

2003 Bluefish Specifications

Environmental Assessment
Essential Fish Habitat Assessment
Regulatory Impact Review and
Final Regulatory Flexibility Analysis

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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 (Lazar and Gibson 2002) indicates that fishing mortality rates on bluefish peaked in 1991 at 0.760 and have steadily declined since then to 0.246 in 2001. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2001 fishing mortality rate for bluefish is below the target of 0.41 for 2002 and 2003. The total stock biomass for 2001 was estimated at 99.45 million lb (45.11 million kg) or 84% 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). A stock projection (using a constant fishing mortality rate $F=0.246$ -- equal to the 2001 rate) indicates that the bluefish stock will increase from an estimated 2002 biomass of 113.14 million lb (51.32 million kg) to 143.92 million lb (65.28 million kg) in 2003.

1.2 Purpose and Need

The purpose and need of this action is to establish annual specifications for the 2003 bluefish commercial and recreational fisheries. These measures include a commercial quota, a recreational harvest limit, and a possession limit for the recreational fishery. The Council met jointly with the Commission's Bluefish Board and adopted measures at their August, 2002 meeting.

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.

Framework Adjustment 1 to the Bluefish FMP, which was approved by NMFS on August 10, 2001, 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 these 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.

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 October 5, 2002 indicates that overall bluefish commercial landings are within the overall (coastwide quota) commercial quota for 2002. Therefore, the 2003 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 9.546 million lb (4.329 million kg). Potential changes in landings of the 2003 commercial quotas compared to the 2001 landings are presented in Table 2.

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

	2003 Initial TAL	2003 Initial Commercial Quota	2003 Initial Recreational Harvest Limit	2003 Research Set-Aside	2003 Adjusted Commercial Quota	2003 Adjusted Recreational Harvest Limit
Quota Alternative 1 (Preferred)						
Council Preferred Alternative	37,293,397	10,500,000	26,793,397	141,900	10,460,048	26,691,449
Quota Alternative 2						
Projection Based Alternative	37,293,397	6,339,877	30,953,520	141,900	6,315,754	30,835,743
Quota Alternative 3						
Based on 1995 to 2000 Commercial TAL	37,293,397	9,583,000	27,710,397	141,900	9,546,537	27,604,960

Table 2. Commercial quotas under each Alternative compared to 2001 landings (in pounds).

	Adjusted Commercial TAL	Percent of 2001 Landings	Percent Change
Quota Alternative 1 (Status Quo - Least Restrictive)			
Council Preferred Alternative	10,460,048	120.41	20.41
Quota Alternative 2 (Most Restrictive)			
Projection Based Alternative	6,315,754	72.71	-27.29
Quota Alternative 3 (1995 to 2000 commercial TAL)			
Based on 1995 to 2000 Commercial	9,546,537	109.90	9.90

3.0 Alternatives Being Considered

3.1 Alternative 1 (2002 Status Quo (No Action - status quo with allocation change to comply with F specified in FMP) and 2003 preferred alternative)

The Council and Board recommended a coastwide 2003 TAL of 37.293 million lb (16.916 million kg). The 2003 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 6.339 million lb (2.875 million kg) as a quota and the recreational fishery would receive 30.953 million lb (14.040 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 2003. 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 8 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 12.539 million lb or 5.687 million kg; Table 3), it is anticipated that the recreational fishery will harvest less than 83% of the TAL in year 2003. A projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2002 will be 64% lower than the recreational harvest established for 2002. As such, the Council and Board recommended that the commercial TAL in year 2003 be 10.500 million lb (4.762 million kg). That is, a transfer of 4.161 million lb (1.887 million kg) was made from the recreational sector to the commercial sector. As such, the recreational TAL for year 2003 will be 26.793 million lb (12.153 million kg). Additionally, the Council approved a research set-aside for bluefish of 141,900 pounds (64,365 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2003 are 10.46 million lb (4.744 million kg; status quo commercial quota) and 26.691 million lb (12.107 million kg), respectively. The entire allocation process is summarized in Table 4.

Table 3. Bluefish commercial and recreational landings ('000 lb), 1981-2001.

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	9,453	15,541
1995	8,004	14,306
1996	9,295	11,746
1997	9,063	14,302

1998	8,254	12,334
1999	7,093	8,253
2000	7,983	10,605
2001	8,686	13,230
Average 81-01	11,676	40,612
Average 92-01	8,948	14,488

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

Bluefish TAL	37,293,397 lb (16,916,000 kg)
Commercial TAL (before transfer)	6,339,877 lb (2,875,720 kg)
Recreational TAL (before transfer)	30,953,520 lb (14,040,280 kg)
Commercial TAL (after transfer)	10,500,000 lb (4,762,720 kg)
Recreational TAL (after transfer)	26,793,397 lb (12,153,280 kg)
Adjusted Commercial TAL (after research set-aside)	10,460,048 (4,744,598 kg)
Adjusted Recreational TAL (after research set-aside)	26,691,449 (12,107,038 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 2003 would be 6.339 million lb (2.875 million kg) and the recreational harvest limit would be 30.953 million lb (10.500 million kg). Additionally, the Council approved a research set-aside for bluefish of 141,900 pounds (64,365 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2003 are 6.315 million lb (2.864 million kg) and 30.835 million lb (13.986 million kg), respectively (Table 1). This alternative would result in the lowest possible landings in 2003 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 3.243 million lb (1.471 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 27.710 million lb (12.569 million kg) for year 2003. Additionally, the

Council approved a research set-aside for bluefish of 141,900 pounds (64,365 kg) that would be deducted from the TAL. Therefore, the adjusted commercial and recreational TALs for 2003 are 9.546 million lb (4.329 million kg) and 27.604 million lb (12.521 million kg), respectively (Table 1). This alternative would result in a 2003 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 5, 2002 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 2003, the Council approved a research set-aside equal to the amount requested in the project that was conditionally accepted by NMFS (August 5, 2002 letter from Mears to Furlong). The set-aside would be 141,900 pounds (64,365 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).

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 Tables 1-5 of 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

^aA 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 1-10² 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 management unit of this FMP that are afforded protection under the Endangered Species Act (ESA) of 1973 (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 Endangered Species Act of 1973 (ESA), the Marine Mammal Protection Act of 1972 (MMPA), or the Migratory Bird Act of 1918 may be found in the environment utilized by bluefish:

Cetaceans

<u>Species</u>	<u>Status</u>
Northern right whale (<i>Eubalaena glacialis</i>)	Endangered
Humpback whale (<i>Megaptera novaeangliae</i>)	Endangered
Fin whale (<i>Balaenoptera physalus</i>)	Endangered
Blue whale (<i>Balaenoptera musculus</i>)	Endangered
Sei whale (<i>Balaenoptera borealis</i>)	Endangered

Sperm whale (<i>Physeter macrocephalus</i>)	Endangered
Minke whale (<i>Balaenoptera acutorostrata</i>)	Protected
Beaked whales (<i>Ziphius and Mesoplodon spp.</i>)	Protected
Risso's dolphin (<i>Grampus griseus</i>)	Protected
Pilot whale (<i>Globicephala spp.</i>)	Protected
White-sided dolphin (<i>Lagenorhynchus acutus</i>)	Protected
Common dolphin (<i>Delphinus delphis</i>)	Protected
Spotted and striped dolphins (<i>Stenella spp.</i>)	Protected
Bottlenose dolphin (<i>Tursiops truncatus</i>)	Protected

Sea Turtles

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

Fish

<u>Species</u>	<u>Status</u>
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	Endangered
Atlantic salmon (<i>Salmo salar</i>)	Endangered

Birds

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

Critical Habitat Designations

<u>Species</u>	<u>Area</u>
Right whale	Cape Cod Bay

As for protected marine mammals, species that may be potentially impacted by these fisheries included bottlenose dolphin, pilot whale, fin whale, humpback whale, right whale, harbor porpoise, harbor seal and four species of beaked whales. The range of these species and bluefish overlap. As such, there always exists a potential for an incidental kill. These potential interactions are described in section 4.1.3.2 of the EA.

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 2002 LOF indicates that most gillnets, which catch a majority of bluefish, are listed as Category II fisheries, and trawls and handlines which are listed as Category III fisheries. However, bluefish are a minor component of the Northeast sink gillnet fishery which is listed as a Category I fishery. 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.

