FISHERY MANAGEMENT PLAN FOR THE BLUEFISH FISHERY

May 1989

Mid-Atlantic Fishery Management Council
and
Atlantic States Marine Fisheries Commission
in cooperation with the
National Marine Fisheries Service,
the
New England Fishery Management Council,
and the
South Atlantic Fishery Management Council

Draft adopted by MAFMC: 17 May 1989
Final adopted by MAFMC: 26 October 1989
Final approved by NOAA: 20 March 1990

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2. SUMMARY

Bluefish is a highly migratory species harvested along the Atlantic coast by a variety of anglers, angling techniques, and commercial gears. Bluefish are extremely important to the recreational fishing industry; bluefish were the predominant species (by weight) harvested by marine anglers each year from 1979 to 1987. Conversely, bluefish comprise a small percentage of all finfish harvested commercially along the Atlantic coast. In 1987, fishermen caught approximately 124 million pounds of bluefish of which commercial landings accounted for approximately 15 million pounds. Since 1979, commercial landings have averaged about 14 million pounds or 10% of the total catch, commercial and recreational catch combined.

Data collected by NMFS suggest that the bluefish resource has declined in recent years. In fact, preliminary NMFS data indicate the 1988 east coast recreational bluefish catch was approximately 16 million fish, down from a reported 33 million in 1987. In addition, survey data collected since 1974 indicate bluefish year class recruitment was low in 1986 and 1987 and that the 1988 value was the lowest on record.

Although the extensive migrations of bluefish preclude a single entity from effectively managing the fishery, fishing activities in the EEZ or in the waters of a few states could seriously impact the coastwide stock. The complexity and affiliated problems associated with bluefish stock dynamics and the bluefish fisheries, necessitates a cooperative, interjurisdictional approach to management. The primary purpose of this fishery management plan is to address the problems that would occur if the bluefish fishery were to expand significantly or the bluefish resource were to decline. Thus, this plan is intended to avert potential, as well as correct current, management problems. This plan was prepared jointly by the Mid-Atlantic Fishery Management Council (Council) and the Atlantic States Marine Fisheries Commission (ASMFC), in cooperation with the New England and South Atlantic Fishery Management Councils.

This Fishery Management Plan (FMP) for the Bluefish Fishery is intended to initiate management of the bluefish (*Pomatomus saltatrix*) fishery pursuant to the Magnuson Fishery Conservation and Management Act of 1976, as amended (MFCMA). The management unit is bluefish in US waters in the western Atlantic Ocean.

The major goal of the management plan is to conserve the bluefish resource along the Atlantic coast. Five major objectives have been adopted to achieve this goal:

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 (defined as the commercial fishery not exceeding 20% of the total catch).
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.

The following management measures have been adopted:

Any person selling a bluefish is identified as a commercial fisherman and must have a commercial fishing permit that allows the sale of bluefish. This commercial definition includes, among others, all hook and line fishermen who sell bluefish, regardless of fishing mode (that is, fishing from shore, man made structures, private boats, party boats, or charter boats). For states without a permit, a federal permit is required to sell bluefish.

The federal costs of implementing an annual permit system for the sale of bluefish shall be charged to permit holders as authorized by section 303(b) (1) of the Magnuson Act. In establishing the annual fee, the NMFS Regional Director will ensure that the fee does not exceed the administrative costs incurred in issuing the permit, as required by section 304(d) of the Magnuson Act. Proper accounting for administrative costs will include labor costs (salary and benefits of permitting officers plus prorated share of secretarial support and supervision at both the NMFS regional and headquarters levels), computer costs for creating and maintaining permit files (prorated capital costs, time share and expendable supplies), cost of forms and mailers (purchase, preparation, printing and reproduction), and postage costs for application forms and permits.

Anglers are restricted to a possession limit of no more than ten bluefish or the equal or more stringent possession limit at the state of landing, if such a limit exists. On vessels with several passengers, the number of bluefish contained on the vessel may not exceed ten (or the adjusted limit) times the number of people aboard the vessel, excluding persons with commercial permits and their catch. Those with commercial permits are required to keep their bluefish separated from the pooled catch and in their possession at all times.

Commercial hook and line fishermen may take more than the possession limit if they have a commercial permit to sell bluefish. Without a permit, fishermen using hook and line gear are restricted to the possession limit.

Based on a recommendation by the Council and ASMFC, the Regional Director, and the Atlantic States in their respective jurisdictions, may modify the possession limit to between 0 and 15 bluefish per angler. This adjustment would be based on the recommendations of the Bluefish FMP Review and Monitoring Committee.

The commercial fishery, on a coastwide basis, is limited to 20% of the total catch (recreational catch plus commercial landings) each year. The decision to implement commercial controls on the bluefish fishery is based on two separate indices (detailed in A and B below) and a two tier approach.

The first tier:

A. A three year moving average of both the commercial landings and total bluefish catch (recreational catch and commercial landings) will be used to derive a time-series projection of the commercial share for the upcoming year. If the projected commercial share is 20% or above, then commercial controls will be implemented at the start of the upcoming year. If this percentage is between 17% and 20%, then policy makers will use the criteria of the second tier to determine if commercial controls will be implemented.

B. The percent of commercial landings in the total bluefish catch will be calculated for each year and compared to the commercial share for the previous year. If the change in the commercial percentage equals or exceeds 50%, then policy makers will use the criteria of the second tier to determine if commercial controls will be implemented.

The second tier:

If the projected commercial share based on the average catch for the previous three years is between 17% and 20% OR the commercial share increased 50% or more from the previous year, then the following steps will be used to determine if controls on the commercial fishery will be implemented for the upcoming year:

1. The most recent, complete year of data will be used to determine what factors led to the increase in commercial share.

2. In-season data will then be investigated to determine if the trends exhibited in the previous year are continuing. These data will include commercial landings by state, month, and gear and recreational catch by wave (2 month periods).

3. If an increasing trend in commercial landings was indicated for the current year then commercial controls will be implemented the following year. The type of control will be determined from examination of the above data.

If the catch in the commercial fishery is projected to equal or exceed the 20% limit during the upcoming year, then a state allocation system will be implemented. This entails the use of landings data from the most recent ten year period for each state to determine the average percentage of coastwide commercial landings. These percentages will be used to determine the amount of the coastwide quota allocated to each state. Quotas apply to landings in each state regardless of where the bluefish are caught.

If no state of landing exists as the result of each coastal state fulfilling the individual quota, then the EEZ will be closed to commercial fishing. In addition, if whole bluefish are processed into fillets at sea, then fillet weight will be converted to whole weight at the state of landing using a 1:2.5 ratio. If whole bluefish are headed and gutted at sea, then the conversion factor is 1:1.5.

Individual states are responsible for ensuring that their individual quotas are not exceeded and as such may design specific management measures best suited to their state. Because bluefish are highly migratory, this method of allocation prevents a single state from harvesting all of the coastwide quota before bluefish are available to other more northern or southern states. States are encouraged to develop regimes that will provide fishing opportunities throughout the season for all bluefish fisheries.

If the increase in commercial landings is attributed to the use of a highly efficient gear (purse seines, pair trawls, or runaround gill nets), then the highly efficient gear responsible for the increase in commercial landings will be regulated for the taking of bluefish in EEZ waters. Regulations to be considered include trip limits, area closures or restrictions, and other measures that may be appropriate, including gear prohibition. The Regional Director will implement specific management measures based on a recommendation by the Council and ASMFC. The states are encouraged to implement companion regulations to regulate that gear in state waters.

Commercial controls will remain in effect until conditions in either the recreational or commercial fishery warrant a retraction. The Bluefish FMP Review and Monitoring Committee (section 9.4), will annually review landing statistics to determine if commercial controls will be suspended.

The projections and proposed allocations will be published in the *Federal Register* with an opportunity for public comment.

Optimum Yield (OY) is all bluefish caught by US fishermen pursuant to this FMP, so retention of bluefish by foreign fishermen is prohibited. Foreign nations catching bluefish are subject to the incidental catch regulations set forth in 50 *CFR* 611.13, 611.14, and 611.50.

