	34.1	5.5
615	11.8	5.1
613	9.5	15.3
636	8.4	0.7
614	7.7	7.3
612	5.4	9.2
539	4.2	13.0
611	3.1	14.1
514	2.5	5.2

6.0 Environmental Consequences and Preliminary Economic Evaluation of Alternatives

6.1 Impacts of Alternative 1 on the Environment

6.1.1 Biological Impacts

This alternative examines the impacts to the environment that would result from Alternative 1 (preferred). The derivation of the TAL and its allocation to the commercial and recreational sectors are fully described in section 3.0 of the EA. The preferred alternative would set the TAL at 31.850 million lb (14.447 million kg).

This alternative includes a preliminary adjusted commercial quota of 10.401 million lb (4.718 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 21.150 million lb (9.593 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

An update on the status of the bluefish stock (Lee 2003) indicates that fishing mortality rates on bluefish peaked in 1987 at 0.718 and have steadily declined since then to 0.184 in 2002. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2002 fishing mortality rate for bluefish is below the target of 0.41 for 2003 and 0.31 for 2004. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 90% of the total biomass threshold relative to Amendment 1 overfishing definition (i.e., ½ B_{msy} = 118.50 million lb or 53.75 million kg). A stock projection (using a constant fishing mortality rate F=0.184 -- equal to the 2002 rate) indicates that the bluefish stock will increase from an estimated 2003 biomass of 129.37 million lb (58.68 million kg) to 165.85 million lb (75.23 million kg) in 2004. Since the preferred alternative is likely to achieve the target F for 2004, 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 and otter trawls. 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 2004 (adjusted for research set-aside) is less than 1% lower than the 2003 commercial quota. This small decrease in commercial quota is due to the 2004 quota being adjusted for research set-aside (section 2.0 of the EA). The NMFS Quota Report as of the week ending October 18, 2003 indicates that overall bluefish commercial landings are within the overall commercial quota for 2003. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2004. 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 2004 commercial allocation equal to the largest amount allowed by Amendment 1 regulations (section 3.0 of the EA). In the absence of a quota transfer, the commercial fishery would receive a 5.363 million lb (2.432 million kg; section 3.0 of the EA) quota for 2004. This would represent a reduction of 49% from the 2003 adjusted quota (10.460 million lb; 4.744 million kg) and a 21% reduction from the 2002 landings (6.778 million lb; 3.074 million kg). As indicated in section 3.1 of the EA, the commercial quota allocation under this alternative incorporates a transfer 5.085 million lb (2.306 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 21.150 million lb (9.593 million kg) in 2004 would be about twice the recreational landings for 2002 and 21% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 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 research set-aside of 297,750 pounds (135,057 kg). The results of the research conducted through the research set-aside program would benefit both the bluefish stock and the bluefish fishery. The exemptions required under the research projects are analyzed in section 6.4. The positive biological impacts of the research set-aside are expected to be similar across all the alternatives evaluated in this document.

The overall TAL under this alternative was recommended by the Monitoring Committee and was based on the condition of the stock relative to the biological reference point. The stock assessment indicates that the stock size in 2004 will allow a landing limit of 31.850 million lb (14.447 million kg) to achieve the target fishing mortality rate in 2004 (i.e, F=0.31). Overall this alternative is not expected to adversely affect the bluefish stock or the stocks of other species.

6.1.2 Socioeconomic Impacts

The stock assessment indicates that the stock size in 2004 will allow a landing limit of 31.850 million lb (14.447 million kg) to achieve the target fishing mortality rate in 2004. The overall TAL under this alternative is identical to the TAL under Alternatives 2 and 3 and would achieve the target F in 2004. 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 3.0 of the EA).

This alternative includes a preliminary adjusted commercial quota of 10.401 million lb (4.718 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 21.150 million lb (9.593 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004. Under this alternative, the allocation to the commercial and recreational fisheries are less than 1% and 21% lower than the commercial and recreational quotas for 2003, respectively. The small decrease in the commercial quota from 2003 to 2004 is due to adjustment for the research set-aside.

The commercial quota allocation under this alternative would provide commercial fishermen with the same fishing opportunities in 2004 compared to 2003. 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 3.1 and 6.1.1 of the EA, the commercial quota allocation under this alternative incorporates a transfer 5.085 million lb (2.306 million kg) from the recreational sector to the commercial sector. In the absence of a quota transfer, the commercial fishery would receive a 5.363 million lb (2.432 million kg) quota for 2004. This would represent a reduction of 49% from the 2003 adjusted quota (10.460 million lb; 4.744 million kg) and a 21% reduction from the 2002 landings (6.778 million lb; 3.074 million kg). Table 3 indicates that for the 1993 to 2002 period, recreational landings have ranged from 8.253 million lb (3.743 million kg) to 20.292 million lb (9.204 million kg; averaging 13.205 million lb or 5.989 million kg). In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. Given recent trends in recreational landings it is expected that the recreational sector will land less than 83% of the recreational harvest limit for 2004. As such, the Council and Board decided allow for a transfer and to set the 2004 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 2004 commercial quota under the preferred alternative will be allocated as indicated in Table 21.

Table 21. The 2004 state-by-state commercial bluefish quota[a] and the 2002 commercial landings by state.

State	% of Quota	2004 Commercial Quota Alternative 1	2004 Commercial Quota Alternative 2	2004 Commercial Quota Alternative 3	2002 Landings
ME	0.6685	69,536	35,858	63,463	802
NH	0.4145	43,116	22,233	39,350	5,349
MA	6.7167	698,660	360,276	637,644	406,693
RI	6.8081	708,168	365,179	646,321	561,286
CT	1.2663	131,719	67,923	120,215	2,715
NY	10.3851	1,080,242	557,045	985,900	1,475,173
NJ	14.8162	1,541,158	794,725	1,406,563	1,324,947
DE	1.8782	195,367	100,745	178,305	45,851
MD	3.0018	312,242	161,013	284,973	88,367

VA	11.8795	1,235,687	637,203	1,127,770	475,341
NC	32.0608	3,334,913	1,719,706	3,043,664	2,310,130
SC	0.0352	3,661	1,888	3,342	28
GA	0.0095	988	510	902	333
FL	10.0597	1,046,394	539,591	955,009	81,246
Total	100.0001	10,401,851	5,363,894	9,493,422-	6,778,261

[a]2004 quota adjusted for research set-aside.
Source: 2002 landings are from NMFS preliminary dealer data ME-VA and preliminary South Atlantic General Canvass data, NC-FL.

A description of ports and communities is found in the 2002 Bluefish Specifications Document. The "top ports" that landed bluefish are identified in section 4.2.1 (Table 6). 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

Vessel affected under the 2004 recommended commercial quota harvest levels

In order to conduct a more complete analysis, overall impacts were examined for three alternatives to represent three potential quota "alternatives." Under Alternative 1, there are no vessels impacted with significant revenue reductions (section 5.1 of the RIR/IRFA).

The economic impacts for the vessels participating in this fishery is small across all participants. According to Northeast dealer data, 928 vessels were projected to incur revenue losses of less than 5%. More specifically, of the 928 vessels projected to be impacted with revenue losses of less than 5%, 45 vessels (5%) were projected to incur in revenue losses ranging from 1 to 4.99% and 883 vessels (95%) were projected to incur in revenue losses of less than 1%. Furthermore, South Atlantic Trip Ticket Report data indicated that on average, reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to be minimal for fishermen that land bluefish in North Carolina (0.05%) and Florida (0.003%). 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 fishing opportunities from 2003 to 2004 (i.e., changes in quota levels). However, under the assumption that 2004 allocations to New York represent harvest constraints to the commercial fishery, and bluefish abundance and harvesting capacity would allow that state to harvest the amount equal to their 2002 landings, there could be a 27% reduction in bluefish revenues in New York compared to 2002 landings. Thus, economic impacts would be higher than those described above. Implicit in this assumption is that when a state's quota is reached and the fishery is closed, it will not be able to take advantage of a transfer provision under the FMP which allows states that have a surplus quota to transfer a portion or all of that quota to a state that has or will reach its quota. The transfer provision was implemented by Amendment 1 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. In 2002, in addition to their initial allocated quota, New York received quota transfers from other states that had surpluses. These transfers allowed the initial bluefish quota in that state to increase from 1,090,436 lb (494,613 kg) to 1,449,372 lb (657,424 kg). Like in 2002, this commercial quota level is likely to constrain landings in New York, thus, requiring this state to request bluefish quota transfer(s) from other states.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden.

This alternative was chosen by the Council and Board because it provides the best allocation to the commercial and recreational sectors considering recent fishing practices.

Recreational Impacts

Under Alternative 1, the bluefish 2004 recreational harvest limit would be 21.150 million lb (9.593 million kg). This limit would be about twice the recreational landings for 2002 and 21% lower than the recreational harvest limit that was specified in 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 and similar to those that have occurred since 2000. The possession limit would remain at 15 fish.