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

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

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, 2001 NMFS weighout 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 2001 weighout 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	3,014,561	74
LONG BEACH/BARNEGAT LIGHT, NJ	730,460	36
HATTERAS, NC	399,454	29
PT. PLEASANT, NJ	376,890	33
POINT JUDITH, RI	343,271	101
GREENPORT, NY	333,665	15
MONTAUK, NY	273,191	77
AMMAGANSETT, NY	233,721	14
HAMPTON BAY, NY	196,404	118
VIRGINIA BEACH, VA	195,438	14
PROVINCETOWN, MA	104,051	6

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

Table 7. MRFSS preliminary estimates of 2001 recreational harvest and total catch (in numbers of fish) for bluefish.

State	Catch (A+B1)		Harvest (A+B1+B2)
	Pounds	Number	Number
CT	1,242,790	2,145,658	716,477
DE	189,792	322,147	101,503
FL	1,213,220	2,429,039	840,490
GA	7,749	58,126	9,672
ME	121,304	55,223	15,449
MD	632,961	1,502,838	428,589
MA	1,858,295	1,305,025	357,242
NH	52,824	21,906	8,029
NJ	3,704,766	3,486,159	1,430,605
NY	1,902,790	3,548,913	1,005,457
NC	1,171,178	3,594,742	1,265,790
RI	1,082,306	1,257,572	364,597
SC	90,232	270,642	118,264
VA	465,380	885,906	260,817

4.2.2 Analysis of Permit Data/Human Environment

Federally Permitted Vessels

Analysis of the Northeastern Federal Permit data indicates that there were 3,562 vessels with a commercial and/or recreational 2001 Federal Northeast bluefish permit (a permit year is April 30-May 1 for bluefish). A total of 3,196 and 796 federal commercial and party/charter permits, respectively, had been issued to Northeast region fishing vessels in the 2001 permit year. Thus, 313 vessels in the bluefish fishery had both commercial and recreational permits.

Dealers

There were 508 dealers who bought bluefish in 2001. They were distributed by state as indicated in Table 8. Employment data for these specific firms are not available. In 2001 these dealers bought \$2.56 million worth of bluefish.

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

Number of Dealers	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	FL	OTHER
	27	7	130	60	6	110	50	4	10	35	46	19	4

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, 2002 indicates that the bluefish stock is overfished, but overfishing is not occurring with respect to the overfishing definition. The fishing mortality rate declined from 0.760 in 1991 to 0.246 in 2001. The 2001 F is less than the threshold F of 0.40, and the target F of 0.36. The total stock biomass for 2001 was estimated at 99.45 million lb (45.11 million kg) or 84% 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). The complete assessment is detailed in: "Assessment and projections of the Atlantic coast bluefish stock using a biomass dynamic model" (Lazar and Gibson 2002).

The assessment also provided information to develop stock projections and quota recommendations for the 2003 fishery. This information indicates that if fishing mortality rate remains at 0.246 in 2002 and 2003, then biomass is projected to be 143.92 million lb (65.28 million kg) in 2003.

5.2 Stock Characteristics and Ecological Relationships

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

The 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 and 1994, then increased slightly in 1995, 1996, and 1999. 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" (Lazar and Gibson 2002).

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 7.98 million lb (3.61 million kg) and 8.68 million lb (3.93 million kg), respectively. Commercial landings in 2001 were approximately 9% above the 2000 level and approximately 26% below the 1981-2001 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 2001, the value of bluefish landings was above \$2.8 million. Average ex-vessel price of bluefish was \$0.32 per pound in 2001.

Bluefish comprised 0.25% and 0.53% 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 2001, respectively. The contribution of bluefish to the total value of all finfish and shellfish vary by state, ranging from 0% in Maine to over 1% in North Carolina. The contribution of bluefish to the total pounds landed of all finfish and shellfish vary by state, ranging from 0% in Maine to 3.32% 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 4. The percentage contribution of bluefish to the total landings and value of all species combined bluefish from Maine through East Coast of Florida, 2001.

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	0.06%	0.03%
MA	0.14%	0.04%
RI	0.41%	0.24%
CT	0.23%	0.05%
NY	3.32%	0.97%
NJ	0.76%	0.53%
DE	0.26%	0.13%
MD	0.23%	0.11%
VA	0.14%	0.15%
NC	2.93%	1.26%
SC	<0.01%	<0.01%
GA	0.02%	<0.01%
FL (East Coast)	0.52%	0.11%
Total	0.53%	0.25%

Source: NMFS pers. comm., Silver Spring, MD, 2002 and preliminary 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 1.7 billion lb (0.8 billion kg) of fish and shellfish in 2001. Those landings have been valued at approximately \$1.1 billion. Total landed value ranged from \$25 thousand in Pennsylvania to \$242 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 2001, bluefish accounted for 13% of the Atlantic coast recreational harvest of finfish by weight. 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 4.3 million in 1999 to 6.3 million in 2001 (averaging 5.1 million for the 1982 to 2001 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 39.4 million trips for the 1982 to 2000 period; MRFSS).

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 last twelve years (1990-2001), the contribution of bluefish to the total amount of fish landed by party/charter boats have 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 48% of bluefish were caught by private and rental boats during the period 1992-2001 (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, 44% of bluefish were caught from shore and 8% from party and charter boats (Table 10) during the 1992-2001 period.

Table 10. The percentage (%) of bluefish caught and landed by recreational fishermen for each mode, Maine to Florida, 1992-2001.

Mode	Catch (Number A+B1+B2)	Landing (Weight A+B1)
Shore	44	17
Party/Charter	8	27
Private/Rental	48	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 2001 (Table 11).

Table 11. Number of bluefish recreational fishing trips, recreational harvest limit, and recreational landings from 1991 to 2003.

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	14,306
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	10,605
2001	1,914,480	28,258	13,230
2002	N/A	16,365	N/A
2003	-	26,691 ^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.

^cAdjusted 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). 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 \$90.7 million on trip-related goods and services in 2001.¹ Approximately \$42.1 million was spent by anglers fishing aboard private/rental boats, \$39.2 million by those fishing from shore, and \$9.4 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 is negligible. A variety of analytical approaches are available for determining these impacts, such as input-output modeling. Unfortunately, a model of this kind was not available. Nonetheless, the total sales impacts can be approximated by assuming a multiplier of 1.5 to 2.0 for the Northeast Region. Given the large geographical area of the Northeast Region, it is likely that the sales multiplier falls within those values. As such, the total estimated sales generated from anglers that targeted bluefish in 2001 was likely to be between \$136.1 million (\$90.7 million * 1.5) and \$181.4 million (\$90.7 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.

¹The 1998 estimate of total expenditures across all modes (\$83.5 million) was adjusted to its 2001 equivalent (\$90.7 million) by using the Bureau of Labor Statistics Consumer Price Index.

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 2001.

Mode	Total MRFSS Effort	Total effort targeting bluefish	Percent targeting Bluefish
Party/charter	1,626,349	172,303	10.6%
Private/rental	16,839,066	1,164,158	6.9%
Shore	11,775,158	1,638,982	13.9%
Total	30,240,573	2,975,443	9.8%

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 2001 (\$'s) ^a
ME	6.4	7.65
NH	0.85	1.02
MA	8.38	10.01
RI	4.23	5.05
CT	3.07	3.67
NY	21.58	25.79
NJ	14.12	16.87
DE	1.43	1.71
MD	12.09	14.45
VA	42.33	50.58

^aPrices 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 2001 (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 \$3.69 (the 1994 value adjusted to its 2001 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 2001 was \$104.33 million (total trips (30.24 million) x average per trip value (\$3.45)). 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 2001.

State	Total effort targeting bluefish	Willingness to pay (\$'s)
ME	50,744	388,192
NH	27,558	28,109
MA	643,344	6,439,873
RI	245,097	1,237,740
CT	370,394	1,359,346
NY	834,601	21,524,360
NJ	576,642	9,727,951
DE	61,576	105,295
MD	111,244	1,607,476
VA	54,243	2,743,611

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 2001 (\$'s) ^a
ME	3.74	4.47
NH	3.25	3.88
MA	3.09	3.69
RI	3.13	3.74
CT	3.29	3.93
NY	2.43	2.90
NJ	2.69	3.21
DE	3.00	3.59
MD	3.44	4.11
VA	2.46	2.94
All States	2.89	3.45

^aPrices 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.

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

Source: Steinback *et al.*, 1999.

"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.

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

Source: Steinback *et al.*, 1999.

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.

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

Source: Steinback *et al.*, 1999.

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.

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 37.293 million lb (16.916 million kg). This limit is 39% higher than the 2002 limit.