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4. INTRODUCTION

4.1. HISTORY OF DEVELOPMENT OF THE PLAN

Bluefish has consistently been one of the top three species most frequently sought by marine recreational fishermen along the Atlantic coast of the United States. In fact, more bluefish (by weight) were landed by anglers coastwide than any other marine fish each year from 1979 to 1987. An increase in the number of marine anglers, an apparent increase in bluefish abundance, and a decline in the abundance of other desired finfish such as striped bass and weakfish may explain this predominance (Anderson and Almeida 1979). Although most bluefish are harvested by sport fishermen, commercial landings have averaged about 14 million pounds per year since 1979, or approximately 10% of the total bluefish catch along the Atlantic coast.

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

The MAFMC in cooperation with the NMFS, New England and South Atlantic Fishery Management Councils, and the Atlantic States Marine Fisheries Commission (ASMFC) completed a Bluefish FMP in 1984 (MAFMC 1984). Basically, the plan was based on an allocation system with recreational fishermen receiving 80% of the total projected bluefish catch each year and the commercial fishery the remaining 20%. Commercial catch was to be further allocated at the rates of 10%, 50%, and 40% to the North Atlantic, the Mid-Atlantic, and South Atlantic subregions, respectively. The difference between the total projected catch for each subregion and the commercial catch in state waters was to be allocated to the commercial fishery in the Exclusive Economic Zone (EEZ).

To serve as the basis of management decisions, the MAFMC, in consultation with the NMFS, planned to submit catch projections each year to NMFS. If catch projections for any user group/area equaled or exceeded 90% of the user group/area allocation, the Regional Director of NMFS could have instituted control measures such as trip limits, individual vessel quotas, time limits, and/or gear limitations. Also, the Regional Director could have closed the commercial fishery in any area of the EEZ to vessels using non-traditional gear (that is, gear other than hook and line, conventional gill nets, and otter trawls) when 80% of the allowable commercial harvest in the EEZ of that area had been caught by such vessels. Furthermore, the plan established a data collection system, based on permits and logbooks, to facilitate operation of the management system.

However, the MAFMC bluefish plan was rejected by the Secretary of Commerce for the following reasons:

1. The regulatory actions in the FMP were not based upon adequate information concerning the need for and the consequences of proposed action. As such, the regulatory impacts were not quantified as to benefits compared to cost.
2. There was no immediate urgency for management at the time.
3. The measures in the plan did not prevent overfishing since they applied only to commercial fishing in federal waters.
4. The allocation system of the plan was too rigidly fixed and complex and did not allow for changes in various areas over time.
5. There was a question of fairness in the plan with regard to treatment of different areas and between traditional and non-traditional fishing gear.

Although this Plan was rejected, bluefish remained a major value to the nation and public concerns about bluefish overexploitation were not abated. Subsequently, the Fishery Management Councils and the ASMFC agreed to proceed jointly on the development of a new bluefish management plan containing compatible management measures that could be enacted in both state and federal waters. This cooperative venture represented a new approach for managing interjurisdictional fisheries.

This bluefish management plan was prepared cooperatively by the MAFMC and the ASMFC. The ASMFC portion was funded through the ASMFC Interstate Fisheries Management Program under a contract with the Maryland Department of Natural Resources, a contract with the US Fish and Wildlife Service (USFWS), and a contract with the MAFMC. State and federal representatives on the ASMFC Bluefish Scientific and Statistical Committee, Bluefish Management Board, and the MAFMC Coastal Migratory Fisheries Committee provided guidance and technical expertise in plan development.

The FMP was adopted by the ASMFC at its annual meeting 2 - 5 October 1989. The FMP was adopted by the Council 26 October 1989.

4.2. PROBLEMS FOR RESOLUTION

The primary purpose of the Plan is to address the problems that would occur if the bluefish fishery were to expand significantly or the bluefish resource were to decline. Thus, this Plan is intended to avert potential, as well as correct current, management problems.

Bluefish are extremely important to the recreational fishing industry; bluefish was the predominant species (by weight) harvested by marine anglers each year from 1979 to 1987. Conversely, bluefish comprise a small percentage of all finfish harvested commercially along the Atlantic coast primarily because the commercial bluefish market is unstable, easily saturated, and characterized by low dockside prices. Expansion of the commercial fishery has been limited both by the lack of sizable markets and the fact that bluefish spoil rapidly and are generally sold fresh. A significant increase in bluefish demand coupled with the use of advanced processing and freezing technology could increase the commercial harvest and impact historical catch proportions.

Presently, although two states, Maryland and Florida, have minimum size regulations that pertain to the recreational harvest of bluefish, no state restricts the number of bluefish creeled by anglers. Liberal or nonexistent harvest regulations may allow for overharvest by recreational fishermen and eventual stock decline or even collapse as witnessed in the South African bluefish fishery (van der Elst 1983). Furthermore, overharvest may lead to increasing conflicts between commercial and recreational bluefish fishermen. Localized conflicts between charter boats and gill net fishermen in Massachusetts, for example, resulted in the closure of specific areas to gill netting. In addition, encircling gill nets were prohibited in Virginia waters after use of this gear significantly increased the commercial bluefish harvest in Chesapeake Bay in 1982 (Sports Fishing Institute 1982).

Bluefish commercial landings and recreational catch have increased over the last three decades; commercial landings increased from 2.7 to 14.8 million pounds from 1960 to 1987, and the recreational catch doubled during this same period. However marked fluctuations in abundance historically characterize populations of bluefish in the western North Atlantic (Hildebrand and Schroeder 1928, Bigelow and Schroeder 1953).

Data collected by NMFS suggest that the bluefish resource has declined in recent years. For example, although the estimated number of directed recreational fishing trips for bluefish was approximately the same in both 1987 and 1988, preliminary NMFS data indicate that the 1988 east coast recreational bluefish catch was approximately 16 million fish, down from a reported 33 million in 1987. This would suggest a declining resource.

In addition, a recent stock assessment indicated that that bluefish year class recruitment was highly variable and that three strong year classes has been produced at irregular intervals since 1974, one each in 1977, 1981, and 1984. Low values were recorded in 1986 and 1987, and the 1988 value was the lowest on record. Without the production of a strong year class in 1989, it is probable that the population will continue to decline into the 1990s. If current trends continue, recreational pressure will likely increase in the near future. Increasing fishing pressure coupled with declining recruitment could lead to serious and sustained stock decline.

Waste of bluefish has been identified by marine scientists and concerned citizens in a number of coastal states (ASMFC 1986). During the public hearing process, a number of people indicated that waste of bluefish has occurred or was a problem in their state. In general, the perception by the public that the resource is abundant, coupled with low ex-vessel prices for commercially caught bluefish, has resulted in waste in the bluefish fishery. For example, during May, 1988 a large number of dead bluefish were found floating in Chesapeake Bay from the James River to the Rappahannock River. Although several factors were investigated as potential causes, including pollution and disease, the dead fish were attributed to discards from commercial and recreational fishermen (Burnley 1988).

Comprehensive management strategies for bluefish were non-existent prior to the development of this Plan. Bluefish is a highly migratory species harvested along the Atlantic coast by a variety of anglers, angling techniques, and commercial gear. Although its extensive migrations preclude a single entity from effectively managing the fishery, fishing activities in the EEZ or in the waters of a few states could seriously impact the coastwide stock. The complexity and affiliated problems associated with bluefish stock dynamics and the bluefish fisheries, necessitates the cooperative, interjurisdictional approach to management presented in this plan.

4.3. MANAGEMENT OBJECTIVES

The major goal of the management plan is to conserve the bluefish resource along the Atlantic coast. The Council and ASMFC have adopted five major objectives to achieve this goal:

1. Increase understanding of the stock and of the fishery.
2. Provide the highest availability of bluefish to US fishermen while maintaining, within limits, traditional uses of bluefish (defined as the commercial fishery not exceeding 20% of the total catch).
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.

4.4. MANAGEMENT UNIT

The management unit for this FMP has been defined as the entire bluefish population along the Atlantic coast of the United States.

5.0. DESCRIPTION OF STOCKS

5.1. SPECIES DESCRIPTION AND DISTRIBUTION

Bluefish and *Pomatomus saltatrix* are the accepted common and scientific names for the species (American Fisheries Society 1980). Bluefish are also known as blue, tailor, snapper, elf, fatback, snap mackerel, skipjack, snapping mackerel, horse mackerel, greenfish, skip mackerel, chopper, and Hatteras blue (Wilk 1977).