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 2004 and recreational landings in recent years, it is not anticipated that this management measure will 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.

Other Impacts

<u>Effects of the research set-aside</u>

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 2004 relative to the adjusted 2003 quotas (section 3.1 of the RIR/IRFA). That is, the research set-aside for bluefish was deducted from the initial overall TAL for 2004 to derive adjusted 2004 quotas. Therefore, the threshold analyses conducted under each alternative has accounted for overall reductions in fishing opportunities in 2004 versus 2003 available to all vessels typically participating in this fishery due to research set-aside. 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 research set-aside that will be available only to vessels participating in research set-aside 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 2004 RSA projects. This would be particularly true under the assumption that 2004 allocations to a particular state represent harvest constraints to the commercial fishery (section 5.1.2 of the RIR/IRFA).

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.

6.1.3 EFH Impacts

The preferred bluefish alternative (status quo) includes a preliminary adjusted commercial quota of 10.401 million lb (4.718 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 21.150 million lb (9.593 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004. 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 4.1.2.1 of the EA. It was concluded in section 4.1.2.1 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 2004 preferred alternative is the status quo commercial quota. It is difficult to predict whether the retention of the 2003 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 22 represents the range of potential habitat impacts that could occur under each of the various quota alternatives.

Table 22. 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)	10.401	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)	5.363	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	9.493	Based upon species abundance,	Does not maximize commercial landings,

		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.	reduced short-term yields, potential decreased impacts on habitat, potential decrease in financial benefit to industry.

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.

6.1.4 Protected Resources Impacts

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 4.1.3 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 22). 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.

6.2 Impacts of Alternative 2 on the Environment

6.2.1 Biological Impacts

The derivation of the TAL and its allocation to the commercial and recreational sectors for Alternative 2 are fully described in section 3.0 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 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 5.363 million lb (2.432 million kg), a preliminary adjusted recreational harvest limit of 26.188 million lb (11.878 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

As stated under section 6.1.1 of the EA, a stock projection (using a constant fishing mortality rate F=0.184 -- equal to the 2002 rate) indicates that the bluefish stock will increase from an estimated 2003 biomass of 129.37 million lb (58.68 million kg) to 165.85 million lb (75.23 million kg) in 2004. Since this alternative is likely to achieve the target F for 2004, 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 and otter trawls, 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 2004 (adjusted for research set-aside) under this alternative is 5.363 million lb (2.311 million kg), which is 49% lower than the 10.46 million lb commercial quota for 2003. The commercial quota for 2004 would decrease overall commercial bluefish landings by approximately 1.414 million lb (0.641 million kg) compared to 2002 landings (Table 21). In addition, this commercial quota is 5.037 million lb (2.285 million kg) less than the preferred Alternative 1 commercial quota (49% lower). This 2004 commercial quota would allow fishermen to land fewer bluefish compared to the status quo commercial alternative (preferred alternative; status quo). As such, effort in the directed bluefish fishery could decrease and the incidental catch rates of other species would also decrease.

Increased stock size in 2004 will increase the likelihood that a landing limit of 31.850 million lb (14.447 million kg) will achieve the target fishing mortality rate in 2004. However, the commercial quota allocation under this alternative would provide commercial fishermen with a substantial decrease in fishing opportunities in 2004 compared to 2003. A significant portion of bluefish commercial landings are caught while targeting other species and as such, the lower allocation 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 26.188 million lb (11.878 million kg) in 2004 would be more than twice the recreational landings for 2002 and approximately 2% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be

substantially lower than the recreational harvest limit for 2004 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 TAL under this alternative would achieve the target F in 2004. 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.

6.2.2 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 6.1.2 of the EA) also applies here.

The stock assessment indicates that the stock size in 2004 will allow a landing limit of 31.850 million lb (14.447 million kg) to achieve the target fishing mortality rate in 2004. The overall TAL under this alternative is identical to the TAL under Alternatives 1 and 2 except that no transfer is made to the commercial fishery.

Alternative 2 would set the TAL at 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 5.363 million lb (2.432 million kg), a preliminary adjusted recreational harvest limit of 26.188 million lb (11.878 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

The state-by-state quota allocation for 2004 under Alternative 2 is shown in Table 21. The commercial quota allocation under this alternative would provide commercial fishermen with substantially lower (i.e., 49%) fishing opportunities in 2004 compared to 2003 (sections 3.1 and 4.0 of the RIR/IRFA).

Commercial Impacts

Vessels affected under the most restrictive alternative (Alternative 2)

The analysis of the harvest levels under this alternative indicate that the economic impacts ranged from small to large revenue losses. According to Northeast dealer data, 138 vessels were projected to incur revenue losses of more than 5%. More specifically, 40 vessels were projected to incur in revenue losses of 5-10%, 39 vessels of 10-19%, 13 vessels of 20-29%, 10 vessels of 30-39%, 21 vessels of 40-49%, and 15 vessels of 50% or more. In addition, 790 vessels were projected to incur in revenue losses of less than 5%. Since there is a number of vessel 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 (section 3.1 of the RIR/IRFA).

Of the 138 vessels projected to have revenue reductions of more than 5%, 129 hold permits in other fisheries (Table 23). In particular, most vessels have squid-mackerel-butterfish, multispecies, 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 likely to have increasingly stringent catch limits in the near future.

Table 23. The other 2002 permits held by the 129 commercial vessels with bluefish permits that were 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	22	17
	Multispecies	Open Access	59	46
	Atl. Sea Scallop	Open Access	32	25
	Surfclam	Open Access	9	7
	Ocean Quahogs	Open Access	9	7
	Herring	Open Access	58	45
	Lobster	Limited Access	4	3
	Tilefish (Full-time/Tier 2)	Limited Access	43	33
	Summer Flounder	Limited Access	13	10
	Scup	Limited Access	40	31
	Loligo/*Illex*/Mackerel/ Butterfish	Limited Access	2	2
	Loligo/*Illex*/Mackerel/ Butterfish	Open Access	77	60
	Black Sea Bass	Limited Access	44	34
	Dogfish	Open Access	86	67
	Monkfish	Limited Access	14	11
	Monkfish	Open Access	47	36
Recreational (Party/Charter)	Multispecies	Open Access	32	25
	Lobster	Limited	1	1
	Bluefish	Open Access	41	32
	Summer Flounder	Open Access	38	29
	Scup	Open Access	36	28
	Squid/Mackerel/ Butterfish	Open Access	33	26
	Black Sea Bass	Open Access	35	27

The majority of the 129 vessels with federal permits for bluefish have home ports in New York, New Jersey, Massachusetts, and North Carolina. The principal ports of landing for these vessels are mainly located in New York and New Jersey (Table 24).

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 five states home-porting the highest number of vessels projected to have revenue reductions of more than 5% (New York, New Jersey, Massachusetts, North Carolina, and Rhode Island), vessels in those states are likely to land in their home port state (88 to 100%; Table 24). 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 York and New Jersey (Table 24). 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.

Table 24. Descriptive information for the commercial vessels with bluefish permits that were projected to have revenue reductions of more than 5% based on 2002 descriptive data from NMFS permit files - No vessel characteristics data are reported for states with fewer than 3 permits.

	MA	NC	NJ	NY	RI	Other
# Permits by Home Port State	19	18	23	50	4	3
# Permits by Principal Port State	19	19	26	54	5	3
# Permits by Mailing Address State	19	19	27	54	5	3
Avg. Length in Feet by Principal Port	26	38	47	32	41	
Avg. GRT by Principal Port	26	16	31	83	15	
% of Vessels where Home Port State = Principal Port State	100	95	88	93	80	100

Most commercial vessels showing revenue reductions of more than 5% are concentrated in New York, New Jersey, Massachusetts, and North Carolina (Table 25). Within these states, the most impacted counties are: New York -- Suffolk; Massachusetts -- Barnstable; North Carolina -- Dare; 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 numbers of vessels, the proportion that may be impacted thus may be lower. This effect may mitigate the impacts on the community as a whole.

To further characterize the potential impacts on indirectly impacted entities and the larger communities within which owners of impacted vessels reside, selected county profiles were constructed. 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. 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 4.2.1 of the EA.

Table 25. Distribution of commercial vessels showing revenue reductions of more than 5% (holding permits for bluefish) by state, county, and home port, from 2002 NMFS permit files - home ports with fewer than three vessels are not reported - only county-level data supplied; counties with fewer than three vessels are not reported.