This alternative includes a preliminary adjusted commercial quota of 10.460 million lb (4.744 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 26.691 million lb (12.107 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

An update on the status of the bluefish stock (Lazar and Gibson 2002) indicates that fishing mortality rates on bluefish peaked in 1991 at 0.760 and have steadily declined since then to 0.246 in 2001. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2001 fishing mortality rate for bluefish is below the target of 0.41 for 2002 and 2003. The total stock biomass for 2001 was estimated at 99.45 million lb (45.11 million kg) or 84% 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). A stock projection (using a constant fishing mortality rate $F=0.246$ -- equal to the 2001 rate) indicates that the bluefish stock will increase from an estimated 2002 biomass of 113.14 million lb (51.32 million kg) to 143.92 million lb (65.28 million kg) in 2003. Since the preferred alternative is likely to achieve the target F for 2003, 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. The preliminary adjusted commercial quota for 2003 (adjusted for research set-aside) is less than 1% lower than the 2002 commercial quota. This small decrease in commercial quota is due to the 2003 quota being adjusted for research set-aside (section 2.0 of the EA). The NMFS Quota Report as of the week ending October 5, 2002 indicates that overall bluefish commercial landings are within the overall commercial quota for 2002. There is no indication that the market environment for commercially caught bluefish will change considerably in year 2003. 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 2003 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 6.315 million lb (2.864 million kg; section 3.0 of the EA) quota for 2003. This would represent a reduction of 40% from the 2002 adjusted quota (10.500 million lb; 4.762 million kg) and a 27% reduction from the 2001 landings (8.686 million lb; 3.940 million kg). As indicated in section 3.1 and 6.1.1 of the EA, the commercial quota allocation under this alternative incorporates a transfer 4.161 million lb (1.887 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 26.691 million lb (12.107 million kg) in 2003 would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. The possession limit would remain at 15 fish. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 141,900 pounds (64,365 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 stock assessment indicates that the stock size in 2003 will allow a landing limit of 37.293 million lb (16.916 million kg) to achieve the target fishing mortality rate in 2003 (i.e, $F=0.246$). 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 2003 will allow a landing limit of 37.293 million lb (16.916 million kg) to achieve the target fishing mortality rate in 2003. The overall TAL under this alternative is identical to the TAL under Alternatives 2 and 3 and would achieve the target F in 2003. 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 10.460 million lb (4.744 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 26.691 million lb (12.107 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003. Under this alternative, the allocation to the commercial and recreational fisheries are less than 1% lower and 63% higher than the commercial and recreational quotas for 2002, respectively. The small decrease in the commercial quota from 2002 to 2003 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 2003 compared to 2002. 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 4.161 million lb (1.887 million kg) from the recreational sector to the commercial sector. In the absence of a quota transfer, the commercial fishery would receive a 6.315 million lb (2.864 million kg) quota for 2003. This would represent a reduction of 40% from the 2002 quota (10.500 million

lb; 4.762 million kg) and a 27% reduction from the 2001 landings (8.686 million lb; 3.939 million kg). Table 3 indicates that for the 1992 to 2001 period, recreational landings have ranged from 8.253 million lb (3.743 million kg) to 24.275 million lb (11.010 million kg; averaging 14.488 million lb or 6.572 million kg). In addition, a projection based on preliminary MRFSS data from Waves 1-4, indicates that commercial bluefish landings in 2002 will be 64% lower than the recreational harvest established for 2002. Given recent trends in recreational landings it is expected that the recreational sector will land less than 83% of the recreational harvest limit for 2003. As such, the Council and Board decided allow for a transfer and to set the 2003 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 2003 commercial quota under the preferred alternative will be allocated as indicated in Table 21.

Table 21. The 2003 state-by-state commercial bluefish quota^a and the 2001 commercial landings by state.

State	% of Quota	2003 Commercial Quota Alternative 1	2003 Commercial Quota Alternative 2	2003 Commercial Quota Alternative 3	2001 Landings
ME	0.6685	69,925	42,221	63,819	0
NH	0.4145	43,357	26,179	39,570	11,677
MA	6.7167	702,570	424,210	641,212	348,526
RI	6.8081	712,131	429,983	649,938	483,354
CT	1.2663	132,456	79,976	120,888	4,331
NY	10.3851	1,086,286	655,897	991,417	1,411,359
NJ	14.8162	1,549,782	935,755	1,414,434	1,286,644
DE	1.8782	196,461	118,622	179,303	18,678
MD	3.0018	313,990	189,586	286,568	130,451
VA	11.8795	1,242,601	750,280	1,134,081	790,775
NC	32.0608	3,353,575	2,024,881	3,060,696	4,065,979
SC	0.0352	3,682	2,223	3,360	484
GA	0.0095	994	600	907	533
FL	10.0597	1,052,249	635,346	960,353	133,462
Total	100.0001	10,460,058	6,315,760	9,546,547	8,686,253

^a2003 quota adjusted for research set-aside.

Source: 2001 landings are from NMFS preliminary dealer data ME-VA (May 2002); preliminary general canvass data, NC-FL (June 2002).

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 2003 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, 650 vessels were projected to incur revenue losses of less than 5%. In addition, 193 vessels were projected to incur revenue gains. The revenue increases occur in spite of the fact that the overall 2003 quota under Alternative 1 is slightly lower than the specified quota for 2002. This is primarily due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, that state shows a positive proportional change in quota from 2002 to 2003 (section 5.1 of the RIR/IRFA). Furthermore, South Atlantic Trip Ticket Report data indicated that on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to be minimal for fishermen that land bluefish in North Carolina (0.06%) 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 2002 to 2003 (i.e., changes in quota levels). However, under the assumption that 2003 allocations to New York 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 2001 landings, there could be a 23 and an 18% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kg) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses. Like in 2001, this commercial quota level is likely to constrain landings in New York and North Carolina, thus, requiring these states 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 2003, 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 2003 recreational harvest limit would be 26.691 million lb (12.107 million kg). This limit would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003 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

Effects of the research set-aside

The economic analysis regarding changes in the commercial TALs for the bluefish fishery conducted under this alternative, as well as the other alternatives analyzed, incorporated adjustments for the quota specifications for 2003 relative to the adjusted 2002 quotas (section 3.1 of the RIR/IRFA). That is, the research set-aside for bluefish was deducted from the initial overall TAL for 2003 to derive adjusted 2003 quotas. Therefore, the threshold analyses conducted under each alternative has accounted for overall reductions in fishing opportunities in 2003 versus 2002 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).

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 10.460 million lb (4.744 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 26.691 million lb (12.107 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003. 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 2003 preferred alternative is the status quo commercial quota. It is difficult to predict whether the retention of the 2002 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)	10.460	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)	6.315	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	9.546	Based upon species abundance, habitat impacts may remain the same as existing, or decrease. The potential for impacts to habitat is less than Alternative 1 and more than Alternative 2.	Does not maximize commercial landings, reduced short-term yields, potential decreased impacts on habitat, potential decrease in financial benefit to industry.

Since the preferred commercial quota meets the FMP objective of increasing yields while ensuring that overfishing does not occur, and due to the evidence that suggests that fishing effort on bottom habitats will not increase due to this action. This action will not result in adverse effects to EFH, pursuant to Section 303(a)(7) of the MSFCMA.

6.1.4 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 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.

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 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 6.315 million lb (2.864 million kg), a preliminary adjusted recreational harvest limit of 30.835 million lb (13.986 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

As stated under section 6.1.1 of the EA, a stock projection (using a constant fishing mortality rate $F=0.246$ -- equal to the 2001 rate) indicates that the bluefish stock will increase from an estimated 2002 biomass of 113.14 million lb (51.32 million kg) to 143.92 million lb (65.28 million kg) in 2003. Since this alternative is likely to achieve the target F for 2003, 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). However, the preliminary adjusted commercial quota for 2003 (adjusted for research set-aside) under this alternative is 4.184 million lb (1.897 million kg) or 40% below the commercial quota for 2002. The commercial quota for 2003 would decrease overall commercial bluefish landings by approximately 2.370 million lb (1.075 million kg) compared to 2001 landings (Table 21). In addition, this commercial quota is 4.144 million lb (1.879 million kg) or 40% lower than the preferred commercial quota (Alternative 1; status quo). This 2003 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 2003 will increase the likelihood that a landing limit of 37.293 million lb (16.916 million kg) will achieve the target fishing mortality rate in 2003. However, the commercial quota allocation under this alternative would provide commercial fishermen with a substantial decrease in fishing opportunities in 2003 compared to 2002. A significant portion of bluefish commercial landings are bycatch and as such, the lack of transfer to the commercial fishery could result in large quantities of bluefish discarded by fishermen. The mortality of bluefish would not be reduced and fish would be wasted.