The bluefish body is elongate, robust, and moderately compressed, with the belly compressed to a bluntish edge. The coloration is bluish or greenish above and silvery below with a blackish blotch at the base of the pectoral (Jordan and Evermann 1896). Bluefish may attain ages of 11 or 12 years and can exceed 3 feet in length. The official rod and reel record is 31 pounds and a bluefish weighing 45 pounds was reportedly caught off the African coast (Anderson 1978).

Bluefish are a migratory, pelagic species generally found in continental shelf waters in temperate and semi-tropical oceans around the world with the exception of the north and central Pacific (Fig. 1). In North America, bluefish range from Nova Scotia to Florida in the northwestern Atlantic and also occur in the Gulf of Mexico from Florida to Texas. Tagging studies and other information indicate a significant degree of separation between bluefish in the northwestern Atlantic and bluefish in the Gulf of Mexico (Lyman 1974, Wilk 1977), although some intermingling may occur (Miller 1969). Distribution of the fish and fisheries by season and area support the theory of separate populations, as does the discovery of a separate bluefish spawning area in the Gulf (Barger *et al.* 1978).

Bluefish spawn in two principal areas along the Atlantic coast, one in the South Atlantic Bight , the other in the Mid-Atlantic Bight (Figure 2). Bluefish spawning in the South Atlantic Bight occurs on the shoreward edge of the Gulf Stream principally during spring and to a lesser extent in fall and winter. Larvae from spring spawning drift north of Cape Hatteras in the Gulf Stream and spread out along the continental slope of the Mid-Atlantic Bight (Kendall and Walford 1979). These young bluefish enter shelf waters and estuaries in mid-June as waters warm, remain in estuaries during the summer, and migrate south along the coast in early fall. Larvae from fall-winter spawning in the South Atlantic move to inshore waters south of Cape Hatteras. In the mid-Atlantic Bight, spawning begins in continental shelf waters in June, peaks in July, and continues into August with larvae inhabiting estuaries or near shore waters before migrating south in the fall (Norcross *et al.* 1974, Kendall and Walford 1979). The temporal distribution of young bluefish in oceanic and estuarine waters may differ from year to year (Norcross *et al.* 1974).

In general, adult bluefish travel northward in spring and summer, and southward in fall and winter. Tagging studies indicate the southerly migration route may be closer to shore than the northerly migration in spring and both migration periods are characterized by some offshore-inshore movement (Wilk 1977). Temperature and photoperiod are the principal factors directing activity and distribution (Olla and Studholme 1971, 1972) with bluefish migrations triggered by water temperatures between 54-59° F (Lund and Maltezos 1970). During summer, bluefish stocks are centered between Cape Cod and Chesapeake Bay, and in the northern part of North Carolina. The summer range of bluefish tends to shift further north as the fish increase in size and age (Wilk 1977). Although the exact distribution of bluefish during winter is unknown, it is possible that a large portion of the population remain on the outer continental shelf, far offshore during this period (Hamer 1959, Lund and Maltezos 1970).

Bluefish migrate in groups of like sized fish which in turn form loose aggregations which may extend over tens of squares of miles of ocean surface (Wilk 1977). Freeman and Turner (1977) observed three migrating groups of bluefish offshore of New Jersey: an inshore contingent (bluefish 1-3 pounds), mid-shelf contingent (bluefish 3-10 pounds), and an offshore contingent (bluefish 6 pounds and greater). The number of fish exhibiting schooling behavior may be greater by day than by night (Olla and Studholme 1972, 1979). Hydrographic features such as changing thermal gradients, cold cells, and frontal systems (Olla *et al.* 1985), as well as anoxic water (Freeman and Turner 1977) may act as migration barriers. Changes in tides, weather, season, and prey may explain localized migrations into bays and ocean inlets (Wilk 1977).

Bluefish respond to either high or low temperature extremes with avoidance (Olla and Studholme 1979) and temperature preference varies with size and season. Juveniles inhabit water at temperatures between 64-79° F during summer (Wilk and Silverman 1976), but are found at temperatures between 59-63° F in fall (Kendall and Walford 1979). Adult bluefish are generally found in water with a surface temperature of 64-74° F but have been caught in water temperatures as low as 48° F and as high as 86° F (MAFMC 1984). Thermal preferences may in part explain distributional differences between juvenile and adult fish.

Bluefish can withstand a wide range of salinities. Experimental work conducted at the Oceanographic Research Institute, Durban, South Africa, indicated juvenile bluefish tolerated salinities from 19.5 ppt to 35 ppt and adults from 9 ppt to 48.5 ppt (van der Elst 1976).

Occurrence and abundance of bluefish varies annually in specific areas off the Atlantic coast due to seasonal migrations (Freeman *et al.* MS). Bluefish are found from Nova Scotia to northern New England from June-October with a peak in August and September. They occur from April to December from southern New England to the Mid-Atlantic states with a peak abundance between July and October. In South Atlantic waters, bluefish occur year round during most years. Commercial landings data compiled by NOAA/FDA/EPA (1986) indicated most bluefish were caught in North Carolina waters between December and March. Off the east coast of Florida, peak landings occurred in January.

5.2. ABUNDANCE AND PRESENT CONDITION

Because year class strength of Atlantic coast bluefish is highly variable (Boreman 1983), the development of an accurate pre-recruitment index is essential for effective management. Boreman (1983) concluded that the catch per tow of bluefish in the NMFS fall inshore survey north of Cape May, appeared to be an adequate index of recruitment based on a correlation between this index and commercial and recreational harvest 2 to 4 years later. A recent study (Crecco *et al.* 1987, USDC 1987c) found a significant positive correlation ($r=0.87$, $P<0.001$) between the 1979-1986 mean juvenile indices from the NMFS fall inshore survey (the 1974-1986 geometric mean catch per tow of juvenile bluefish from Cape Cod to Cape Hatteras) and the corresponding mean CPUE indices of juvenile bluefish from the coastwide shore fishery (Figure 3). However, because of the variability associated with year to year catches of age 1 and older bluefish in the survey and trends in recruitment indicated by the MRFSS data (USDC 1988d), the juvenile indices from the NMFS trawl survey may be biased. Despite this and other limitations of the NMFS survey (the survey does not sample bluefish from the South Atlantic), Crecco *et al.* (1987) assumed that the 1974-1986 juvenile indices from the fall survey accurately measured bluefish recruitment from Cape Hatteras to Cape Cod. These indices indicated that bluefish year class recruitment north of Cape Hatteras was highly variable with no evidence of a systematic decline in year class strength from 1974 to 1986 and that three strong year classes had been produced at irregular intervals, one each in 1977, 1981 and 1984 (Crecco *et al.* 1987, USDC 1987d). Since 1984, no strong year classes have been produced and, in fact, low values were recorded in both 1986 and 1987 and the 1988 value was the lowest on record.

5.3. ECOLOGICAL RELATIONSHIPS AND STOCK CHARACTERISTICS

5.3.1. Spawning and Early Life History

Most bluefish are sexually mature by age 2 (Deuel 1964), although ovaries mature at a slightly slower rate than testes in bluefish of similar size (Wilk 1977). The overall sex ratio for bluefish sampled from recreational and commercial fisheries, 1963 to 1968, was 1:1 with approximately equal numbers of males and females present at all ages (Wilk 1977). The sex of bluefish cannot be determined externally and there may be some tendency for sexes to school together (van der Elst 1976). Morse (cited in Boreman 1983) found a linear relationship between size of female bluefish and the number of eggs they contained. The equation describing this relationship, for bluefish 22 to 32" in fork length (FL), was:

$$\text{Fecundity (000's)} = -5063.11 + 297.6(\text{FL}).$$

This relationship substantiates information from other studies (Lassiter 1962, van der Elst 1976, Wilk 1977, Finucane and Collins MS) that indicate bluefish are a highly fecund species.

Spawning probably proceeds in waves (Wilk 1977) occurring in offshore spawning areas principally from April to May in southern waters and June through August in the Middle Atlantic Bight (Kendall and Walford 1979). Temperature and salinity are the principal factors directing spawning activity; optimum temperature and salinity for spawning in the Mid-Atlantic Bight were 78° F and 31 ppt (Norcross *et al.* 1974). Minimum temperature and salinity at which spawning occurred in these waters was 64° F at 31.7 ppt and 69° F at 26.6 ppt (Norcross *et al.* 1974).