State	County	Home port	Number of Vessels
North Carolina	Dare	Wanchese	9
		Other	8

New Jersey	Ocean	Barnegat Light	9
		Point Pleasant	5
		Point Pleasant Beach	3
		Other	4
New York	Nassau	Freeport	3
	New York	New York	11
	Suffolk	Montauk	17
		Other	14
Massachusetts	Barnstable	Other	10
	Essex	Gloucester	6
	Suffolk	Boston	3
Rhode Island	Washington	Other	3

In addition to the economic analysis presented above, South Atlantic Trip Ticket Report data was evaluated to further assess the economic impacts associated with the change in quota levels from 2003 to 2004. This evaluation indicated that on average, reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to have small reductions in revenue for fishermen that land bluefish in North Carolina (4.33%) and minimal for fishermen that land bluefish in Florida (0.29%). 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 fishing opportunities from 2003 to 2004 (i.e., changes in quota levels). However, under the assumption that 2004 allocations to Massachusetts, Rhode Island, New York, New Jersey, and North Carolina represent harvest constraints to those fisheries, and bluefish abundance and harvesting capacity would allow those states to harvest the amount equal to their 2002 landings, there could be a 13% reduction in bluefish revenues in Massachusetts compared to 2002 landings, 54% in Rhode Island, 190% in New York, 67% in New Jersey, and 34% in North Carolina. Thus, economic impacts would be higher than those described above. Implicit in this assumption is that when a state's quota is reached and the fishery is closed, it will not be able to take advantage of a transfer provision under the FMP which allows states that have a surplus quota to transfer a portion or all of that quota to a state that has or will reach its quota. The transfer provision was implemented by Amendment 1 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. In 2002, in addition to their initial allocated quota, New York received quota transfers from other states that had surpluses. These transfers allowed the initial bluefish quota in that state to increase from 1,090,436 lb (494,613 kg) to 1,449,372 lb (657,424 kg).

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, since the overall quota in 2004 is substantially lower than the 2003 quota, 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 2004 recreational harvest limit would be 26.188 million lb (11.878 million kg). This limit would be more than twice the recreational landings for 2002 and 2% lower than the recreational harvest limit for 2003. 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 6.1.2 of the EA).

6.2.3 EFH Impacts

Alternative 2 would set the TAL at 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 5.363 million lb (2.432 million kg), a preliminary adjusted recreational harvest limit of 26.188 million lb (11.878 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004. 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 4.1.2.1 of the EA. It was concluded in section 4.1.2.1 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 landings a larger volume of fish. Conversely, an 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 22 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 more conservative than necessary to achieve the 2004 target exploitation rate. Due to 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.

6.2.4 Protected Resources Impacts

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 4.1.3 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 could result in a decrease in fishing effort (Table 22). 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.

6.3 Impacts of Alternative 3 on the Environment

6.3.1 Biological Impacts

The derivation of the TAL and its allocation to the commercial and recreational sectors for Alternative 3 are fully described in section 3.0 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 (4.168 million lb; 1.890 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 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 9.493 million lb (4.305 million kg), a preliminary adjusted recreational harvest limit of 22.058 million lb (10.005 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

As stated under section 6.1.1 of the EA, a stock projection (using a constant fishing mortality rate F=0.184 -- equal to the 2002 rate) indicates that the bluefish stock will increase from an estimated 2003 biomass of 129.37 million lb (58.68 million kg) to 165.85 million lb (75.23 million kg) in 2004. Since this alternative is likely to achieve the target F for 2004, it would have a positive impact on the bluefish stock.

The preliminary adjusted commercial quota for 2004 under this alternative is 0.966 million lb (0.438 million kg) below the commercial quota for 2003. In addition, this commercial quota is 0.908 million lb (0.411 million kg) or approximately 9% lower than the preferred commercial quota (Alternative 1; status quo).

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 and otter trawls. 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 2004 (adjusted for research set-aside) is approximately 9% lower than the 2003 commercial quota and the 2004 adjusted quota for Alternative 1 (preferred alternative; status quo). There is no indication that the market environment for commercially caught bluefish will change considerably in year 2004. 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.

Increased stock size in 2004 will increase the likelihood that a landing limit of 31.850 million lb (14.447 million kg) will achieve the target fishing mortality rate in 2004. However, the commercial quota allocation under this alternative would provide commercial fishermen with a decrease in fishing opportunities in 2004 compared to 2003.

The resulting recreational harvest limit would be 22.058 million lb (10.005 million kg) for year 2004. This alternative would result in a 2004 recreational harvest limit that falls between those specified under Alternatives 1 and 2. A recreational harvest limit of 22.058 million lb (10.005 million kg) in 2004 would be approximately twice the recreational landings for 2002 and 17% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 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 TAL under this alternative (as well as the other alternatives evaluated in this document) would achieve the target F in 2004. 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.

6.3.2 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 6.1.2 of the EA) also applies here.

The stock assessment indicates that the stock size in 2004 will allow a landing limit of 31.850 million lb (14.447 million kg) to achieve the target fishing mortality rate in 2004. The overall TAL under this alternative is identical to the TAL under Alternatives 1 and 2, except that a smaller transfer is made to the commercial fishery.

Alternative 3 would set the TAL at 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 9.493 million lb (4.305 million kg), a preliminary adjusted recreational harvest limit of 22.058 million lb (10.005 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

The state-by-state quota allocation for 2004 under Alternative 3 is shown in Table 21. The commercial quota allocation under this alternative would provide commercial fishermen with lower (9%) fishing opportunities in 2004 compared to 2003 (sections 3.1 and 4.0 of the RIR/IRFA).

Commercial Impacts

Vessels affected under Alternative 3

According to Northeast dealer data, 53 vessels were projected to incur revenue losses in the range of 5 to 19%. In addition, 875 vessels were projected to incur revenue losses of less than 5%.

In addition to the economic analysis presented above, South Atlantic Trip Ticket Report data was evaluated to further assess the economic impacts associated with the change in quota levels from 2003 to 2004. This evaluation indicated that on average, reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to have small reductions in revenue for fishermen that land bluefish in North Carolina (0.82%) and minimal for fishermen that land bluefish in Florida (0.05%). 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 fishing opportunities from 2003 to 2004 (i.e., changes in quota levels). However, under the assumption that 2004 allocations to New York represent harvest constraint to that fishery, and bluefish abundance and harvesting capacity would allow that state to harvest the amount equal to their 2002 landings, there could be a 33% reduction in bluefish revenues in New York compared to 2002 landings. Thus, economic impacts would be higher than those described above. Implicit in this assumption is that when a state's quota is reached and the fishery is closed, it will not be able to take advantage of a transfer provision under the FMP which allows states that have a surplus quota to transfer a portion or all of that quota to a state that has or will reach its quota. The transfer provision was implemented by Amendment 1 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. In 2002, in addition to their initial allocated quota, New York received quota transfers from other states that had surpluses. These transfers allowed the initial bluefish quota in that state to increase from 1,090,436 lb (494,613 kg) to 1,449,372 lb (657,424 kg). Like in 2002, this commercial quota level is likely to constrain landings in New York, thus, requiring this state to request bluefish quota transfer(s) from other states.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, 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 2004 recreational harvest limit would be 22.058 million lb (10.005 million kg). This limit would be approximately twice the recreational landings for 2002 and 17% lower than the recreational harvest limit for 2003. 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 6.1.2 of the EA).

6.3.3 EFH Impacts

Alternative 3 would set the TAL at 31.850 million lb (14.447 million kg). This TAL includes a preliminary adjusted commercial quota of 9.493 million lb (4.305 million kg), a preliminary adjusted recreational harvest limit of 22.058 million lb (10.005 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004. 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 4.1.2.1 of the EA. It was concluded in section 4.1.2.1 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 landings a larger volume of fish. Conversely, an 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 22 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 more conservative than necessary to achieve the 2004 target exploitation rate. Due to 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.

6.3.4 Protected Resources Impacts

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 4.1.3 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 22). 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.

6.4 Impacts of the Research Set-Aside 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 research set-aside program, the Council encourages collaborative efforts between 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.

The Council and Board recommended a bluefish research set-aside of 297,750 lb (135,057 kg) for 2004. One research project was submitted to NMFS. If the research set-aside is not used, the research set-aside quota would be put back into the overall TAL. A summary of the various research set-aside projects conditionally approved for 2004 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 various projects.

6.4.1 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 research set-aside 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 2001-2002 period, commercial landings were 23% below the commercial quota and recreational landings were 44% 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 research set-aside will have biological impacts.

6.4.2 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 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 research set-aside 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 research set-aside 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.

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. However, the amount of the bluefish research set-aside is minimal, so impacts in such states would also be expected to be minimal.

6.4.3 EFH Impacts

The recommended research set-aside level is 297,750 lb (135,057 kg) for 2004. The basic fishing operations for bluefish are expected to remain the same in spite of the research set-aside. In addition, the research set-aside specifications should not result in an increase in fishing effort or redistribute effort by gear type. Therefore, the overall impact to essential fish habitat is not expected to change.

6.4.4 Protected Resources Impacts

Protected species are discussed in section 4.1.3 of the EA. The range of these species overlap 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 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.

The provisions under the research set-aside will not result in major changes to existing management measures. The basic fishing operations for bluefish are expected to remain the same in spite of the research set-aside. 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.