A recreational harvest limit of 30.835 million lb (13.986 million kg) in 2003 would be more than twice the recreational landings for 2001 and 88% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. The possession limit would remain at 15 fish. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003. 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 2003 will allow a landing limit of 37.293 million lb (16.916 million kg) to achieve the target fishing mortality rate in 2003. 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 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 6.315 million lb (2.864 million kg), a preliminary adjusted recreational harvest limit of 30.835 million lb (13.986 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

The state-by-state quota allocation for 2003 under Alternative 2 is shown in Table 21. The commercial quota allocation under this alternative would provide commercial fishermen with substantially lower (i.e., 40%) fishing opportunities in 2003 compared to 2002.

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, 103 vessels were projected to incur revenue losses in the range of 5 to 39 percent. In addition, 740 vessels were projected to incur revenue losses of less than 5 percent. 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 103 vessels projected to have revenue reductions in the 5 to 39 percent range, 97 hold permits in other fisheries (Table 23). In particular, most vessels have squid-mackerel-butterfish, multispecies, dogfish, 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 97 commercial vessels with bluefish permits that are projected to have revenue reductions in the 5 to 39 percent range under the most restrictive alternative (Alternative 2).

	Northeast Region Permit Status		Number of Vessels	Percent of Permitted Vessels
Commercial	Multispecies	Limited Access	4	4
	Multispecies	Open Access	23	22
	Atl. Sea Scallop	Open Access	10	10
	Surfclam	Open Access	2	2
	Herring	Open Access	19	18
	Tilefish (Full-time/Tier 2)	Limited Access	15	15

	Summer Flounder	Limited Access	4	4
	Scup	Limited Access	13	13
	<i>Loligo/Illex/Mackerel/</i> Butterfish	Open Access	24	23
	Black Sea Bass	Limited Access	16	16
	Dogfish	Open Access	22	21
	Monkfish	Limited Access	7	7
	Monkfish	Incidental	10	10
Recreational (Party/Charter)	Multispecies	Open Access	8	8
	Summer Flounder	Open Access	11	11
	Scup	Open Access	10	10
	Squid/Mackerel/ Butterfish	Open Access	8	8
	Black Sea Bass	Open Access	9	9

The majority of the 97 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 in the 5 to 39 percent range (New York, New Jersey, Massachusetts, North Carolina, and Rhode Island), vessels in those states are likely to land in their home port state (91 to 100 percent; 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 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 are projected to have revenue reductions in the 5 to 39 percent range 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	15	13	19	41	4	5
# Permits by Principal Port State	16	13	21	41	4	2
# Permits by Mailing Address State	16	13	22	40	4	2
Avg. Length in Feet by Principal Port	27	37	42	32	33	
Avg. GRT by Principal Port	7	17	26	11	14	
% of Vessels where Home Port State = Principal Port State	94	100	91	95	100	100

Most commercial vessels showing revenue reductions in the 5 to 39 percent range vessels are concentrated in New York, Massachusetts, North Carolina, and New Jersey (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. 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.

Table 25. Distribution of commercial vessels showing revenue reductions in the 5 to 39 percent range (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	5
		Other	6
New Jersey	Ocean	Barneгат Light	8
		Point Pleasant	4
		Other	5
New York	Suffolk	Montauk	16
		Other	6
		New York	9
Massachusetts	Barnstable	Orleans	4
		Other	7

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 2002 to 2003. This evaluation indicated that on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to have small reductions in revenue for fishermen that land bluefish in North Carolina (6.10%) and minimal for fishermen that land bluefish in Florida (0.31%). 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 2002 to 2003 (i.e., changes in quota levels). However, under the assumption that 2003 allocations to Rhode Island, New York, New Jersey, Virginia, 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 2001 landings, there could be an 11% reduction in bluefish revenues in Rhode Island compared to 2001 landings, 54% in New York, 27% in New Jersey, 5% in Virginia, and 50% 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kg) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2003, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, since the overall quota in 2003 is

substantially lower than the 2002 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 2003 recreational harvest limit would be 30.835 million lb (13.986 million kg). This limit would be more than twice the recreational landings for 2001 and 88% higher than the recreational harvest limit for 2002. 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 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 6.315 million lb (2.864 million kg), a preliminary adjusted recreational harvest limit of 30.835 million lb (13.986 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003. 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 2003 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

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 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 (3.243 million lb; 1.471 million kg). This transfer would result in a commercial quota that falls between those specified in Alternative 1 and 2.

Alternative 3 would set the TAL at 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 9.546 million lb (4.329 million kg), a preliminary adjusted recreational harvest limit of 27.604 million lb (12.521 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

As stated in section 6.1.1, a stock projection (using a constant fishing mortality rate $F=0.246$ -- equal to the 2001 rate) indicates that the bluefish stock will increase from an estimated 2002 biomass of 113.14 million lb (51.32 million kg) to 143.92 million lb (65.28 million kg) in 2003. Since this alternative is likely to achieve the target F for 2003, it would have a positive impact on the bluefish stock.

The preliminary adjusted commercial quota for 2003 under this alternative is 0.953 million lb (0.432 million kg) below the commercial quota for 2002. In addition, this commercial quota is 0.913 million lb (0.414 million kg) or 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. The preliminary adjusted commercial quota for 2003 (adjusted for research set-aside) is approximately 9% lower than the 2002 commercial quota and the 2003 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 2003. 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 2003 will increase the likelihood that a landing limit of 37.293 million lb (16.916 million kg) will achieve the target fishing mortality rate in 2003. However, the commercial quota allocation under this alternative would provide commercial fishermen with a decrease in fishing opportunities in 2003 compared to 2002.

The resulting recreational harvest limit would be 27.604 million lb (12.521 million kg) for year 2003. This alternative would result in a 2003 recreational harvest limit that falls between those specified under Alternatives 1 and 2. A recreational harvest limit of 27.604 million lb (12.521 million kg) in 2003 would be approximately twice the recreational landings for 2001 and 69% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. The possession limit would remain at 15 fish. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003. 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 2003 will allow a landing limit of 37.293 million lb (16.916 million kg) to achieve the target fishing mortality rate in 2003. 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 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 9.546 million lb (4.329 million kg), a preliminary adjusted recreational harvest limit of 27.604 million lb (12.521 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

The state-by-state quota allocation for 2003 under Alternative 3 is shown in Table 21. The commercial quota allocation under this alternative would provide commercial fishermen with lower (i.e., 9%) fishing opportunities in 2003 compared to 2002.

Commercial Impacts

Vessels affected under Alternative 3

According to Northeast dealer data, 28 vessels were projected to incur revenue losses in the range of 5 to 10 percent. In addition, 626 vessels were projected to incur revenue losses of less than 5 percent. Furthermore, 189 vessels are projected to incur an increase in revenue. The revenue increase occurs in spite of the fact that the overall 2003 quota under Alternative 3 is lower than the specified quota for 2002. This is primarily due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, that state shows a positive proportional change in quota from 2002 to 2003 (section 5.3 of the RIR/IRFA).

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 2002 to 2003. This evaluation indicated that on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to have small reductions in revenue for fishermen that land bluefish in North Carolina (1.44%) and minimal for fishermen that land bluefish in Florida (0.07%). 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 2002 to 2003 (i.e., changes in quota levels). However, under the assumption that 2003 allocations to New York 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 2001 landings, there could be a 30 and an 25% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kb) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses.. Like in 2001, this commercial quota level is likely to

constrain landings in New York and North Carolina, thus, requiring these states 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 2003, 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 2003 recreational harvest limit would be 27.604 million lb (12.521 million kg). This limit would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. 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 37.293 million lb (16.916 million kg). This TAL includes a preliminary adjusted commercial quota of 9.546 million lb (4.329 million kg), a preliminary adjusted recreational harvest limit of 27.604 million lb (12.521 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003. 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 2003 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

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 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 141,900 lb (64,364 kg) for 2003. 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.

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 17% below the commercial quota and recreational landings were 47% below the recreational harvest limit. Since the commercial landings in recent years have been below the established quotas, 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 where 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 141,900 lb (64,364 kg) for 2003. 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 measures 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.

7.0 Essential Fish Habitat Assessment

All species managed by the Mid-Atlantic Fishery Management Council, 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. 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 4.1.2.1 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 2003, 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 2003 bluefish commercial quota is the same as that specified for 2002. 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 Agencies and Persons Consulted in Formulating the Action

The bluefish specifications were submitted to the National Marine Fisheries Service (NMFS) by the Mid-Atlantic Fishery Management Council.