Fertilization of bluefish eggs is external. Eggs are pelagic and highly buoyant with hatching and early larval development occurring in oceanic waters. Surveys indicate the greatest abundance of bluefish eggs and larvae appear on the outer part of the continental shelf more than 30 nautical miles from shore (Deuel *et al.* 1966, Norcross *et al.* 1974).

Fertilized bluefish eggs hatch in 48 hours at temperatures between 68 to 70° F. Larvae are strongly associated with the surface and have been sampled during every season of the year in offshore waters from Cape Cod, Massachusetts to Palm Beach, Florida (Kendall and Walford 1979). However, an intensive sampling program conducted recently by the Northeast Fisheries Center, collected only two bluefish larvae in offshore waters during spring, 1988 (USDC 1988c). Bluefish larvae are rarely found in near-shore waters, although recently hatched larvae have been collected in both the lower Chesapeake Bay (Pearson 1950) and in Narragansett Bay (Herman 1963).

As the season progresses, young-of-year bluefish move inshore with estuaries serving as the chief habitat during the juvenile life stage (Kendall and Walford 1979). Juvenile bluefish spawned in southern waters in spring grow to 8" in length by fall whereas those spawned in summer are approximately 2-3" by fall. Spawning patterns and growth rates explain the distinct size groups of juvenile bluefish, or snappers, caught concurrently in the fall by anglers along the Middle Atlantic and Northeast coasts, that is, fish in 2-4 and 6-10" ranges (Sargeant and Boreman 1984). Bluefish spawned in the Mid-Atlantic Bight in summer, appear in North Carolina sounds the following spring at a TL of 10", and may remain in the sounds through summer averaging 13-14" in length by fall.

5.3.2. Age and Growth

Bluefish length-age data have been reported by Wilk (1977), Richards (1976), and several state agencies along the Atlantic coast (New Hampshire Game and Fish, Connecticut Department of Environmental Protection, Maryland Department of Natural Resources, North Carolina Division of Marine Fisheries). These studies indicate that mean lengths (TL inches) for Atlantic coast bluefish more than doubled between ages 1 to 4, and then the rate of growth declined steadily thereafter (Table 1). Lengths at age 1 usually ranged from 9.3 to 11.1", whereas the lengths at age 2, when most bluefish are sexually mature (Wilk 1977), generally ranged from 14.9 to 20.1" TL. The growth rates of older (greater than age 5) bluefish not only declined with age, but were often more variable than those of younger bluefish. Bluefish over age 8 were rare in all samples; the 1982-1985 North Carolina data contained the only fish age 9 and older with a mean back-calculated length for age 11, the oldest bluefish aged in any study, of 37.0" TL.

Length-age data available from the separate studies was fit to the von Bertalanffy growth equation:

$$L_t = L_{inf}(1 - e^{-K(t - t_0)})$$

where: L_t is mean fork length (in) at age, L_{inf} is theoretical maximum length, K is the rate at which L_t approaches L_{inf}, t_0 is the age at zero length, and t is the age of the fish (years). The L_{inf} (asymptotic size) estimates for the separate studies ranged from 35.3 to 40.9" TL and the K values from 0.216 to 0.373 (Table 2).

5.3.3. Age Composition of the Fisheries

Because much of the data collected for bluefish are in length rather than age frequencies, an age-length key was developed from recent length-age data collected along the coast (Crecco *et al.* 1987). The key was developed from recreational and commercial samples (N = 4861) taken coastwide over a five year (1982-1986) period, and it may be biased if growth is variable from year to year (USDC 1987d). The coastwide age-length key was applied to a length frequency distribution of bluefish collected in the North Carolina winter trawl fishery from 1982 to 1987 (Ross *et al.* 1986, J. Ross pers. comm.) and length frequency data collected in the Marine Recreational Fishery Statistical Survey (MRFSS) each year from 1979 to 1985 (USDC 1984b, 1985a, 1985c, 1986b).

The age frequency distribution of bluefish collected in the North Carolina winter trawl fishery from 1982 to 1987, indicated age 0 and age 1 bluefish were numerically predominant in trawl catches with numbers declining steadily after age 1 (Table 3). Similarly, the age frequencies in number of the MRFSS catches indicated that snapper (age 0) and age 1 bluefish dominated the recreational catch from 1979 through 1985 (Table 4).

An analysis of mean age frequencies in MRFSS catches by subregion and fishing mode, indicated that over 75% of the shore-based catches in the North and Mid-Atlantic subregions were juvenile (age 0) bluefish, whereas the boat fishery in these subregions caught mainly adult fish (ages 1 through 8) (Table 5). In the South Atlantic however, both the shore and boat fisheries caught primarily young (ages 0 and 1) bluefish, suggesting that older (greater than age 3) bluefish either remained offshore in the South Atlantic, or were mainly confined to the North and Mid-Atlantic subregions.

5.3.4. Length-Weight Relationship

Length-weight relationships have been developed for bluefish in several studies (Hamer 1959, Lassiter 1962, Richards 1976,Wilk 1977, Barger MS). Wilk *et al.* (1978) found that age specific weight increments did not differ significantly between male and female bluefish collected in the New York Bight. However, extreme variability in the weight of bluefish of similar lengths has been reported (Hamer 1959). Wilk (1977) developed a length-weight relationship from over 7500 bluefish collected coastwide between 1963 and 1968:

$$W = (7.323 \times 10^{-4}) \times FL^{2.855}$$

where: W is weight (lbs) and FL is fork length (in).

5.3.5. Adult Mortality

The instantaneous natural mortality rate (M) is defined as annual losses experienced by adult bluefish from all natural and anthropogenic factors except commercial and recreational fishing. The indirect methods of Pauly (1980) and Hoenig (1983) were used to estimate M for adult (age 1 and older) bluefish (Crecco *et al.* 1987). Hoenig (1983) related published natural mortality rates (M) to the maximum age (t_{max}) of 84 fish stocks, from which he developed the following predictive equation:

$$\log_e(M) = 1.46 - 1.01 \log_e(t_{max}).$$

Based on a maximum age (t_{max}) of 11 or 12 years for bluefish results in M values of 0.38 and 0.35, respectively.

An estimate of M was also derived using Pauly's (1980) multiple regression equation, which incorporates the von Bertalanffy growth parameters (L_{inf}, K) and the mean water temperature (T) within which adult bluefish commonly occur. Based on growth parameters derived by Wilk (1979), as well as a range of water temperatures in which bluefish are commonly found (54-64° F), the estimated M values ranged from 0.32 to 0.39. In the absence of any additional information, these methods indicate that 0.35 is a reasonable estimate of M for age 1 and older bluefish.

Due to data limitations, catch curve analysis (Gulland 1983) is the only method currently available to estimate total mortality rates for bluefish. Thus, total mortality rates (Z) for adult bluefish (age 1 and older) were estimated using catch curve analysis and age composition data for bluefish collected from a Connecticut trawl survey and a New Jersey recreational survey. In addition, data collected from sport fish surveys conducted in Delaware Bay and New York, and commercial data from North Carolina were aged using the coastwide age-length key to derive mortality estimates.

Estimates of total mortality (Z) from the fisheries dependent and independent data generally ranged from 0.6 to 0.8 (Table 6). Instantaneous fishing mortality rates (F) were estimated by subtracting a natural mortality rate of 0.35 from these Z values. Age frequencies (ages 1-8) from the Connecticut trawl survey provided instantaneous fishing rates (F) between 0.24 and 0.52 (Table 6). These fishing rates were similar to those from the North Carolina winter trawl fishery in 1983, 1984, 1986, and 1987 but are much higher than the F value (0.087) in 1985. Based on associated coefficients of variability, Crecco *et al.* (1987) determined that this value of F (0.087) for 1985 was less reliable than the other estimates. In addition, the derived fishing mortality rates for bluefish collected in New York, New Jersey, and Delaware Bay, were within the range of values estimated from the other data sets.

An average F from all data sets was 0.347 (+ 0.027). Although this estimate may be biased due to changes in recruitment, catchability and availability of bluefish from year to year, no additional data or methodology exists to refute or corroborate this value. This suggests that the best estimate of the current fishing mortality rate on adult bluefish is approximately 0.35 (assuming an M value of 0.35 also).