6.5 Cumulative Impacts of Preferred Alternative

A cumulative impact analysis is required as specified by the Council on Environmental Quality's regulation for implementing 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 § 1508.7)."

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 2003 management measures for the bluefish fisheries. These measures include commercial 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 insure 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 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 overall decrease in fishing effort. If this action in addition to future actions result in a decrease in fishing effort, positive cumulative impacts will result related to non-target species, EFH, and protected resources.

A cumulative impact analysis is required by the Council on Environmental Quality's (CEQ) regulation for implementation of NEPA. Cumulative effects are defined under NEPA as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action (40 CFR section 1508.7)." A formal cumulative impact assessment is not necessarily required as part of an Environmental Assessment under NEPA as long as the significance of cumulative impacts has been considered (U.S. EPA 1999). The following remarks address the significance of the expected cumulative impacts as they relate to the federally managed bluefish fisheries.

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.

Overall bluefish commercial landings have been below the commercial quotas estabiiehed 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.

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.

During the 1980's, 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 1998).

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 1998).

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 1998).

The current bluefish management plan was prepared cooperatively by the by the Council and the ASMFC 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 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 EIS 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 which allows for review. In addition, as mentioned before the Council added a framework adjustment procedure in Amendment 1 which allows the Council to add or modify management measures through a streamlined public review process. 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 have subsequently improved. For example, the most recent bluefish stock assessment, completed in July, 2003 indicates that the bluefish stock is overfished, but overfishing is not occurring with respect to the overfishing definition. The fishing mortality rate declined from 0.718 in 1987 to 0.184 in 2002. The 2002 F is less than the threshold F of 0.40, and the target F of 0.36. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 96% of the total biomass threshold relative to Amendment 1 overfishing definition (i.e., $\frac{1}{2}$ B_{msy} = 118.50 million lb or 53.75 million kg).

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) and promote safety at sea (National Standard 10). Finally, National Standard 9 addresses bycatch in fisheries and this fishery are clean fisheries by their nature. Amendment 1 fully addresses how the management measures implemented to successfully manage these three species comply with the National Standards. The fishing gear impacts to essential fish habitat are discussed in section 4.1.2.2 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.

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.

Targeted species

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 have subsequently improved. For example, the most recent bluefish stock assessment, completed in July, 2003 indicates that the bluefish stock is overfished, but overfishing is not occurring with respect to the overfishing definition. The fishing mortality rate declined from 0.718 in 1987 to 0.184 in 2002. The 2002 F is less than the threshold F of 0.40, and the target F of 0.36. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 96% of the total biomass threshold relative to Amendment 1 overfishing definition (i.e., ½ B_{msy} = 118.50 million lb or 53.75 million kg).

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 bluefish. Since this species occur 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, and recreational possession limit) would have any significant effect on the target species by itself, or in conjunction with other anthropogenic activities.

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 and 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 and otter trawls. 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 make 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.

As indicated before, the recreational fishery for bluefish is significant. A high portion of the bluefish that are caught are released after capture by anglers die (15%), i.e, the majority of the fish are released alive and are expected to survive after release. The fish that survive are not defined as bycatch under the SFA. The Council and Commission believe that information and education programs relative to proper catch and release techniques for bluefish and other species caught by recreational fishermen should help to maximize the number of these species released alive.

Current recreational management measures could effect 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 2004 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 2004 relative to 2003.

Protected resources

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. Eleven 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 4.1.3) of species protected either by the ESA, the MMPA, or the Migratory Bird Act of 1918 that may be found in the environment utilized by the 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 4.1.3 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.

Habitat

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 4.1.2.1 of the EA. It was concluded in section 4.1.2.1 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 2004 preferred alternative is the status quo commercial quota. It is difficult to predict whether the retention of the 2003 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.

Communities

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, 2002 NMFS dealer data are used. The top commercial landings ports bluefish are shown in Table 6 (section 4.1.1 of the EA).

The commercial quota allocation under this alternative would provide commercial fishermen with the same fishing opportunities in 2004 compared to 2002-2003. 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.

With regard to the specific quota and recreational harvest limit recommendations proposed in this document, impact to the affected biological and physical and human environment are described in section 6. 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 6.1.2 of the EA and in the RIR/IRFA of this document.

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.

7.0 Essential Fish Habitat Assessment

All species managed by the MAFMC, New England Fishery Management Council, South Atlantic Fishery Management Council, and NMFS - Highly Migratory Species, have EFH that overlap with bluefish EFH, as described in section 4.1.1.1 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 4.1 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 4.1.2 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 target exploitation rate for bluefish in 2004, and other commercial management measures. The impact of the actions in this EA are not expected to impact EFH (section 6.1.3 of the EA).

In summary, the 2004 bluefish commercial quota is the same as that specified for 2003. As discussed in section 6.1.3 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 22 represents 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.

8.0 List of Preparers of the Environmental Assessment

This document was prepared by the Mid-Atlantic Council and the Northeast Regional Office of NMFS and is based on part by information provided by the Northeast Fisheries Science Center. Specifically, the package was prepared by the following members of the MAFMC staff: Dr. Christopher M. Moore, Dr. José L. Montañez, and Kathy M. Collins. Scott Steinback (Northeast Fisheries Science Center) provided information used to describe the economic environment of the recreational fishery. In order to ensure compliance with NMFS formatting requirements, the advice of Myles Raizin (NMFS Northeast Region) was relied upon document preparation.

9.0 Other Applicable Laws

9.1 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 FMP will be reviewed relative to CZM programs of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida . Letters were sent to all of the states listed detailing the specifications. The letters to all of the states stated that the Council concluded that the 2004 Specifications would not affect the state's coastal zone and were consistent to the maximum extent practicable with the state's CZM program as understood by the Council.

9.2 Impacts of the Plan Relative to Federalism

This amendment does not contain policies with federalism implications sufficient to warrant preparation of a federalism assessment under Executive Order 12612.

9.3 Paperwork Reduction Act

This action does not contain a collection-of-information requirement for purposes of the Paperwork Reduction Act.

9.4 Section 515 Information Quality Determination

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 2004 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 2004 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 Meetings held on July 22, 2003 and during the MAFMC meeting held on August 4-7, 2003 in Baltimore, Maryland.

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

Integrity of Information Product

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 Marine Mammal Protection Act.)

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 the Specifications document, the responsible Regional Fishery Management Council must comply with the requirements of the Magnuson-Stevens Act, the Regulatory Flexibility Act, the Paperwork Reduction Act, the Coastal Zone Management Act, the Endangered Species Act, the Marine Mammal Protection Act, the Data Quality Act, and Executive Orders 12612 (Federalism), 12866 (Regulatory Planning), and other applicable laws.

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 data and South Atlantic General Canvass Data for 2002 which was used to characterize the economic impacts of the management proposals. The specialists who worked with these data are familiar with the most recent analytical techniques and with the available data and information relevant to the bluefish fisheries. Marine Recreational Fisheries Statistics Survey data was used to 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.

10.0 Finding of no Significant Environmental 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 6.1.1 of the EA. The proposed quota and recreational harvest limit specifications under the preferred alternative are consistent with the FMP overfishing definitions. 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 6.1.3 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 4.1 of the EA.

Overall, the measures proposed in this action will have an effect ranging from reduction in adverse effects to no more than minimal adverse impacts resulting on EFH.

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 limits, and other management measures in 2004. 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 limits, and other management measures in 2004. 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 6.5 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 6.1.1 of the EA. Additionally, the measures proposed in this action will have an effect ranging from reduction in adverse effects to no more than minimal adverse impacts resulting on EFH. (section 7.0 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 2004. Overall, the measures proposed in this action will have an effect ranging from reduction in adverse effects to no more than minimal adverse impacts resulting on EFH.(section 7.0 of the EA).

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

As discussed in section 6.1 of the EA, the proposed specifications for 2004 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 6.1.2 of the EA. The proposed action merely revises the annual commercial quota, recreational harvest limit, and other management measures for the bluefish fisheries for 2004. 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 2004 bluefish fisheries, and the available information relating to the action, I have determined that there will be no significant environmental impact including cumulative impacts resulting from the action and that preparation of an

environmental impact statement on the action is not required by section 102(2)©) of the National Environmental Policy Act or its implementing regulations.

_____ _____

Assistant Administrator for Fisheries, NOAA — Date

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 E.O. 12866. Also included is an Initial Regulatory Flexibility Analysis (IRFA). This analysis is being undertaken in support of the 2004 specifications for bluefish.

2.0 Evaluation of Regulatory Impact Review (E.O. 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 1 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 5.0 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 4.2.1 of the EA. An analysis of permit data is found in section 4.2.2 of the EA.