9.0 List of Preparers of the Environmental Assessment

This environmental assessment was prepared by the Mid-Atlantic Council and the Northeast Regional Office of NMFS, and is based, in part, on information provided by the Northeast Fisheries Science Center (Center).

10.0 Coastal Zone Management Act

The Council determined that this action is consistent to the maximum extent practicable with enforcement policies of the approved coastal zone management programs of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. This determination was submitted on November 6, 2002, for review by the responsible state agencies under section 307 of the Coastal Zone Management Act. Concurrence in consistency was submitted by the responsible state agencies of New Hampshire, Connecticut, Pennsylvania, Delaware, and Virginia. Because no response was received from Maine, Massachusetts, Rhode Island, New York, New Jersey, Maryland, North Carolina, South Carolina, Georgia, and Florida, state concurrence in consistency is inferred.

11.0 Paperwork Reduction Act

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

12.0 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 action. The significance of this action is analyzed through this EA. These criteria are discussed below:

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

The 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 TAL and other management measures under the preferred alternative are consistent with the FMP overfishing definition. 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 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?

It was concluded that the commercial and recreational bluefish fishery has no adverse impact on EFH (section 4.1.2.1 of the EA). The action is not expected to increase fishing effort as described in section 6.1.3 of the EA. As such, the action is not expected to allow damage to the ocean, coastal habitats, and/or EFH as defined under the Magnuson-Stevens Act and identified in the bluefish FMP.

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

This action proposes a commercial quota, recreational harvest limit, and other management measures in 2003. 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 actions on these fisheries, including the communities in which it operates, will not impact adversely public health or safety.

4. Can the 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, recreational harvest limit, and other management measures in 2003. None of the specifications are expected to alter fishing methods or activities (section 6.1.4 of the EA). 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 rule will have no adverse impacts on endangered or threatened species, marine mammals, or their critical habitat (section 6.1.4 of the EA).

5. Can the 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 actions on target and non-target species are detailed in section 6.5 of the EA. The measures are not expected to alter fishing methods or activities. As such, the measures are not expected to result in any cumulative effects on target or non-target species.

6. Can the action be reasonably expected to jeopardize the sustainability of any non-target species?

The action is not expected to jeopardize the sustainability of any non-target species, as discussed in section 6.1.1 of the EA. The propose action is not expected to result in adverse impacts to EFH (sections 6.1.3 and 7.0 of the EA).

7. Can the 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 action is not expected to have a substantial impact on biodiversity and ecosystem function within the affected area. This action merely revises the annual commercial quota, recreational harvest limit, and other management measures for the bluefish fisheries for 2003. Additionally, the propose action is not expected to result in adverse impacts to EFH (sections 6.1.3 and 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 specifications for 2003 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 measures on the human environment are described in section 6.1.2 of the EA. The action merely revises the annual commercial quota, recreational harvest limit, and other management measures for the bluefish fisheries for 2003. 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 2003 bluefish fisheries, and the available information relating to the action, I have determined that there will be no significant adverse environmental impact resulting from the action and that preparation of an environmental impact statement on the action is not required by Section 102(2)(c) of the National Environmental Policy Act or its implementing regulations.

Assistant Administrator for
Fisheries, NOAA

Date

REGULATORY IMPACT REVIEW/FINAL REGULATORY FLEXIBILITY ANALYSIS

This section provides the analysis and conclusions to address the requirements of Executive Order 12866 and the Regulatory Flexibility Act (RFA). Since many of the requirements of these mandates duplicate those required under the Magnuson-Stevens Act and NEPA, this section contains references to other appropriate sections of this document. The following sections provide economic analyses that fulfill the requirements of E.O. 12866 and the Regulatory Flexibility Act. An initial regulatory flexibility analysis was prepared for the proposed rule stage and was part of an EA/EFHA/RIR/IRFA dated November 4, 2002. NMFS prepared a final regulatory flexibility analysis for the final rule stage that is part of this analytical document (see section 3.0, page 58).

1.0 INTRODUCTION

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

Also included is a FINAL Regulatory Flexibility Analysis (FRFA). This analysis is being undertaken in support of the 2003 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 Fishery Conservation and Management Act (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. An analysis of permit data is found in section 4.2 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 general canvass data (NC-FL east coast), the total commercial value in 2001 (Maine to Florida) was estimated at \$2.8 million for bluefish. The preliminary adjusted commercial bluefish quota for 2003 is slightly lower (i.e., less than 1% lower) to the bluefish commercial quota implemented in 2002 and would allow fishermen about the same fishing opportunities for bluefish in 2003 compared to 2002. On average, commercial bluefish landings for the 1992-2001 period are about 8.948 million lb (4.058 million kg) (Table 3). Unless market conditions change substantially in year 2003, commercial bluefish fishermen on a coastwide basis would likely land bluefish in an amount close to the 1992-2001 average. The NMFS Quota Report as of the week ending October 5, 2002 indicates that overall bluefish commercial landings are within the overall commercial quota for 2002. Therefore, the 2003 overall quota was not adjusted for overages. However, it is important to mention that the on September 12, 2002 [FR Vol. 67 No. 177 p. 57758] NMFS reduced the bluefish quota for New York due to overages that occurred in 2001. More specifically, the FR notice states that "Consistent with the regulations regarding the disposition of overages, New York's 2002 Atlantic bluefish commercial quota is hereby reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg)." There is no indication that the market environment for commercially caught bluefish will change considerably in year 2003. As such, it is expected that overall ex-vessel revenues from bluefish will not significantly change in 2003 from 2002 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 2001 were 9.0, 21.2, and 21.6 million, respectively. Of the total number of fishing trips for all modes combined in the North Atlantic and Mid-Atlantic regions (30.2 million), 1.6 million trips or 5.3% of the total were party/charter fishing trips. In addition, there were 0.5 million charter trips in the South Atlantic region in 2001 or 2.3% 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 2001 was 172,303 (section 5.3.2 of the EA). MRFSS data indicates that anglers reported targeting bluefish as the primary species sought in the North Atlantic and Mid-Atlantic regions.

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 26.691 million lb (12.107 million kg) in 2003 would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. The possession limit would remain at 15 fish. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003 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 benefits of the bluefish FMP have been evaluated as amendments to the FMP have been implemented. These analyses have been conducted at the time a major amendment is developed and interim actions (quota specifications) may be presumed to leave the conclusions reached in the initial benefit-cost analyses unchanged provided the original conservation and economic objectives of the plan are being met.

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 in 2000 and 2001. 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 determined by the market clearing 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 37.293 million lb (16.916 million kg). This alternative includes a preliminary adjusted commercial quota of 10.460 million lb (4.744 million kg; status quo commercial quota), a preliminary adjusted recreational harvest limit of 26.691 million lb (12.107 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

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 2002. 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 2002. Aggregate changes in fishing opportunities in 2003 (preliminary adjusted commercial quota) versus adjusted quotas for 2002 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.

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 2003 is near identical compared to 2002 quota.

Prices

Given that this alternative will result in the same overall quota level as in 2002 and that there is no indication that the market environment for commercially caught bluefish will change considerably in year 2003, it would be anticipated that there will be no change 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 2003 recreational harvest limit would be 26.691 million lb (12.107 million kg). This limit would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. The possession limit would remain at 15 fish. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003 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 2003 is twice the 2001 landings and 63% higher than the 2002 recreational harvest limit. In addition, the recreational possession limit remains unchanged from 2002.

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 37.293 million lb (16.916 million kg). This alternative includes a preliminary adjusted commercial quota of 6.315 million lb (2.864 million kg), a preliminary adjusted recreational harvest limit of 30.835 million lb (13.986 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003.

Commercial Fishery

Landings

Under this alternative aggregate landings for bluefish in 2003 are expected to be 40% lower in 2003 when compared to 2002 quotas.

Prices

Given that this alternative will result in lower 2003 landings compared to the overall quota level in 2002, 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 may increase.

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 2003 recreational harvest limit would be 30.835 million lb (13.986 million kg). The possession limit would remain at 15 fish. This limit is more than twice the 2001 recreational landings and projected 2002 landings. Given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003. 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 2003 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 2003 is twice the 2001 landings and 89% higher than the 2002 recreational harvest limit. In addition, the recreational possession limit remains unchanged from 2002.

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 37.293 million lb (16.916 million kg). This alternative includes a preliminary adjusted commercial quota of 9.546 million lb (4.329 million kg), a preliminary adjusted recreational harvest limit of 27.604 million lb (12.521 million kg), and a research set-aside of 141,900 pounds (64,365 kg) for 2003. In addition, the possession limit would remain at 15 fish.