5.3.6. Juvenile Mortality Rates

Crecco *et al.* (1987) derived an average instantaneous natural mortality rate (M) of 2.6 for juvenile bluefish (age 0) using Pauly's method (1980). This rate is equivalent to a monthly mortality rate of 25%. Although the accuracy of M (2.6) for age 0 bluefish is difficult to assess, this monthly estimate (25%/month) is within the range of monthly mortality rates reported for several juvenile fishes including American shad, *Alosa sapidissma*, (34%/month) (Crecco *et al.* 1983), winter flounder, *Psuedopleuronectes americanus* (30%/month) (Pearcy 1962), Atlantic herring, *Clupea harengus*, (36%/month) (Dragesund 1969), plaice, *Pleuronectes platessa*, (20%/month) (Bannister *et al.* 1974) and striped bass, *Morone saxatilis* (36%/month) (Dey 1981).

Preliminary information indicates that fishing mortality rates on juvenile (age 0) bluefish may be 25% (that is, 0.09) of that estimated for adult bluefish (Crecco pers. comm.). Juvenile bluefish along the Mid-Atlantic bight do not reach a catchable size (5-6") until about mid-July (Wilk 1977) and remain in bays and estuaries until mid-October before migrating offshore (Kendall and Walford 1979, Nyman 1987). Therefore, the low fishing rates on age 0 bluefish are most likely attributed to their short period of vulnerability to shore-based fishing.

5.3.7. Food and Feeding

Bluefish are voracious carnivores that feed on a wide variety of pelagic and demersal fish and invertebrates. At least 70 species of fish have been found in bluefish stomachs including butterfish, alewife, menhaden, round herring, sand lance, silverside, Atlantic mackerel, anchovy, Spanish sardine, gizzard shad, weakfish, silver hake, spotted sea trout, Atlantic croaker, sea lamprey, and spot (Hildebrand and Schroeder 1928, Klima and Tabb 1959, Grant 1962, Deuel 1964, Richards 1976, Wilk 1977, Wilk 1979, Naughton and Saloman 1984). Invertebrates eaten by bluefish include shrimp, lobster, squid, crab, annelid worms, and surf clams (Richards 1976, McCluskey 1977, Wilk 1977, Freeman and Turner 1977). Bluefish attacks on sea birds (French 1981) and humans (de Sylva 1974) have also been documented.

Bluefish have shearing dentition that allow them to ingest part of prey items (Baird 1873, Goode 1879, Bigelow and Schroeder 1953, Mahoney 1972, de Sylva 1974, Smale and Kok 1983). This feeding behavior increases the maximum size of prey available to bluefish and also favors schooling behavior since incapacitated prey are available to other feeding individuals (Smale and Kok 1983).

Ontogenetic changes in prey species and prey size selection have been documented for bluefish (Naughton and Saloman 1984, Smale 1984). In South African waters, bluefish less than 4" in length consumed principally small Crustacea less than 20% of body length whereas those greater than 4" consumed primarily fish 30-50% of body length (Smale and Kok 1983, Smale 1984). Juvenile bluefish in the Hudson River fed on bay anchovy, white perch, American shad, river herring, and striped bass (Texas Instruments 1976) and juvenile winter flounder have also been observed in stomachs of juvenile bluefish (Greely 1939).

Bluefish respond to olfactory stimuli but rely primarily on vision to locate and capture prey. In addition, Olla *et al.* (1970) found satiated bluefish could be stimulated to resume feeding if offered larger prey items, indicating prey size is an important factor in feeding motivation.

5.3.8. Predators and Competitors

Bluefish have been found in stomach samples collected from blue sharks (Kohler and Stillwell 1981), swordfish (Stillwell and Kohler 1985), and other bluefish (Lassiter 1962, Richards 1976, Wilk 1977, Naughton and Saloman 1984). Also, its probable bluefish are preyed upon by other large piscivores such as tunas and wahoo (Wilk 1977). Based on stomach samples that indicated bluefish was the major food item (77.5% of stomach

contents by volume) of shortfin mako, Stillwell and Kohler (1982) estimated these sharks consumed 5,108 to 17,021 tons of bluefish each year in an area between Cape Hatteras and Georges Bank in the Atlantic ocean.

Bluefish share common food resources with striped bass (ASMFC 1988), weakfish (ASMFC 1986), Spanish mackerel, and king mackerel (Wilk 1977). Bluefish may compete with common terns for prey fish (Safina and Burger 1985).

5.3.9. Parasites, Diseases, Injuries and Abnormalities

Anderson (1970) prepared an annotated list of parasites found in bluefish along the Atlantic coast of the United States. Meyers *et al.* (1977) found myxosporidian parasites, *Henneguya* sp., in hearts of a bluefish collected in the Atlantic from New York, New Jersey, and Maryland waters. Fin rot disease was noted in bluefish sampled in the New York Bight (Mahoney *et al*, 1973) and Hickey and Austin (1974) reported pugheadedness in two bluefish specimens collected in Long Island Sound.

5.4. MAXIMUM SUSTAINABLE YIELD

Maximum sustainable yield (MSY) has been estimated for Atlantic coast bluefish in several studies. Anderson and Almeida (1979) used a generalized stock production model to derive estimates of MSY that ranged from 189 to 203 million pounds. This estimate was based on data from the NMFS fall offshore survey, reported commercial landings, and the estimated recreational catch.

In a subsequent analysis, the identical methodology was used to derive an estimate of MSY of between 90 and 119 million pounds (Anderson 1980). This analysis differed from the previous assessment in that estimated recreational landings were halved to account for a possible overestimate in the original catch estimates from the 1960, 1965, and 1970 recreational survey.

Boreman (1983) modified the analysis of Anderson (1980) by incorporating several changes in the data base. These included two additional years of data and revised estimates of recreational catch. Derived estimates of MSY ranged from 133 to 143 million pounds.

Because the NMFS fall offshore survey seemed to be selective for larger, older fish (greater than 22 in), Boreman (1983) assumed the survey did not measure the relative abundance of all age groups in the stock. Thus, he assumed his, and previous estimates of MSY by Anderson and Almeida (1979) and Anderson (1980), were biased. As an alternative, he based MSY on a value that represented a median recruitment level. Because of a correlation between the stratified mean catch per tow from the NMFS fall inshore survey, and commercial and recreational harvest 2 to 4 years later, Boreman (1983) used median catch levels for the years 1960 to 1982 to reflect recruitment. The median catch level, and thus MSY, was 123 million pounds if the original 1960, 1965, and 1970 recreational survey estimates were correct and 93 million pounds if the recreational catch was overestimated by 100%. Based on this methodology, and catches from 1979 to 1987, MSY would be approximately 145 million pounds.

In an attempt to overcome some of the difficulties associated with the previous assessments, Crecco *et al.* (1987) used a steady state yield model derived by Shepherd (1982) to determine MSY, and the fishing rates that maximize yield and ensure surplus production to the spawning population. This approach predicts long term average yields by combining the results of yield-per-recruit (Y/R) and biomass-per-recruit (B/R) analyses with the stock-recruitment characteristics of the stock. The results of this equilibrium modeling suggested that highest sustainable yields for Atlantic coast bluefish range from 137 to 150 million pounds.

Because virtual population analysis was subsequently rejected as a valid technique for estimating stock size (USDC 1987d, 1988d), the original data base used by Crecco *et al.* (1987) was modified using the NMFS fall survey to obtain stock recruitment data (V. Crecco pers. comm.). Revised estimates were similar to previous values, and ranged from 142 to 150 million pounds.

Based on this recent assessment, as well as the update of Boreman's (1983) method, it's probable that MSY ranges from 140 to 150 million pounds. Since 1979, total catch (commercial landings and recreational catch) has exceeded 140 million pounds six times; each year from 1979 to 1983 and also in 1986. The catch exceeded 150 million pounds in 1979, 1980, and 1983.

The assessment conducted by Crecco *et al.* (1987), and the subsequent modification, indicated that highest sustainable yields occur at fishing mortality rates (F) of between 0.3 and 0.4. The participants at the 5th Stock Assessment Workshop (USDC 1987d), concurred with these estimates. These results were substantiated by a yield-per-recruit analysis that indicated $F_{0.1}$ for Atlantic coast bluefish was equal to 0.31 (Terceiro 1987). However, these biological reference points are dependent on values of natural mortality (M) and any uncertainty

associated with M would be reflected in these estimates. In the absence of additional data, this information coupled with current best estimates of F (0.35) would suggest that the stock is fully exploited and it would be unwise to allow fishing rates on bluefish to exceed 0.4 for more than a few years.