2.3 A Statement of the Problem

A statement of the problem for resolution is presented under section 1 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 2.0 and 3.0 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 E.O. 12866 for the following reasons. First, it will not have an annual effect on the economy of more than $100 million. The measures considered in this 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 2002 (Maine to Florida) was estimated at $2.3 million for bluefish. The preliminary adjusted commercial bluefish quota for 2004 is slightly lower (i.e., less than 1% lower) than the bluefish commercial quota implemented in 2003 and would allow fishermen about the same fishing opportunities for bluefish in 2004 compared to 2003. On average, commercial bluefish landings for the 1993-2002 period are about 8.484 million lb (3.848 million kg; Table 3). Unless market conditions change substantially in year 2004, commercial bluefish fishermen on a coastwide basis would likely land bluefish in an amount close to the 1993-2002 average. The NMFS Quota Report as of the

week ending October 23, 2003 indicates that overall bluefish commercial landings are within the overall commercial quota for 2003. Therefore, the 2004 overall quota was not adjusted for overages. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2004. As such, it is expected that overall ex-vessel revenues from bluefish will not significantly change in 2004 from 2003 as a consequence of the final 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 2002 were 8.6, 16.6, and 17.8 million, respectively. Of the total number of fishing trips for all modes combined in the North Atlantic and Mid-Atlantic regions (25.1 million), 1.3 million trips or 5.2% of the total were party/charter fishing trips. In addition, there were 0.4 million charter trips in the South Atlantic region in 2002 or 2.5% 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 2002 was 63,351 (section 5.3.2 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 research set-aside) of 21.150 million lb (9.593 million kg) in 2004 would be about twice the recreational landings for 2002 and 21% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 and similar to those that have occurred since 2000. 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 2004 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 actions are 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 actions will not materially alter the budgetary impact of entitlement, grants, user fees, or loan programs or the rights and obligations of their participants. And, fourth, the actions do not raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 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 Alternative)

A complete description of the derivation of the TAL and its allocation to the commercial and recreational sectors is presented in section 3.0 of the EA. Alternative 1 would set the TAL at 31.850 million lb (14.447 million kg). This alternative includes a preliminary adjusted commercial quota of 10.401 million lb (4.718 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 21.150 million lb (9.593 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

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 quotas (or adjusted quotas if applicable) for 2003. This comparison will allow for the evaluation of the potential fishing opportunities associated with each alternative versus the fishing opportunities that were in place in 2003. Aggregate changes in fishing opportunities in 2004 (preliminary adjusted commercial quota) versus adjusted quotas for 2003 are shown in Table 26. The information presented in Table 26 was used to determine potential changes in commercial landings associated with the quota levels associated with each of the alternatives evaluated in

this analysis. That is, the change in fishing opportunity for commercial fishermen in 2004 compared to 2003.

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 2004 is near identical compared to 2003 quota.

Prices

Given that this alternative will result in the same overall quota level as in 2003 and that there is no indication that the market environment for commercially caught bluefish will change considerably in year 2004, 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 2004 recreational harvest limit would be 21.150 million lb (9.593 million kg). This limit would be about twice the recreational landings for 2002 and 21% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that recreational bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is

expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 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 2004 and recreational landings in recent years, it is not anticipated that this management measure will 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 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 31.850 million lb (14.447 million kg). This alternative includes a preliminary adjusted commercial quota of 5.363 million lb (2.432 million kg), a preliminary adjusted recreational harvest limit of 26.188 million lb (11.878 million kg), and a research set-aside of 297,750 pounds (135,057 kg) for 2004.

Commercial Fishery

Landings

Under this alternative aggregate landings for bluefish in 2004 are expected to be 49% lower in 2004 when compared to 2003 quotas.

Prices

Given that this alternative will result in lower 2004 landings compared to the overall quota level in 2003, 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 potential increase in the price for this species under this scenario is anticipated, 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[2]: 1) the

[2]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

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 2004 recreational harvest limit would be 26.188 million lb (11.878 million kg). The possession limit would remain at 15 fish. This limit is more than twice the 2002 recreational landings and projected 2003 landings. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004. The possession limit would remain at 15 fish.

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 2004 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 since the recreational harvest limit for 2004 is more than twice the 2002 landings and about the same as the 2003 recreational harvest limit. In addition, the recreational possession limit remains unchanged from 2003.

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 31.850 million lb (14.447 million kg). This alternative includes a preliminary adjusted commercial quota of 9.493 million lb (4.305 million kg), a preliminary adjusted recreational harvest limit of 22.058 million lb (10.005 million kg),

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demanded and price are the same.

and a research set-aside of 297,750 pounds (135,057 kg) for 2004. In addition, the possession limit would remain at 15 fish.

This alternative would result in 2004 commercial landings between those specified under Alternatives 1 and 2. Under this alternative aggregate commercial quota is approximately 9% lower in 2004 when compared to the 2003 quota. The directional impacts associated with the commercial fishery are expected to be similar than those described under Alternative 2 above, except that given the larger commercial quota under this alternative compared to Alternative 2, the magnitude of the changes may be smaller than that expected under Alternative 2. Under Alternative 3, the recreational harvest limit for 2004 is about twice the 2002 landings and 2003 projected landings. For the recreational fishery, impacts similar to those described under Alternatives 1 and 2 are expected.

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 2004 versus the fishing opportunities or quotas that occurred in 2003.

The preferred alternative (status quo alternative), is expected to have no impacts on prices, consumer surplus, or producer surplus in the commercial sector. Alternatives 2 and 3 show a potential increase in price and decrease in consumer surplus. Under Alternatives 2 and 3, the price of bluefish is projected to increase, consumer surplus is projected to decrease, and producer surplus is expected to increase (assuming the demand for bluefish is moderate to highly elastic). While the directional changes of these elements (i.e., price, CS, and PS) are expected to be the same for Alternatives 2 and 3, the magnitude of these changes are expected to be larger under Alternative 2 due to the larger potential reduction in quota when compared to 2003.

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 ex-vessel gross revenues associated with each alternative were estimated. More specifically, changes in landings for bluefish in 2004 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 2002 ex-vessel price for bluefish to derive potential changes in net revenues which are used as a proxy for changes in net benefits. NMFS dealer data from Maine to Virginia and South Atlantic General Canvass data were used to derive the ex-vessel price for bluefish from Maine to Florida. The ex-vessel price for bluefish in 2002 was estimated at $0.34/lb. The aggregate change in landings in 2004 compared to the base year for each species in

presented in Table 26. The overall change in gross revenue associated with the 2004 adjusted quota compared to 2003 adjusted quota is a decrease of less than 36 thousand dollars, $1.7 million, and $0.3 million under Alternatives 1, 2, and 3, respectively. These changes in revenues correspond to the potential changes associated with the changes of quota levels from 2003 to 2004 (fishing opportunities). The changes in gross revenues associated with the potential changes in fishing opportunities in 2004 versus 2003 assumed static prices (i.e., 2002) 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 the overall bluefish quota would be taken in 2003 and 2004.

The changes in gross revenues indicate that Alternative 1 will provide the largest commercial net benefits followed by Alternatives 3 and 2. Alternative 1 provides the largest commercial net benefits among all the evaluated alternatives, and it also provides the best allocation to the commercial and recreational sectors considering recent fishing practices.

Given the level of the recreational harvest limit for 2004 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 2004 is substantially higher than the 2002 landings and 2003 projected recreational landings. In addition, the recreational possession limit remains unchanged from 2003.

It is important to mention that although the measures that are evaluated in this specification package are for the 2004 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 2002 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, 2001, or 2002, 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 October 23, 2003 indicates that overall bluefish commercial landings are within the overall commercial quota for 2003. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2002 fishing mortality rate for bluefish (i.e., 0.184) is below the target of 0.41 for 2003 and 0.31 for 2004. The total stock biomass for 2002 was estimated at 113.65 million lb (51.55 million kg) or 90% of the total biomass threshold relative to Amendment 1 overfishing definition (i.e., ½ B_{msy} = 118.50 million lb or 53.75 million kg).

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 small quota decreases in the commercial bluefish fishery (1% decrease) contained in the Preferred Alternative, the IRFA was prepared to further evaluate the economic impacts of the three quota alternatives on small business entities.

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 1 of the EA. A statement of the problem for resolution is presented under section 1 of the EA.

The Objectives and legal basis of the Proposed Rule

A complete description of the objectives of this proposed rule is found under section 1 of the EA. This action is taken under the authority of the Magnuson-Stevens Act and regulations at 50 CFR part 648.

Estimate of the Number of Small Entities

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

Reporting Requirements

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

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 5.0 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 4.2.1 of the EA. An analysis of permit data is found in section 4.2.2 of the EA. A full description of the three alternatives analyzed in this section is presented in section 3.0 of the EA. In addition, a brief description of each alternative is presented in section 2.5 of the RIR/IRFA.