This alternative would result in 2003 commercial landings between those specified under Alternatives 1 and 2. Under this alternative aggregate commercial quota is 9% lower in 2003 when compared to the 2002 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 2003 is twice the 2001 landings and 69% higher than the 2002 recreational harvest limit. 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 producer 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 (2002) was discussed above. The analysis conducted in this section was based on the evaluation of potential fishing opportunities associated with each quota alternative in 2003 versus the fishing opportunities or quotas that occurred in 2002.

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, decrease in consumer surplus, and increase in producer surplus. 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 2002.

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 2003 compared to the 2002 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 2001 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 NMFS general canvass data North Carolina were used to derive the ex-vessel price for bluefish from Maine to Florida. The ex-vessel price for bluefish in 2001 was estimated at \$0.32/lb. The aggregate change in landings in 2003 compared to the base year for each species is presented in Table 26. The overall change in gross revenue associated with the 2003 adjusted quota compared to 2002 quota is a decrease of less than 13 thousand dollars, \$1.3 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 2002 to 2003 (fishing opportunities). The changes in gross revenues associated with the potential changes in fishing opportunities in 2003

versus 2002 assumed static prices (i.e., 2001) for bluefish. However, if prices for this species decrease or increase as a consequence of changes in landings, then the associated revenue increases and decreases could be different than those estimated above. Furthermore, these changes in revenues also assume that the overall bluefish quota would be taken in 2002 and 2003.

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 2003 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 2003 is substantially higher than the 2001 landings and the 2002 recreational harvest limit for all alternatives evaluated. In addition, the recreational possession limit remains unchanged from 2002.

It is important to mention that although the measures that are evaluated in this specification package are for the 2003 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 2000, and 2001 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 or 2001, 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 5, 2002 indicates that overall bluefish commercial landings are within the overall commercial quota for 2002. The latest stock assessment indicates that the stock is overfished but overfishing is not occurring. The 2001 fishing mortality rate for bluefish (i.e., 0.246) is below the target of 0.41 for 2002 and 2003. The total stock biomass for 2001 was estimated at 99.45 million lb (45.11 million kg) or 84% 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).

3.0 FINAL 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.

A complete description of the purpose and need and objectives of this final 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. 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. An analysis of permit data is found in section 4.2.2 of the EA. A statement of the problem for resolution is presented under section 1 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/FRFA.

This action does not duplicate, overlap, or conflict with other Federal rules. This action does not contain any new collection of information, reporting, or record-keeping requirements.

No public comments were received specifically on the Initial Regulatory Flexibility Analysis. However, one comment was received opposing the transfer of bluefish allocation from the recreational sector to the commercial sector. The FMP stipulates that such a transfer may be made if the recreational fishery is not projected to land its harvest limit for the upcoming year, and projections indicate that such is the case for 2003. Since the bluefish stock condition is improving, and the overall TAL maintains a very low fishing mortality rate, there is no valid reason to impose a reduction in allowed landings upon the commercial sector.

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 2003 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 2001. This data covers activity by unique vessels. Of the active vessels reported in 2001, 846 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 124 federally permitted vessels landed bluefish in North Carolina in 2001. However, the North Carolina landings data for bluefish may be incomplete in this data system. South Atlantic Trip Ticket Report data indicate that 1,092 vessels landed bluefish in North Carolina in 2001 (Lees Sabo, NC Division of Marine Fisheries, pers. comm., 2002). Some of these vessels may be included in the 124 vessels identified as landing bluefish in the Dealer data. As such, double counting is possible. In addition, 214 vessels landed bluefish in Florida's east coast in 2001 (Steve Brown, Fla Fish and Wildlife Conservation Commission, pers. comm., 2002). Bluefish landings in South Carolina and Georgia are very small (i.e., only a few hundred pounds), representing a negligible proportion of the total bluefish landing along the Atlantic coast in 2001. 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 as 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 2001 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 2001. This estimate provides the base from which subsequent quota changes and their associated effects on vessel revenues were compared. Since 2001 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 2002 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 2002 to 2003) 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 5, 2002 indicates that overall bluefish commercial landings are within the overall commercial quota for 2002. Therefore, the 2003 overall quota was not adjusted for overages. However, it is important to mention that the on September 12, 2002 [FR Vol. 67 No. 177 p. 57758] NMFS reduced the bluefish quota for New York due to overages that occurred in 2001. More specifically, the FR notice states that "Consistent with the regulations regarding the disposition of overages, New York's 2002 Atlantic bluefish commercial quota is hereby reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg)." As such, even though the overall quota in 2003 is identical to the overall quota in 2002, the fishing opportunity (i.e., quota level) in New York in 2003 will differ from those in 2002 due to a decrease in quota allocation to that state in 2002 as the consequence of previous overages (i.e., 2001). Landings to date, overages, and research set-aside estimates were employed to adjust the 2003 quotas. In addition to this, for the purpose of estimating the 2003 quotas and revenue changes, it was assumed that the states will fully harvest, and not exceed, the 2002 state allocations.

The fourth step was to compare the estimated 2003 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 4 counties were identified: Dare County, NC; Ocean County, NJ; Suffolk County, NY; Barnstable County, MA (section 6.1 of the RIR/IRFA). Counties not included in this analysis (i.e., Brunswick and Hyde Counties, NC; Suffolk and Essex Counties, MA; and Philadelphia County, PA; Cape May and Middlesex Counties, NJ; Nassau County, NY; and Providence and Washington 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 2003 allowable commercial landings (adjusted for research set-aside) relative to the 2002 quotas. Note that the overall changes in fishing opportunity in 2003 compared to 2002 are 0.38%, 39.85%, and 9.08% decrease for Alternatives 1, 2, and 3, respectively. While most states show a similar changes in fishing opportunities as the overall change in fishing opportunity in 2003 compared to 2002, the state of New York shows larger positive and smaller negative change in fishing opportunities in 2003 compared to 2002. This is due to the fact that the as indicted in section 3.1 of the RIR/IRFA, the New York's 2002 bluefish commercial quota was reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg) due to overages in 2001. As such, the potential changes in fishing opportunity (i.e., changes in quota levels) for New York in 2003 will differ from that of other states when compared to 2002 due to a decrease in quota allocation to that state in 2002 as the consequence of previous overages (i.e., 2001).

Table 26. Percentage changes associated with allowable commercial landings for various quota alternatives in 2003 (adjusted quota for research set-aside) relative to 2002 adjusted quota^a by state.

State	2003 Commercial Quota Alternative 1	2003 Commercial Quota Alternative 2	2003 Commercial Quota Alternative 3
ME ^a	-0.38	-39.85	-9.08
NH	-0.38	-39.85	-9.08
MA	-0.38	-39.85	-9.08
RI	-0.38	-39.85	-9.08
CT	-0.38	-39.85	-9.08
NY	24.24	-24.99	13.99
NJ	-0.38	-39.85	-9.08
DE	-0.38	-39.85	-9.08
MD	-0.38	-39.85	-9.08
VA	-0.38	-39.85	-9.08
NC	-0.38	-39.85	-9.08
SC	-0.38	-39.85	-9.08
GA	-0.38	-39.85	-9.08
FL	-0.38	-39.85	-9.08
Total	-0.38	-39.85	-9.08

^aNew York's 2002 bluefish commercial quota was reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg) due to overages that occurred in 2001 (section 2.5 of the RIR/IRFA).

All quota alternatives considered in this FRFA are based on a TAL of 37.293 million lb (16.916 million kg) in 2003. This overall TAL would achieve the target F in 2003. 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 ANALYSES 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 2001 were identified. Total revenues from all species landed by each vessel during calendar year 2001 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 2001. These estimates provided the base from which to compare the effects of the final quota changes from 2002 to 2003. The final bluefish quota for 2003 (Preferred Alternative) would allow fishermen to land near the same amount of bluefish in 2003 compared to the 2002.

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 2002 to 2003 would be expected to have a large proportional reduction in the revenue of that vessel compared to one that only generates 10% of its 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 2001, the contribution of bluefish to the total value of all fish and shellfish landed in North Carolina, South Carolina, Georgia, and Florida was 1.26%, less than 0.01%, less than 0.01%, and 0.11%, 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 and 63% higher than the commercial and recreational quotas for 2002, respectively.