Furthermore, this modeling approach (Crecco *et al.* 1987 and subsequent modifications) predicted a sharp decline in sustainable yield and recruitment if fishing rates (F) exceeded 0.5 for extended periods. In addition, the bluefish stock collapsed completely if F increased beyond 0.6. The reason for the collapse at high F values (F greater than 0.5) is that long term recruitment drops rapidly as spawning stock biomass is depleted, so that recruitment cannot replace the heavy losses to the adult stock.

5.5. PROBABLE FUTURE CONDITION

Estimated mortality rates (M = 0.35, F = 0.35) can be combined with relative abundance of age 0 bluefish from the NMFS fall inshore survey to predict future relative population sizes of adult bluefish (Table 7). These extrapolations indicate that high population levels of bluefish in recent years have been supported by the strong year classes in 1981 and 1984, and, to a lesser extent, the 1977 year class. In fact, the estimated catch per unit effort (number/trip) for bluefish derived from MRFSS data have trended downward since 1981, reflecting a decline in bluefish abundance. CPUE values in 1988 were less than half the value calculated for 1987. In addition, recruitment was low in 1986 and 1987, and the 1988 value was the lowest on record. These data suggest that without the production of a strong year class in 1989, the population will likely continue to decline into the 1990s. However, given the uncertainties associated with mortality rates and the juvenile index, projections of adult population size may prove unreliable.

6.0 DESCRIPTION OF HABITAT

6.1 HABITAT DESCRIPTION

Climate, physiographic, and hydrographic differences separate the Atlantic ocean from the Gulf of Maine to Florida into two distinct areas: the New England) Middle Atlantic Area and the South Atlantic Area, with the natural division occurring at Cape Hatteras. These differences result in major zoogeographic faunal changes at Cape Hatteras (Briggs 1974).

The New England region from Nantucket Shoals to the Gulf of Maine includes Georges Bank, one of the worlds most productive fishing grounds. The Gulf of Maine, a deep cold water basin, is nearly sealed off from the open Atlantic by Georges and Browns Banks, which fall off sharply into the continental shelf. Vineyard and Nantucket Sounds and Cape Cod Bay are other major features in this region.

The New England - Middle Atlantic Area is fairly uniform physically and is influenced by many large coastal rivers and estuarine areas including Chesapeake Bay, the largest estuary in the United States, Narragansett Bay, Long Island Sound, the Hudson River, Delaware Bay, and the nearly continuous band of estuaries behind the barrier beaches from southern Long Island to Virginia. The southern edge of the region includes the estuarine complex of Currituck, Albemarle, and Pamlico Sounds, a 2500 square mile system of large interconnecting sounds behind the Outer Banks of North Carolina (Freeman and Walford 1974 a, b, c, d; 1976 a, b).

The South Atlantic region is characterized by three long crescent shaped embayments, demarcated by four prominent points of land: Cape Hatteras, Cape Lookout, and Cape Fear in North Carolina, and Cape Romain in South Carolina. Low barrier islands occur along the coast south of Cape Hatteras with concomitant sounds that are only a mile or two wide. These barriers become a series of large irregularly shaped islands along the coast of Georgia and South Carolina separated from the mainland by one of the largest coastal salt-water marsh areas in the world. Similarly, a series of islands border the Atlantic coast of Florida. These barriers are separated in the north by broad estuaries which are usually deep and continuous with large coastal rivers, and in the south by narrow, shallow lagoons (Freeman and Walford 1976 b, c, d).

The continental shelf (characterized by water less than 650 feet in depth) extends seaward approximately 120 miles off Cape Cod, narrows gradually to 70 miles off New Jersey, and is 20 miles wide at Cape Hatteras. South of Cape Hatteras, the shelf widens to 80 miles near the Georgia- Florida border, narrows to 35 miles off Cape Canaveral, Florida and is 10 miles or less off the southeast coast of Florida and the Florida Keys. The shelf is at its narrowest, reaching seaward only 1.5 miles, off West Palm Beach, Florida.

Surface circulation is generally southwesterly on the continental shelf during all seasons of the year, although this may be interrupted by coastal indrafting and some reversal of flow at the northern and southern extremities of the area. There may be a shoreward component to this drift during the warm half of the year and an offshore component during the cold half. The direction of this drift, fundamentally the result of

temperature-salinity distribution, is largely determined by the wind. A persistent bottom drift at speeds at tenths of knots per day extends from beyond mid-shelf toward the coast and eventually into the estuaries.

Water temperatures range from less than 35° F in the New York Bight in February to approximately 80° F off Cape Hatteras in August. The annual range of surface temperatures at any location may be 25° F in slope waters to greater than 35° F near shore. The vertical thermal gradient is minimized during winter. In late April to early May, a thermocline develops in shelf waters except over Nantucket Shoals where storm surges retard thermocline development. The thermocline persists through the summer until surface waters begin to cool in early autumn. By mid-November surface to bottom temperature along the shelf is nearly homogeneous.

Coastwide, an annual salinity cycle occurs as the result of freshwater stream flow and the intrusion of slope water from offshore. Water salinities near shore average 32 ppt, increase to 34-35 ppt along the shelf edge, and exceed 36.5 ppt along the main lines of the Gulf stream. Mean salinity values during the year vary from about 32 ppt to 34 ppt depending on depth and location.

6.2. HABITAT CONDITION

Marine fisheries scientists from several areas along the Atlantic coast, from Florida to Maine, indicated that almost all the estuarine and near shore waters in their states serve as important habitat for juvenile and adult bluefish. These areas are important habitat for bluefish in Florida (J. Kimmel pers. comm.) and South Carolina (E. Joseph pers. comm.). In North Carolina, although bluefish do not utilize nursery areas with relatively low salinities (less than 15 ppt), they are regularly collected by mongoose trawls in eastern Pamlico Sound and near Roanoke Island in the vicinity of inlets (W. Hogarth pers. comm.). Young bluefish (6 to 15 inches) are common during summer and fall in high salinity estuaries from Core Sound, North Carolina, and south. From spring through mid-winter, juvenile and adult bluefish are common in the nearshore ocean throughout the North Carolina coastal area and larger fish are common from Cape Lookout northward. During winter, large bluefish are located in areas well beyond three miles from shore, especially from Cape Hatteras northward.

In Georgia, bluefish utilize most of the tidally influenced waters, rarely appearing in fresh and low salinity (0-10 ppt) areas (D. Harris pers. comm). During summer and early fall, high salinity salt marsh tidal creeks and rivulets, in this state, serve as important nursery areas for juveniles. Juvenile and adult bluefish utilize all areas containing abundant prey, including tidal creek, river, bay, and beach areas. Larger bluefish are seasonally abundant in temperate/subtropical reef areas located 11 to 50 miles offshore.

In Maryland, bluefish eggs have been reported as far inshore as southern Chesapeake Bay with eggs and larvae most abundant in surface waters (Jones *et al.* 1988). Seasonally, juvenile and adult bluefish occur along Maryland coastal beaches in near shore waters and are widely distributed in Chesapeake Bay. Juvenile bluefish have been sampled in almost all the estuarine areas in the state of New Jersey including Raritan Bay, Manasquan River, Barnegat Bay and its tributaries, Little Egg Harbor Bay, Mullica River, Great Bay, Great Egg Harbor River and Bay, and the Hereford Inlet-Grassy Sound area (B. Halgren pers comm). It's probable that other inlet areas and embayments that haven't been sampled also serve as nursery areas for juvenile bluefish. In addition, New Jersey's bays and nearshore coastal waters are important feeding areas for migrating juvenile and adult bluefish.

In New England, virtually every cove, embayment, and river mouth along the Connecticut shoreline is important as nursery and feeding habitat for bluefish (L. Gunn pers. comm.). Narragansett Bay and it tributaries, Mount Hope Bay and its tributaries, Little Narragansett Bay and the Pawacatuck River, coastal ponds, and the nearshore coastal zone, all serve as nursery areas for juvenile bluefish in Rhode Island waters (T. Lynch pers. comm.). In addition, adult bluefish utilize these same waters as they migrate along the coast. Juvenile and adult bluefish seasonally occupy all the bays and estuaries as well as nearshore and offshore waters in the state of Massachusetts (D. Kolek pers. comm.). In addition, juvenile bluefish occur in estuaries as far north as the southern and mid-coastal areas of the state of Maine (W. Brennan pers. comm.). However, Maine estuaries serve primarily as feeding and growing areas for bluefish larger than 4 pounds.