The Small Business Administration (SBA) defines a small business in the commercial fishing and recreational fishing activity, as a firm with receipts (gross revenues) of up to $3.5 and $5.0 million, respectively. This rule could affect any vessel that fish for bluefish in federal or state waters. The final measures regarding the 2004 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 2002. This data covers activity by unique vessels. Of the active vessels reported in 2002, 928 known vessels landed bluefish from Maine to North Carolina. The dealer data does not cover vessel activity in the South Atlantic. The dealer data indicate that 139 federally permitted vessels landed bluefish in North Carolina in 2002. However, the North Carolina landings data for bluefish may be incomplete is this data system. South Atlantic Trip Ticket Report data indicate that 1,004 vessels landed bluefish in North Carolina in 2002 (Lees Sabo, NC Division of Marine Fisheries, pers. comm., 2003). Some of these vessels may by included in the 139 vessels identified as landing bluefish in the dealer data. As such, double counting is possible. In addition, 266 vessels landed bluefish in Florida's east coast in 2002 (Steve Brown, Fla Fish and Wildlife Conservation Commission, pers. comm., 2003). Bluefish landings in South Carolina and Georgia were very small in 2002 (i.e., only a few hundred pounds combined), representing a negligible proportion of the total bluefish landings along the Atlantic coast in 2002. 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 2002 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 2002. This estimate provides the base from which subsequent quota changes and their associated effects on vessel revenues were compared. Since 2002 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 2003 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 (due to changes in quota level from 2003 to 2004) depending upon which of the three quota alternatives were evaluated. These changes in quota levels were then used to estimate proportional reductions or increases in the three quota alternatives versus the base quota year. The NMFS Quota Report as of the week ending October 23, 2003 indicates that overall bluefish commercial landings are within the overall commercial quota for 2003. Landings to date, overages, and research set-aside estimates were employed to adjust the 2004 quotas. In addition to this, for the purpose of estimating the 2004 quotas and revenue changes, it was assumed that the states will fully harvest, and not exceed, the 2003 state allocations.

The fourth step was to compare the estimated 2004 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 and Suffolk Counties, NY; and Barnstable and Essex Counties, MA (section 6.1 of the RIR/IRFA). Counties not included in this analysis (e.g., Brunswich County, NC; Providence County, RI; Ulster and Nassau Counties, NY; and Cumberland and Monmouth Counties, NJ) 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 2002 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 summaries of landings, federal permits, demographic statistics, and employment, wages, 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 26 shows the commercial quotas under the three alternatives evaluated in this analysis and their state-by-state distribution. Table 26 shows the percentage change of the 2004 allowable commercial landings (adjusted for research set-aside) relative to the 2003 quotas. Note that the overall changes in fishing opportunity in 2004 compared to 2003 are 0.55%, 48.72%, and 9.24% decrease for Alternatives 1, 2, and 3, respectively. The individual states show similar changes in fishing opportunities in 2004 compared to 2003.

Table 26. Percentage changes associated with allowable commercial landings for various quota alternatives in 2004 (adjusted quota for research set-aside) relative to 2003 adjusted quota by state.

State	2004 Commercial Quota Alternative 1	2004 Commercial Quota Alternative 2	2004 Commercial Quota Alternative 3
ME[a]	-0.56	-48.72	-9.24

NH	-0.56	-48.72	-9.24
MA	-0.56	-48.72	-9.24
RI	-0.56	-48.72	-9.24
CT	-0.56	-48.72	-9.24
NY	-0.55	-48.72	-9.24
NJ	-0.56	-48.72	-9.24
DE	-0.56	-48.72	-9.24
MD	-0.56	-48.72	-9.24
VA	-0.56	-48.72	-9.24
NC	-0.56	-48.72	-9.24
SC	-0.56	-48.72	-9.24
GA	-0.56	-48.72	-9.24
FL	-0.56	-48.72	-9.24
Total	-1.01	-49.18	-9.70

All quota alternatives considered in this IRFA are based on a TAL of 31.850 million lb (14.447 million kg) in 2004. This overall TAL would achieve the target F in 2004. 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 2.0 and 3.0 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 Impacts 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 2002 were identified. Total revenues from all species landed by each vessel during calendar year 2002 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 2002. These estimates provided the base from which to compare the effects of the final quota changes from 2003 to 2004. The final bluefish quota for 2004 (Preferred Alternative) would allow fishermen to land near the same amount of bluefish in 2004 compared to the 2003.

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 from 2003 to 2004 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.

5.1 Quota Alternative 1

To analyze the economic effects of this alternative, the total harvest limits specified in section 3.0 of the EA were employed. Under this alternative, the allocation to the commercial and recreational fisheries are less than 1% lower than the commercial quota for 2003 and 21% lower than the recreational harvest limit for 2003.

The overall commercial allocation for 2004 is near identical to the 2003 commercial quota. When this allocation is distributed to the states, all states show a 2004 quota level which is slightly lower (0.56%) than their adjusted 2003 quota (Table 26). Thus, the overall quota as well as the individual quotas for most state show a small decrease in fishing opportunity (0.56%) from 2003 to 2004.

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 would be 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. These quota transfers have allowed states that have been constrained by their initial quota levels to harvest additional bluefish in previous years.

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 27. A total of 928 vessels were projected to be impacted by revenue losses of less than 5%. More specifically, of the 928 vessels projected to be impacted with revenue losses of less than 5%, 45 vessels (5%) were projected to incur in revenue losses ranging from 1 to 4.99% and 883 vessels (95%) were projected to incur in revenue losses of less than 1%.

Table 27. Threshold analysis of revenues for participating vessel, based on dealer data.

Quota Alternative 1 (Preferred)		Number of Vessels with an Increase in Revenue	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

928	0	0	0	928	0	0	0	0	0	0

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 28). "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.

Table 28. Review of revenue impacts under quota Alternative 1, by home port state.

State	Participating Vessels	Number of Vessels Impacted ≥5%	Number of vessels with an Increase in Revenue	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	4	0	0	0	4	0	0	0	0	0	0
FL	4	0	0	0	4	0	0	0	0	0	0
MA	264	0	0	0	264	0	0	0	0	0	0
MD	16	0	0	0	16	0	0	0	0	0	0
ME	17	0	0	0	17	0	0	0	0	0	0
NC	121	0	0	0	121	0	0	0	0	0	0
NH	29	0	0	0	29	0	0	0	0	0	0
NJ	99	0	0	0	99	0	0	0	0	0	0
NY	183	0	0	0	183	0	0	0	0	0	0
PA	5	0	0	0	5	0	0	0	0	0	0
RI	113	0	0	0	113	0	0	0	0	0	0
VA	43	0	0	0	43	0	0	0	0	0	0
OTHER[a]	3	0	0	0	3	0	0	0	0	0	0
NOT KNOWN[b]	27	0	0	0	27	0	0	0	0	0	0
Total	928	0	0	0	928	0	0	0	0	0	0

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of bluefish in 2002, but do not hold any commercial federal permits in 2002. 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.

The threshold analysis presented in Table 27 is based on Northeast dealer data and represents potential impacts on vessels participating in the fisheries on the North Atlantic region. In order to assess the impacts of the commercial 2004 quota measure on commercial vessels participating in the bluefish fishery in the east coast of Florida and further assess impacts in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 1,004 vessels (318 vessels <=18 ft; 553 vessels between 19-38 ft; and 133 vessels =>39 ft) landed bluefish in North Carolina in 2002. On average, these vessels generated 8.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 5.68% for vessel <=18 ft; 12.57% for vessels 19-38 ft; and 7.06% for vessels =>39 ft. Of the 1,004 vessels that landed bluefish in North Carolina in 2002, approximately 1% (10 vessels) landed bluefish only and 99% (994) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 165 individual licenses and 101 vessel licenses that reported bluefish landings in 2002. On average, the commercial harvest of bluefish in Florida's east coast contributed to less than 1% of the total value of the commercial harvest by fishermen landing bluefish. Under this alternative, landings are projected to decrease by approximately 0.56% in North Carolina and Florida as a consequence of the 2004 allocation when compared to 2003 allocation. Therefore, on average,

reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to be minimal for fishermen that land bluefish in those states (i.e, 0.05% in North Carolina and 0.003% in Florida).