The overall commercial allocation for 2003 is near identical to the 2002 commercial quota. When this allocation is distributed to the states, all states except New York show a 2003 quota level which is slightly smaller than their adjusted 2002 quota (Table 26). This is due to the fact that New York's 2002 commercial quota was reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg) due to overages that occurred in 2001 (section 2.5 of the RIR/IRFA). Thus, while the overall quota as well as the individual quotas for most state show a small decrease in fishing opportunity from 2002 to 2003, the 2003 quota for New York shows an increase in fishing opportunity from 2002 to 2003. 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 life. 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 650 vessels were projected to be impacted by revenue losses of less than 5%. In addition, 193 vessels are projected to incur an increase in revenue. The revenue increase occurs in spite of the fact that the overall 2003 quota under Alternative 1 is slightly lower than the specified quota for 2002. This is primarily due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, that state shows a positive proportional change in quota from 2002 to 2003 (Table 26).

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 $\geq 5\%$ Reduction			<5	5-9	10-19	20-29	30-39	40-49	\$50
843	0	193	0	650	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 $\geq 5\%$	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	5	0	0	0	5	0	0	0	0	0	0
FL	4	0	3	0	1	0	0	0	0	0	0
MA	228	0	4	0	224	0	0	0	0	0	0
MD	14	0	0	0	14	0	0	0	0	0	0
ME	5	0	1	0	4	0	0	0	0	0	0
NC	107	0	0	0	107	0	0	0	0	0	0
NH	21	0	0	0	21	0	0	0	0	0	0
NJ	95	0	0	0	95	0	0	0	0	0	0
NY	182	0	169	0	13	0	0	0	0	0	0
PA	6	0	1	0	5	0	0	0	0	0	0
RI	102	0	5	0	97	0	0	0	0	0	0
VA	43	0	0	0	43	0	0	0	0	0	0
OTHER ^a	4	0	0	0	4	0	0	0	0	0	0
NOT KNOWN ^b	27	0	10	0	17	0	0	0	0	0	0
Total	843	0	193	0	650	0	0	0	0	0	0

^aStates with fewer than 4 vessels were aggregated (DE, WV).

Vessels have shown landings of bluefish in 2001, 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 2003 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 1,092 vessels (341 vessels ≤ 18 ft; 621 vessels between 19-38 ft; and 130 vessels ≥ 39 ft) landed bluefish in North Carolina in 2001. On average these vessels generated 15.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the

contribution of bluefish to total revenue for these vessels was 11.28% for vessel ≤ 18 ft; 17.17% for vessels 19-38 ft; and 15.42% for vessels ≥ 39 ft. Of the 1,092 vessels that landed bluefish in North Carolina in 2001, approximately 0.5% (6 vessels) landed bluefish only and 99.5% (1,086) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 274 individual licenses and 145 vessel licenses that reported bluefish landings in 2001. 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 0.38% in North Carolina and Florida as a consequence of the 2003 allocation when compared to 2002 allocation. Therefore, on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to be minimal for fishermen that land bluefish in those states (i.e., 0.06% in North Carolina and 0.003% in Florida).

The potential changes described above are based on the potential changes in fishing opportunities from 2002 to 2003 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/IRFA. However, under the assumption that 2003 allocations to New York 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 2001 landings (Table 21), there could be a 23 and an 18% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kg) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses. Like in 2001, this commercial quota level is likely to constrain landings in New York and North Carolina, thus, requiring these states 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 2003, 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 2003 recreational harvest limit would be 26.691 million lb (12.107 million kg). This limit would be more than twice the recreational landings for 2001 and 63% higher than the recreational harvest limit for 2002. Bluefish recreational landings for the 2000 and 2001 periods were 59 and 53% 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 2002 will be 64% lower than the recreational harvest established for 2002. While the recreational harvest limit for 2003 is higher than the recreational harvest limit established in 2002, given recent trends in bluefish recreational landings, it is expected that landings in 2003 will be substantially lower than the recreational harvest limit for 2003 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 2003 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.

Effects of research set-aside quota

The Council approved a research set-aside amount of 141,900 pounds (64,365 kg) for 2003. 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 in this RIR/IRFA incorporated adjustments for the quota specifications for 2003 relative to the adjusted 2002 quotas. That is, the research set-aside for bluefish was deducted from the initial overall TALs for 2003 to derive adjusted 2003 quotas. Therefore, the threshold analyses conducted under each alternative has accounted for overall reductions in fishing opportunities in 2003 versus 2002 available to all vessels typically participating in the commercial fishery due to the 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 where 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 26.793 million lb (12.153 million kg) to 26.691 million lb (12.107 million kg; a less than a <1% decrease) in the bluefish harvest level. In addition, given the level of the recreational harvest limit for 2003 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 2003 versus 2002 commercial quota. The 2003 recreational harvest limit is 63% higher than the recreational harvest limit in 2002.

Under this alternative, according to dealer data, a total of 650 of the 843 commercial vessels reporting landings in 2001 (in that data base) were projected to incur revenue losses of less than 5%. In addition, 193 vessels in New York are projected to incur an increase in revenue of 24 percent due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, that state shows a larger proportional change in quota from 2002 to 2003. 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 2002 to 2003 is expected to be minimal (0.06% in New York and 0.003% in Florida).

However, under the assumption that 2003 allocations to New York 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 2001 landings, there could be a 23 and an 18% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2003 to New York and North Carolina, 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 40% lower and 88% higher than the commercial and recreational quotas for 2003, respectively.

When the overall commercial allocation for 2003 is distributed to the states, all states except New York show a 39.85% reduction compared to their 2002 quota. New York shows a 24.99% reduction in their 2003 quota compared to their 2002 quota (Table 26). This is due to the fact that New York's 2002 commercial quota was reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg) due to overages that occurred in 2001 (section 2.5 of the RIR/IRFA). Thus, while the overall quota as well as the individual quotas for most state show a 39.85% decrease in fishing opportunity from 2002 to 2003, the 2003 quota for New York shows a 24.99% decrease in fishing opportunity from 2002 to 2003 (Table 26).

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 103 vessels were projected to incur revenue losses in the 5 to 39%. In addition, 740 vessels were projected to be impacted by 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 \geq 5% Reduction	<5	5-10	10-19	20-29	30-39	40-49	\$50
843	103	740	35	19	30	19	0	0

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 3 in Florida to 213 in Massachusetts. The number of vessels with revenue reduction of 5 to 39% ranged from none in Connecticut, Maryland, and New Hampshire to 41 in New York. In addition, 4 vessels of unknown home port are also impacted. The larger number of impacted vessels with revenue reduction in the 5 to 39 percent range 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 \geq 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	5	0	0	5	0	0	0	0	0	0
FL	4	1	0	3	0	0	1	0	0	0
MA	228	15	0	213	3	3	2	7	0	0
MD	14	0	0	14	0	0	0	0	0	0
ME	5	1	0	4	1	0	0	0	0	0
NC	107	13	0	94	5	4	2	2	0	0
NH	21	0	0	21	0	0	0	0	0	0
NJ	95	19	0	76	7	6	3	3	0	0
NY	182	41	0	141	16	5	20	0	0	0
PA	6	1	0	5	0	0	1	0	0	0
RI	102	4	0	98	0	1	0	3	0	0
VA	43	1	0	42	1	0	0	0	0	0
OTHER ^a	4	1	0	3	0	0	0	1	0	0
NOT KNOWN ^b	27	6	0	21	2	0	1	3	0	0
Total	843	103	0	740	35	19	30	19	0	0

^aStates with fewer than 4 vessels were aggregated (DE, WV).

Vessels have shown landings of bluefish in 2001, 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 2003 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 1,092 vessels (341 vessels

<=18 ft; 621 vessels between 19-38 ft; and 130 vessels =>39 ft) landed bluefish in North Carolina in 2001. On average these vessels generated 15.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 11.28% for vessel <=18 ft; 17.17% for vessels 19-38 ft; and 15.42% for vessels =>39 ft. Of the 1,092 vessels that landed bluefish in North Carolina in 2001, approximately 0.5% (6 vessels) landed bluefish only and 99.5% (1,086) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 274 individual licenses and 145 vessel licenses that reported bluefish landings in 2001. 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 38.85% in North Carolina and Florida as a consequence of the 2003 allocation when compared to 2002 allocation. Therefore, on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to be small for fishermen that land bluefish in North Carolina (6.10%) and minimal for fishermen that land bluefish in Florida (0.31%).

The potential changes described above are based on the potential changes in fishing opportunities from 2002 to 2003 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/FRFA. However, under the assumption that 2003 allocations to Rhode Island, New York, New Jersey, Virginia, 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 2001 landings (Table 21), there could be an 11% reduction in bluefish revenues in Rhode Island compared to 2001 landings, 54% in New York, 27% in New Jersey, 5% in Virginia, and 50% 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kg) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses.