Obviously estuarine, coastal, and continental shelf areas are important habitat for juvenile and adult bluefish. However, human population shifts to coastal areas and associated industrial and municipal expansion have accelerated competition for use of the same habitats. By 1990, 75% of the US population will live within 50 miles of the coastlines including the Great Lakes (USDC 1985d). Increasing efforts to develop new or alternate sources of energy are further stressing habitats of important living marine resources. As a result, these habitats have been substantially reduced and continue to suffer the adverse effects of dredging, filling, coastal construction, energy development, pollution, waste disposal, and other human related activities. For ex-

ample, there was an average annual loss of 104,000 acres of wetlands from 1954 to 1978 (48 *FR* 53142 - 53147). This was a ten fold increase in annual acreage lost compared to the period between 1780 and 1954.

Recently, Congress requested the Office of Technology Assessment (OTA) to assess the status of waste disposal in marine environments (OTA 1987). In general, OTA determined that estuarine and coastal waters were severely degraded across the nation and that "many of the adverse impacts on marine waters and organisms are caused by the introduction of pollutants through the disposal of wastes." These wastes include municipal sewage sludge, industrial wastes, dredged materials, industrial and municipal effluents, and urban and agricultural runoff. Based on their assessment, OTA concluded:

1. "Estuaries and coastal waters around the country receive the vast majority of pollutants introduced into marine environments. As a result, many of these waters have exhibited a variety of adverse impacts, and their overall health is declining or threatened."

2. "In the absence of additional measures, new or continued degradation will occur in many estuaries and some coastal waters around the country during the next few decades (even in some areas that exhibited improvements in the past)."

3. "In contrast, the health of the open ocean generally appears to be better than that of estuaries and coastal waters. Relatively few impacts from waste disposal have been observed, partly because the open ocean has been subject to relatively little waste disposal and because wastes are typically dispersed and diluted. Uncertainty exists, however, about the ability to discern impacts in the open ocean". (Note, however, that studies which would detect these impacts in the open ocean have not been conducted.)

OTA (1987) determined that municipal and industrial discharges, sewage sludge, and dredged material accounted for most of the pollutants found in estuary and coastal waters along the North Atlantic coast. OTA (1987) identified Buzzard's Bay, Boston Harbor, Narragansett Bay, Long Island Sound, the New York Bight, and Chesapeake Bay as specific areas that were severely polluted or degraded in this region. Contaminated sediments, containing excessive concentrations of organic chemicals, metals and pathogens have been identified in Boston Harbor, New Bedford Harbor, the New York Bight, Raritan Bay, Hudson River estuary, the Patapsco River around Baltimore, and the James River estuary. Contaminated water and sediments in the North Atlantic have had adverse impacts on marine organisms. Fish kills, increases in fish diseases and abnormalities, and restrictions on commercial and recreational harvest of both finfish and shellfish have occurred as the result of this pollution (OTA 1987).

Currently, municipal sewage sludge and industrial waste are dumped in two areas along the North Atlantic coast: the New York Bight and deep water sites 100 miles east of Delaware Bay (OTA 1987). In 1985, approximately 7 million wet metric tons (15.4 million pounds) of municipal sewage sludge, several billion gallons of raw sewage, and 8 million wet metric tons (17.6 million pounds) of dredge spoils were dumped in the Bight. Routine dumping of municipal sewage sludge and dredge spoils probably contributed to the depletion of oxygen in the New York Bight during the summer and early autumn of 1976. Near anoxic, and in places, anoxic water was located approximately 4 miles off New Jersey and covered an area about 100 miles long and 40 miles wide during the most critical phases of the depletion (Sharp 1976). The most commercially important species affected by the anoxia were surf clam, red hake, lobster and crabs. Finfish were observed to be driven to inshore areas to escape the anoxia, or were trapped in water with concomitant high levels of hydrogen sulfide (Steimle 1976). These anoxic waters probably blocked the migration of medium bluefish, 3-12 pounds, north of New Jersey (Freeman and Turner 1977). Oxygen levels in 1985, in some areas of the Bight, approached the low values observed in 1976 (OTA 1987).

Along the South Atlantic coast, nonpoint sources (runoff, precipitation, atmospheric deposition, underground transport, and others) are responsible for most of the pollutants in estuaries and coastal waters (OTA 1987). In addition, municipal wastes and elevated concentrations of metals and organic chemicals cause significant pollution problems in densely populated and industrial areas. The forest products industry is responsible for most of the industrial effluent along this area of the coast. As in the North Atlantic, pollutants have had adverse impacts on fish and shellfish populations. Specifically, pollutants have been linked to fish kills, depressed populations of benthic organisms, fish disease, and declines in both commercial and recreational fisheries in South Atlantic waters (OTA 1987).

Sediments and biota in specific areas along the Atlantic coast contain elevated levels of PCBs (OOMA 1987). High levels of PCBs found in bluefish sampled in coastal and estuarine waters of New Jersey (Belton *et al.* 1982) resulted in notices by the New Jersey Office of Cancer and Toxic Substances Research which warned that bluefish should not be consumed by humans or, if eaten, cooked in manner to eliminate as much oily tis-

sue as possible. Similarly, the Massachusetts Director of Public Health prohibited the taking of fish, including bluefish, from New Bedford Harbor because of PCB contamination.

A federal survey of PCBs in Atlantic coast bluefish was recently conducted by the National Oceanic and Atmospheric Administration in cooperation with the Food and Drug Administration and the Environmental Protection Agency (NOAA/FDA/EPA 1986). Bluefish were collected seasonally from 1984 to 1986 at 12 sites along the Atlantic coast from New England to Florida. Samples included fish in three size categories: small (less than 11.8" FL or approximately 13.3" TL), medium (11.8-19.7" FL or approximately 13.3-22.2" TL), and large (greater than 19.7" FL or approximately 22.2" TL). None of the small or medium fish collected at any site contained PCB concentrations which exceeded the FDA tolerance level of 2 parts per million (ppm) in edible fish. However, at every site, some large bluefish did exceed these levels. Greater than 45% of the large fish sampled from the New York Bight in October/November contained PCB in excess of 2 ppm. Similarly, more than 27% of the large bluefish collected from New England in August and greater than 23% of the large bluefish collected in North Carolina in April exceeded the FDA tolerance level.

The cooperating agencies recommended no action be taken regarding the interstate commerce of commercially caught bluefish (NOAA/FDA/EPA 1987). However, for anglers who repeatedly catch and eat bluefish, they recommended a maximum intake of 1 microgram of PCBs per kilogram body weight per day. Based on their estimates of PCB intake by recreational fishermen, they indicated it was unnecessary to control human consumption of bluefish which were less than 19.7 in (500 mm), that is, the maximum intake would not be exceeded. However, the cooperating agencies recommended that public health authorities in each state should consider issuing health advisories to limit the amount of large bluefish (greater than 19.7" or 500 mm FL) that may be safely consumed by fishermen and their families.

Although PCBs are suspected carcinogens to humans, comprehensive research has not yet been done on the significance of elevated body burdens on the fish themselves, or on reproduction processes and subsequent recruitment of larval, juvenile, and pre-recruits to adult stocks. Whereas laboratory and field effects of a range of organic contaminants have been measured, there is little understanding of how contaminants such as PCBs affect the behavior, biochemistry, genetics, or physiology of these fish at either the lethal or sublethal level. It is significant that where elevated levels of PCBs have been reported in the marine environment they have generally been associated with elevated levels of toxic heavy metals, petroleum hydrocarbons, and other contaminants.

The federal PCB study also assessed concentrations of organohalogen pesticides in bluefish collected along the coast. No significant concentrations of pesticide residues were found. However, from 1976 to 1988, the Virginia State Board of Health prohibited the taking, distribution, and consumption of bluefish from designated portions of the James River and its tributaries because of high concentrations of Kepone (chlordecone). The prohibition was removed in July, 1988.