The potential changes described above are based on the potential changes in fishing opportunities from 2003 to 2004 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/IRFA. A comparison of the 2004 commercial quota versus 2002 landings can be used to further evaluate economic impacts of the proposed 2004 commercial specifications. All states, with the exception of New York, landed less in 2002 (Table 21) than their proposed 2004 state allocation. However, New York's bluefish landings of 1.475 million lb in 2002 exceed the 2004 allocation of 1.080 million lb in 2004. Presuming that abundance and harvesting capacity could allow vessels to land the same amount of bluefish in 2004, the quota allocated to New York would represent a constraint and would reduce bluefish revenue in New York by 36.6% when compared to 2002 landings. Implicit in this comparison is the assumption that the state would not be able to take advantage of the quota transfer provision in the FMP which allows states to transfer surplus quota to a state that would otherwise have to close. The transfer provision was established in Amendment 1 to the FMP as a tool to mitigate the adverse economic effects of prematurely closiing a fishery when surplus quota exists. Based on historical evidence, the states have been very cooperative in transferring commercial bluefish quota when needed by states that would otherwise have to close. In fact, New York received over 350,000 lb of quota through quota transfers from other states in 2002. Given that commercial landings have averaged 7.77 million lb for the period 1998 through 2002, and that the 2004 proposed adjusted commercial quota is 10,401 million lb, the Council has a strong basis to assume that transfers will again take place in 2004. Such transfers would reduce the impact to vessels in New York or other states that could otherwise be impacted by state closures.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, 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 2004 recreational harvest limit would be 21.150 million lb (9.593 million kg). This limit would be about twice the recreational landings for 2002 and 21% lower than the recreational harvest limit for 2003. Bluefish recreational landings for the 2000, 2001, and 2002 periods were 59, 53, and 29% lower than the recreational harvest limit established for those years, respectively. In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2003 will be 46% lower than the recreational harvest established for 2003. The possession limit would remain at 15 fish. Given recent trends in bluefish recreational landings, it is expected that landings in 2004 will be substantially lower than the recreational harvest limit for 2004 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 2004 and recreational landings in recent years, it is not anticipated that this management measure will 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.

<u>Effects of research set-aside quota</u>

The Council approved a research set-aside amount of 297,750 pounds (135,057 kg) for 2004. A research project as part of the research set-aside 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 section 6.4 of the EA and 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 2004 relative to the adjusted 2003 quotas. That is, the research set-aside for bluefish was deducted from the initial overall TAL for 2004 to derive adjusted 2004 quotas. Therefore, the threshold analyses conducted under each alternative has accounted for overall reductions in fishing opportunities in 2004 versus 2003 available to all vessels typically participating in this fishery due to research set-aside.

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 research set-aside 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 research set-aside 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. 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.

Changes in the recreational harvest limit due to the research set-aside would be nil; the limit changes from 21.350 million lb (9.684 million kg) to 21.150 million lb (9.593 million kg; a less than a <1% decrease) in the bluefish harvest level. In addition, given the level of the recreational harvest limit for 2004 and recreational landings in recent years, it is not anticipated that the research set-aside will affect angler satisfaction or recreational demand for bluefish.

5.1.3 Summary of Impacts

In sum, Alternative 1 would result in a slight decreased commercial TAL for bluefish in 2004 versus 2003 commercial quota. The 2004 recreational harvest limit is 21% lower than the recreational harvest limit in 2003.

Under this alternative, according to dealer data, a total of 928 commercial vessels reporting landings in 2002 (in that data base) were projected to be impacted by revenue losses of less than 5%. More specifically, of the 928 vessels projected to be impacted with revenue losses of less than 5%, 45 vessels (5%) were projected to incur in revenue losses ranging from 1 to 4.99% and 883 vessels (95%) were projected to incur in revenue losses of less than 1%. In addition, given recent South Atlantic Trip Ticket Report data, the impact of the quota reductions in North Carolina and Florida due to the decrease in quota allocation from 2003 to 2004 is expected to be minimal (0.05% in New York and 0.003% in Florida).

However, under the assumption that 2004 allocations to New York represent harvest constraints to that fishery, and bluefish abundance and harvesting capacity would allow that state to harvest the amount equal to their 2002 landings, there could be a 30% reduction in bluefish revenues in New York compared to 2002. Thus, economic impacts would be higher than those described above. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004 to New York, then the number of affected entities could potentially decrease.

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.

There should be no adverse economic or social impacts associated with the research set-aside. The research set-asides are, conceptually, available for commercial vessels to participate in research, as well as for other vessels. Also, the research set-asides 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. 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 3.0 of the EA were employed. Under this alternative, the allocation to the commercial and recreational fisheries are 49% lower and 2% lower than the commercial and recreational quotas for 2003, respectively.

When the overall commercial allocation for 2004 is distributed to the states, all states show a 48.72% reduction compared to their 2003 quota.

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 29. A total of 138 vessels were projected to incur revenue losses of more than 5%. More specifically, 40 vessels were projected to incur in revenue losses of 5-10%, 39 vessels of 10-19%, 13 vessels of 20-29%, 10 vessels of 30-39%, 21 vessels of 40-49%, and 15 vessels of 50% or more. In addition, 790 vessels were projected to incur in revenue losses of less than 5%.

Table 29. Threshold analysis of revenues for participating vessel, based on dealer data.

Quota Alternative 2 (Most Restrictive)		Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by ≥ 5% Reduction	<5	5-10	10-19	20-29	30-39	40-49	$50
928	138	790	40	39	13	10	21	15

Impacts of the quota provision were examined relative to a vessel's home state as reported on the vessel's permit application (Table 30). "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 Florida to 244 in Massachusetts. The number of vessels with revenue reduction of 5% or more ranged from none in Connecticut and Maryland to 54 in New York. In addition, 9 vessels of unknown home port are also impacted. The larger number of impacted vessels with revenue reduction of 5% or more in New York, New Jersey, Massachusetts, and North Carolina may be due to a relatively higher dependence on bluefish.

Table 30. 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	4	0	0	4	0	0	0	0	0	0
FL	6	3	0	1	0	2	0	0	0	1
MA	265	20	0	244	5	6	1	2	6	0
MD	16	0	0	16	0	0	0	0	0	0
ME	17	1	0	16	0	0	0	0	1	0
NC	120	18	0	103	6	5	3	4	0	0
NH	31	2	0	27	0	2	0	0	0	0
NJ	97	23	0	76	8	6	4	0	5	0
NY	189	54	0	129	11	17	4	4	5	13
PA	5	2	0	3	0	0	0	0	1	1
RI	109	4	0	109	4	0	0	0	0	0
VA	41	2	0	41	2	0	0	0	0	0
OTHER[a]	3	0	0	3	0	0	0	0	0	0
NOT KNOWN[b]	27	9	0	18	4	1	1	0	3	0
Total	928	138	0	790	40	39	13	10	21	15

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of bluefish in 2002, but do not hold any commercial federal permits in 2002. 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.

The threshold analysis presented in Table 29 is based on Northeast dealer data. Thus, represents potential impacts on vessels participating in the fisheries on the North Atlantic region. In order to assess the impacts of the commercial 2004 quota measure on commercial vessels participating in the bluefish fishery in the east coast of Florida and further assess impacts in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 1,004 vessels (318 vessels <=18 ft; 553 vessels between 19-38 ft; and 133 vessels =>39 ft) landed bluefish in North Carolina in 2002. On average these vessels generated 8.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 5.68% for vessel <=18 ft; 12.57% for vessels 19-38 ft; and 7.06% for vessels =>39 ft. Of the 1,004 vessels that landed bluefish in North Carolina in 2002, approximately 1% (10 vessels) landed bluefish only and 99% (994) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 165 individual licenses and 101 vessel licenses that reported bluefish landings in 2002. On average, the commercial harvest of bluefish in Florida's east coast contributed with less than 1% of the total value of the commercial harvest by fishermen landing bluefish. Under this alternative, landings are projected to decrease by approximately

48.72% in North Carolina and Florida as a consequence of the 2004 allocation when compared to 2003 allocation. Therefore, on average, reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to be small for fishermen that land bluefish in North Carolina (4.33%) and minimal for fishermen that land bluefish in Florida (0.29%).

The potential changes described above are based on the potential changes in fishing opportunities from 2003 to 2004 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/IRFA. A comparison of the 2004 commercial quota versus 2002 landings can be used to further evaluate economic impacts of the proposed 2004 commercial specifications. Most states landed less in 2002 (Table 21) than their proposed 2004 state allocation under Alternative 2. However, Massachusetts, Rhode Island, New York, New Jersey and North Carolina's bluefish landings in 2002 exceed their 2004 allocations in 2004. Presuming that abundance and harvesting capacity could allow vessels to land the same amount of bluefish in 2004, the quota allocations to these states would represent a constraint and would reduce bluefish revenue in these states when compared to 2002 landings. The reduction in revenues estimated for each state are Massachusetts, 13%; Rhode Island, 54%; New York, 164.8%; New Jersey, 67%; and North Carolina, 34%. Implicit in this comparison is the assumption that the state would not be able to take advantage of the quota transfer provision in the FMP which allows states to transfer surplus quota to a state that would otherwise have to close. The transfer provision was established in Amendment 1 to the FMP as a tool to mitigate the adverse economic effects of prematurely closiing a fishery when surplus quota exists. Based on historical evidence, the states have been very cooperative in transferring commercial bluefish quota when needed by states that would otherwise have to close. In fact, New York received over 350,000 lb of quota through quota transfers from other states in 2002. Given that commercial landings have averaged 7.77 million lb for the period 1998 through 2002, and that the 2004 proposed adjusted commercial quota is 10,401 million lb, the Council has a strong basis to assume that transfers will again take place in 2004. Such transfers wouldreduce the impact to vessels in states that could otherwise be impacted by state closures.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, since the overall quota in 2004 is substantially lower than the 2003 quota, 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 2004 recreational harvest limit would be 26.188 million lb (11.878 million kg). This limit would be more than twice the recreational landings for 2002 and 2% lower than the recreational harvest limit for 2003. 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 49% decrease the commercial TAL for bluefish in 2004 versus 2003. The 2004 recreational harvest limit is 2% lower than the recreational harvest limit in 2003.