If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2003, then the number of affected entities described in this threshold analysis could potentially decrease, thus decreasing economic burden. However, since the overall quota in 2003 is substantially lower than the 2002 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 2003 recreational harvest limit would be 30.835 million lb (13.986 million kg). This limit would be more than twice the recreational landings for 2001 and 88% higher than the recreational harvest limit for 2002. 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/FRFA).

5.2.3 Summary of Impacts

In sum, Alternative 2 would result in a 40% decrease the commercial TAL for bluefish in 2003 versus 2002. The 2003 recreational harvest limit is 88% higher than the recreational harvest limit in 2002.

Under this alternative, according to dealer data, a total of 103 of the 843 commercial vessels reporting landings in 2001 (in that data base) were projected to incur revenue losses in the 5 to 39 percent range. In addition, given recent South Atlantic Trip Ticket Report data, 1,092 vessels in North Carolina could potentially lose, on average, 6.10% of their total ex-vessel revenue. Fisherman participating in the

bluefish fishery in Florida could lose, on average, a minimal percentage (0.31%) 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 69% higher than the commercial and recreational quotas for 2002, respectively.

The overall commercial allocation for 2003 is slightly lower than the 2002 commercial quota. When this allocation is distributed to the states, all states except New York show a 2003 quota level which is 9% smaller than their adjusted 2002 quota (Table 26). This is due to the fact that New York's 2002 commercial quota was reduced by 216,064 lb (98,033 kg) from 1,090,436 lb (494,753 kg) to 874,372 lb (396,721 kg) due to overages that occurred in 2001 (section 2.5 of the RIR/IRFA). Thus, while the overall quota as well as the individual quotas for most state show a small decrease in fishing opportunity from 2002 to 2003, the 2003 quota for New York shows an increase in fishing opportunity from 2002 to 2003. 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.

5.3.1 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 10% for a total of 28 vessels to increase in revenue for 189 of 843 vessels. The revenue increase occurs in spite of the fact that the overall 2003 quota under Alternative 3 slightly lower than the specified quota for 2002. This is primarily due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, that state shows a positive proportional change in quota from 2002 to 2003 (Table 26).

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

Quota Scenario 3		Increase in Revenue (number)	No Change in Revenue (number)	Number of Impacted Vessels by Reduction Percentile (%)						
Total Vessels	Number of Vessels Impacted by $\geq 5\%$ Reduction			<5	5-10	10-19	20-29	30-39	40-49	\$50
843	28	189	0	626	28	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 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 1 in Florida and New York to 215 in Massachusetts. The number of impacted vessels with revenue reduction in the 5 to 9% by home state ranged from zero for most states to 9 in Massachusetts and 6 in New Jersey. In addition, 1 vessel of unknown home port was also impacted. The larger number of impacted vessels with revenue reductions in the 5 to 9% range in New Jersey and Massachusetts 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 $\geq 5\%$	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	5	0	0	0	5	0	0	0	0	0	0
FL	4	0	3	0	1	0	0	0	0	0	0
MA	228	9	4	0	215	9	0	0	0	0	0
MD	14	1	0	0	13	1	0	0	0	0	0
ME	5	0	1	0	4	0	0	0	0	0	0
NC	107	4	0	0	103	4	0	0	0	0	0
NH	21	0	0	0	21	0	0	0	0	0	0
NJ	95	6	0	0	89	6	0	0	0	0	0
NY	182	1	167	0	14	1	0	0	0	0	0
PA	6	0	1	0	5	0	0	0	0	0	0
RI	102	3	3	0	96	3	0	0	0	0	0
VA	43	0	0	0	43	0	0	0	0	0	0
OTHER ^a	4	1	0	0	3	1	0	0	0	0	0
NOT KNOWN ^b	27	3	10	0	14	3	0	0	0	0	0
Total	843	28	189	0	626	28	0	0	0	0	0

^aStates with fewer than 4 vessels were aggregated (DE, WV).

Vessels have shown landings of bluefish in 2001, 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 2003 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 1,092 vessels (341 vessels <=18 ft; 621 vessels between 19-38 ft; and 130 vessels =>39 ft) landed bluefish in North Carolina in 2001. On average these vessels generated 15.89% of their total ex-vessel revenue from bluefish landings. By vessel size, the contribution of bluefish to total revenue for these vessels was 11.28% for vessel <=18 ft; 17.17% for vessels 19-38 ft; and 15.42% for vessels =>39 ft. Of the 1,092 vessels that landed bluefish in North Carolina in 2001, approximately 0.5% (6 vessels) landed bluefish only and 99.5% (1,086) of the vessels landed bluefish as well as other species. In Florida (east coast), there were 274 individual licenses and 145 vessel licenses that reported bluefish landings in 2001. 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 9.08% in North Carolina and Florida as a consequence of the 2003 allocation when compared to 2002 allocation. Therefore, on average, reduction in revenues due to the change in quota levels from 2002 to 2003 are expected to be minimal for fishermen that land bluefish in those states (i.e, 1.44% in North Carolina and 0.07% in Florida).

The potential changes described above are based on the potential changes in fishing opportunities from 2002 to 2003 (i.e., changes in quota levels) as explained in sections 3.1 and 5.0 of the RIR/FRFA. However, under the assumption that 2003 allocations to New York 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 2001 landings (Table 21), there could be a 30 and an 25% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. 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 2001, in addition to their initial allocated quota, New York and North Carolina received 200,000 lb (90,718 kg) and 1,134,000 lb (514,373 kg), respectively, from states that had surpluses. Like in 2001, this commercial quota level is likely to constrain landings in New York and North Carolina, thus, requiring these states 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 2003, 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 2003 recreational harvest limit would be 27.604 million lb (12.521 million kg). This limit would be more than twice the recreational landings for 2001 and 69% higher than the recreational harvest limit for 2002. 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/FRFA).

5.3.3 Summary of Impacts

In sum, Alternative 3 would result in a slightly increased commercial TAL for bluefish in 2003 versus 2002 commercial quota. The 2003 recreational harvest limit is 63% higher than the recreational harvest limit in 2002.

Under this alternative, according to dealer data, a total of 626 of the 843 commercial vessels reporting landings in 2001 (in that data base) were projected to incur revenue losses of less than 5% and 28 vessels were projected to incur revenue losses in the 5 to 10%. In addition, 189 commercial vessels would incur an increase in revenue of 14 percent. The revenue increase expected in 2003 is primarily due to the fact that the New York quota was adjusted downward in 2002 due to overages in 2001. Thus, New York shows a positive proportional change in quota from 2002 to 2003. Furthermore, given recent South Atlantic Trip Ticket Report data, 1,092 vessels in North Carolina could potentially lose, on average, 1.44% of their total ex-vessel revenue. Fisherman participating in the bluefish fishery in Florida could lose, on average, a minimal percentage (0.07%) of their total ex-vessel revenue.

However, under the assumption that 2003 allocations to New York 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 2001 landings, there could be a 30 and an 25% reduction in bluefish revenues in New York and North Carolina compared to 2001 landings, respectively. If quota allocations were to be transferred from a state or states that do not need to land their entire bluefish quota allocation for 2003 to New York and North Carolina, 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/FRFA, 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 percent per county was either greater than 4, or
- all vessels with revenue loss exceeding 5 percent in a given state were from the same home county.

The results of these analyses are summarized below. The following counties were identified as impacted under Alternative 2 (most restrictive): Dare County, NC; Ocean County, NJ; Suffolk County, NY; Barnstable County, MA. Counties not included in this analysis (i.e., Brunswick and Hyde Counties, NC; Suffolk and Essex Counties, MA; and Philadelphia County, PA; Cape May and Middlesex Counties, NJ; Nassau County, NY; and Providence and Washington 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 percent 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 1998.

Of the 4 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 1.4 million in Suffolk County.

Table 33. Summary of county information for counties with more than three vessels impacted by Scenario 2

State	County	Population	Employment	Total Personal Income (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%
NY	Suffolk	1,427,096	695,522	27,877.06	563	0.03%	*	*
NJ	Ocean	503,141	173,836	5,677.67	202	0.10%	0	0
NC	Dare	30,042	23,643	492.549	*	*	19	0.05%

* = < 10 observations.

a = Data obtained from the Minnesota IMPLANT Group, Inc., IMPLANT System (data and software), 1725 Tower Drive West, Suite 140, Still water, 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 1, NORTHEAST STATISTICAL AREAS