Under this alternative, according to dealer data, a total of 138 of the 928 commercial vessels reporting landings in 2002 (in that data base) were projected to incur revenue losses in the 5% or more. Furthermore, 790 vessels were projected to incur in revenue losses of less than 5%. In addition, given recent South Atlantic Trip Ticket Report data, 1,004 vessels in North Carolina could potentially lose, on average, 4.33% of their total ex-vessel revenue. Fisherman participating in the bluefish fishery in Florida could lose, on average, a minimal percentage (0.29%) of their total ex-vessel revenue.

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 3.0 of the EA were employed. Under this alternative, the allocation to the commercial and recreational fisheries are 9% lower and 17% lower than the commercial and recreational quotas for 2003, respectively.

The overall commercial allocation for 2004 is slightly lower than the 2003 commercial quota. When this allocation is distributed to the states, all states show a 2004 quota level which is 9.24% smaller than their adjusted 2003 quota (Table 26).

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 31. The economic range from expected revenue losses range from losses on the order of 5 to 19% for a total of 53 vessels of the 928 commercial vessels reporting landings in 2002 (in that data base) . In addition, 875 vessels were projected to incur in revenue losses of less than 5%

Table 31. Threshold analysis of revenues for participating vessel, based on dealer data.

Quota Scenario 3				Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by ≥ 5% Reduction	Increase in Revenue (number)	No Change in Revenue (number)	<5	5-10	10-19	20-29	30-39	40-49	$50
928	53	0	0	875	34	19	0	0	0	0

Impacts of the quotas provisions were examined relative to a vessel's home state as reported on the vessel's permit application (Table 32). "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 3 in Florida and Pennsylvania to 256 in Massachusetts. The number of impacted vessels with revenue reduction in the 5 to 19% by home state ranged from zero for most states to 26 in New York and 8 in Massachusetts. In addition, 4 vessels of unknown home port was also impacted. The larger number of impacted vessels with revenue reductions in the 5 to 19% range in New Jersey, Massachusetts, and New York may be due to a relatively higher dependence on bluefish.

Table 32. Review of revenue impacts under quota Alternative 3, by home port state.

State	Participating Vessels	Number of Vessels Impacted ≥5%	Increase in Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (percent)						
					<5	5-9	10-19	20-29	30-39	40-49	$50
CT	4	0	0	0	4	0	0	0	0	0	0
FL	4	1	0	0	3	0	1	0	0	0	0
MA	264	8	0	0	256	8	0	0	0	0	0
MD	16	0	0	0	16	0	0	0	0	0	0
ME	17	1	0	0	16	1	0	0	0	0	0
NC	121	4	0	0	117	4	0	0	0	0	0
NH	29	0	0	0	29	0	0	0	0	0	0
NJ	99	7	0	0	92	7	0	0	0	0	0
NY	183	26	0	0	157	10	16	0	0	0	0
PA	5	2	0	0	3	1	1	0	0	0	0
RI	113	0	0	0	113	0	0	0	0	0	0
VA	43	0	0	0	43	0	0	0	0	0	0
OTHER[a]	3	0	0	0	3	0	0	0	0	0	0
NOT KNOWN[b]	27	4	0	0	23	3	1	0	0	0	0
Total	928	53	0	0	875	34	19	0	0	0	0

[a]States with fewer than 4 vessels were aggregated.
[b]Vessels have shown landings of bluefish in 2002, but do not hold any commercial federal permits in 2002. 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.

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 assess the impacts of the commercial 2004 quota measure on commercial vessels participating in the bluefish fishery in the east coast of Florida and further assess impacts in North Carolina, South Atlantic Trip Ticket Report data was reviewed. South Atlantic Trip Ticket Report data indicate that 1,004 vessels (318 vessels <=18 ft; 553 vessels between 19-38 ft; and 133 vessels =>39 ft) landed bluefish in North Carolina in 2002. On average these vessels generated 8.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 5.68% for vessel <=18 ft; 12.57% for vessels 19-38 ft; and 7.06% for vessels =>39 ft. Of the 1,004 vessels that landed bluefish in North Carolina in 2002, approximately 1% (10 vessels) landed bluefish only and 99% (994) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 165 individual licenses and 101 vessel licenses that reported bluefish landings in 2002. On average, the commercial harvest of bluefish in Florida's east coast contributed with less than 1% of the total value of the commercial harvest by fishermen landing bluefish. Under this alternative, landings are projected to decrease by approximately 9.24% in North Carolina and Florida as a consequence of the 2004 allocation when compared to 2003 allocation. Therefore, on average, reduction in revenues due to the change in quota levels from 2003 to 2004 are expected to be minimal for fishermen that land bluefish in those states (i.e., 0.82% in North Carolina and 0.05% in Florida).

The potential changes described above are based on the potential changes in fishing opportunities from 2003 to 2004 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/IRFA. However, a comparison of the 2004 commercial quota versus 2002 landings can be used to further evaluate economic impacts of the proposed 2004 commercial specifications. All states, with the exception of New York, landed less in 2002 (Table 21) than their proposed 2004 state allocation. However, New York's bluefish landings of 1.475 million lb in 2002 exceed the Alternative 3 allocation of 0.986 million lb in

2004. Presuming that abundance and harvesting capacity could allow vessels to land the same amount of bluefish in 2004, the quota allocated to New York would represent a constraint and would reduce bluefish revenue in New York by 49.6% when compared to 2002 landings. Implicit in this comparison is the assumption that the state would not be able to take advantage of the quota transfer provision in the FMP which allows states to transfer surplus quota to a state that would otherwise have to close. The transfer provision was established in Amendment 1 to the FMP as a tool to mitigate the adverse economic effects of prematurely closing a fishery when surplus quota exists. Based on historical evidence, the states have been very cooperative in transferring commercial bluefish quota when needed by states that would otherwise have to close. In fact, New York received over 350,000 lb of quota through quota transfers from other states in 2002. Given that commercial landings have averaged 7.77 million lb for the period 1998 through 2002, and that the 2004 proposed adjusted commercial quota is 10,401 million lb, the Council has a strong basis to assume that transfers will again take place in 2004. Such transfers would reduce the impact to vessels in New York or other states that could otherwise be impacted by state closures.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004, 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 2004 recreational harvest limit would be 22.058 million lb (10.005 million kg). This limit would be about twice the recreational landings for 2002 and 17% lower than the recreational harvest limit for 2003. 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, Alternative 3 would result in a approximately 9% decrease in commercial TAL for bluefish in 2004 versus 2003 commercial quota. The 2004 recreational harvest limit is 17% lower than the recreational harvest limit in 2003.

Under this alternative, according to dealer data, a total of 875 of the 928 commercial vessels reporting landings in 2002 (in that data base) were projected to incur revenue losses of less than 5% and 53 vessels were projected to incur revenue losses in the 5 to 19%. Furthermore, given recent South Atlantic Trip Ticket Report data, 1,004 vessels in North Carolina could potentially lose, on average, 0.82% of their total ex-vessel revenue. Fisherman participating in the bluefish fishery in Florida could lose, on average, a minimal percentage (0.05%) of their total ex-vessel revenue.

However, under the assumption that 2004 allocations to New York represent harvest constraints to that fishery, and bluefish abundance and harvesting capacity would allow that state to harvest the amount equal to their 2002 landings, there could be a 36% reduction in bluefish revenues in New York compared to 2002 landings. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2004 to New York, then the number of affected entities could potentially decrease.

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.

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 and Suffolk Counties, NY; and Barnstable and Essex Counties, MA (section 6.1 of the RIR/IRFA). Counties not included in this analysis (e.g., Brunswich County, NC; Providence County, RI; Ulster and Nassau Counties, NY; and Cumberland and Monmouth Counties, NJ) 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 1999.

Of the 6 counties identified in Table 33, the percentage of total personal income derived from commercial fishing sales and from seafood sales 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 30 thousand in Dare County to 1.6 million in New York County.

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
MA	Barnstable	213,221	120,375	3,729.63	1,105	0.68%	32	0.03%
MA	Essex	714,909	380,238	22,930.09	1,294	0.23%	848	0.25%
NY	New York	1,613,780	2,643,190	111,647.90	*	*	63	0.001%
NY	Suffolk	1,427,096	695,522	27,877.06	563	0.03%	*	*
NJ	Ocean	503,141	173,836	5,682.67	202	0.10%	0	0
NC	Dare	30,042	23,643	492.549	*	*	19	0.05%

* = < 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, 1999.
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).

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Appendix A. NMFS Northeast Statistical Areas