6.3. CAUSES OF POLLUTION AND HABITAT DEGRADATION

6.3.1. General Habitat Degradation Threats

The Council, in efforts to coordinate with NMFS, has adopted the NMFS Regional Action Plan (USDC 1985d), which identified environmental threats as potential issues that may affect bluefish habitat.

Estuarine and coastal lands and waters are used for many purposes that often result in conflicts for space and resources. Some uses may result in the absolute loss or long term degradation of the general aquatic environment or specific aquatic habitats, and pose theoretically significant, but as yet unquantified, threats to the biota and their associated habitats. Issues arising from these activities, and the perceived threats associated with them, are of serious concern to the public.

Multiple-use issues are constantly changing, as are the real or perceived impacts of certain activities on living marine resources. The coastal and oceanic activities that generate these issues can threaten living marine resources and their habitats. Threats to resources occur when human activities cause changes in physical habitat, water and sediment chemistry, and structure and function of biological communities.

The following discussion identifies and describes each multiple use issue and the potential threats associated with that issue (USDC 1985d). For the purposes of this discussion, an "issue" is a point of debate or controversy evolving from any human activity, or group of activities, that results in an effect, product, or consequence. Environmental and socio-economic issues remaining to be resolved satisfactorily with regard to their impacts on marine organisms, their habitats, and man developed from the multiple, often conflicting uses of coastal lands and waters.

6.3.1.1. Waste Disposal and Ocean Dumping

The Atlantic Ocean off the northeastern United States has been and continues to be used for the disposal of wastes, including sewage sludge, dredged material, chemical wastes, cellar dirt, and radioactive material. Some waste treatment methods, such as chlorination, pose additional problems to aquatic species. Habitats and associated organisms have been degraded by long term ocean disposal, particularly of municipal wastes. Municipal waste pollution causes closure of shellfish beds,and occasionally, of public swimming areas. Additional research on the impacts of ocean disposal at deep water dump sites is urgently needed (USDC 1985d). A very recent potentially serious problem is the at-sea incineration of toxic wastes.

Ocean disposal of sewage sludge, industrial waste products, dredged material, and radioactive wastes degrades water quality and associated habitats. There are active dump sites for industrial chemical wastes, trace metals, suspended solids, and organic wastes in the New York Bight and a deep water dump site 106 miles offshore (OTA 1987). Concentrations of heavy metals, pesticides, insecticides, petroleum products, and other toxics all contribute significantly to degradation of waters off the northeastern States. Organic loading of estuarine and coastal waters is an emerging problem. Symptoms of elevated levels include excessive algae blooms, shifts in abundance of algal species, biological oxygen demand (BOD) increases in sediments of heavily affected sites, and anoxic events in coastal waters. Changes in biological components are a consequence of long term ocean disposal. Harmful human pathogens and parasites can be found in biota and sediments in the vicinity of ocean dump sites. In addition, shellfish harvesting grounds have been closed because of excessive concentrations of pathogenic and indicator species of bacteria.

The deeper waters offshore present a different set of problems, compared with shallower waters, with respect to oceanic currents, warm core rings, and other physical and chemical oceanographic processes. Furthermore, less is known and understood about deep water ecosystems than their shallow water counterparts. Because bluefish utilize these same waters in offshore migrations and spawning (Fig. 2), it is imperative that studies be undertaken to reveal the fate and role of contaminants in deep water ecosystems, and to refine information about the shelf ecosystem through which these materials may be transported (USDC 1985d).

6.3.1.2. Coastal Urbanization

Tremendous development pressures exist throughout the coastal area of the Northeast Region. More than 2000 permit applications are processed annually by the NMFS Northeast Region for commercial, industrial, and private marine construction proposals. The proposals range from generally innocuous, open pile structures, to objectionable fills that encroach into aquatic habitats thereby eliminating their productive contribution to the marine ecosystem. The projects range from small scale recreational endeavors to large-scale commercial ventures to revitalize urban waterfronts.

Associated with marine construction are a number of impacts which affect living marine resources directly, and indirectly through habitat loss or modification. Many of these projects are of sufficient scope to singly cause significant, long term or permanent impacts to aquatic biota and habitat; however, most are small scale causing minor losses or temporary disruptions to organisms and environment. The significance of small scale projects lies in the cumulative effects resulting from the large number of these activities.

Urban construction is not limited to the shore, but upland development,too, which can adversely impact aquatic areas. One of the major problems arising from urban development is the increase in nonpoint source contamination of estuarine and coastal waters. Highways, parking lots, and the reduction in terrestrial vegetation and fringe marshes facilitate runoff loaded with soil particles, fertilizers, biocides,heavy metals, grease and oil products, PCBs, and other material deleterious to aquatic biota and their habitats. Atmospheric emissions resulting from certain industrial processes contain sulphurous and nitrogenous compounds that contribute to acid precipitation, a growing source of concern in some fresh water sections of tidal streams. Nonpoint pollution is incorporated in water, sediments, and living marine resources. Although nonpoint sources of pollution do not usually cause acute problems, they can contribute to subtle changes and increases of contaminants in the environment (USDC 1985d).

As residential, commercial, and industrial growth continues, the demand for potable, process, and cooling water, flow pattern disruption,waste water treatment and disposal, and electric power increases. As ground water resources become depleted or contaminated, greater demands are placed on surface water through dam and reservoir construction or some other method of freshwater diversion. The consumptive use of significant volumes of surface freshwater causes reduced river flow that can affect down stream salinity regimes as saline waters intrude further upstream.

Water that is not lost through consumptive uses is returned to the rivers or streams as point source waste water discharges. Although the waste water generally is treated, it still contains contaminants. Domestic waste water contains residual chlorine compounds, nutrients, suspended organic and inorganic compounds, trace metals and bacteria. Industrial discharges may contain many dissolved and suspended pollutants, including metals, toxic substances, halogenated hydrocarbons, petroleum products, nutrients, organics and heat.

Construction in and adjacent to waterways often results in elevated suspended solids emanating from the project area. The distance the turbidity plume moves from the point of origin is dependent upon tides,currents, nature of the substrate, scope of work, and preventive measures employed by the contractor. Excessive turbidities can abrade sensitive epithelial tissues, clog gills, decrease egg buoyancy, reduce light penetration; thereby affecting photosynthesis of phytoplanktonic and submerged vegetation, and cause localized oxygen depression. Suspended sediments subsequently settle, which can destroy or degrade productive shellfish beds and nursery sites.

The effects of turbidity and siltation are generally, but not always,temporary and short term. Other construction activities can result in permanent loss or long term disruption of habitat. Dredging can degrade productive shallow water and destroy marsh habitat or resuspend pollutants, such as heavy metals, pesticides, herbicides, and other toxins. Concomitant with dredging is spoil disposal, which traditionally occurred on marshes or in open water. Shoreline stabilization can result in gross impacts, through filling of inter-tidal and sublittoral habitat; or cause subtle effects, resulting in the elimination of the ecotone between shore and water, or through the scouring of benthic habitat by reflective wave energy.

Sewage treatment effluent produces changes in biological components as a result of chlorination and increased contaminant loading. Sewage treatment plants constructed where the soils are highly saturated often allow suburban expansion in areas that would have otherwise remained undeveloped, thereby exacerbating already severe pollution problems in some areas.

Another aspect of urban development is nonpoint source pollution, which is caused by land based activities that result in materials being transported to aquatic areas. Certain pollutants (pathogens, phosphorus, sediments, heavy metals, and acid precipitation) from nonpoint sources are demonstrable problems in Atlantic coastal and estuarine waters (USDC 1985d). Nonpoint source pollution appears to be a chronic threat that will affect the Northwest Atlantic Ocean in the upcoming decades.

Diversion of freshwater to other streams, reservoirs, industrial plants, power plants, and municipalities can change the salinity gradient downstream and displace spawning and nursery grounds. Patterns of estuarine circulation necessary for larval and plankton transport could be modified. Such changes can expand the range of estuarine diseases and predators associated with higher salinities that affect commercial shellfish.

Industrial waste water effluent is regulated by EPA through permits. While the NPDES provides for issuance of waste discharge permits as a means of identifying, defining, and where necessary, controlling virtually all point source discharges, the problems remain due to inadequate monitoring and enforcement. It is not possible presently to estimate the singular, combined, and synergistic effects on the ecosystem impacted by industrial (and domestic) waste water.

6.3.1.3. Port Development and Utilization

All ports require shoreside infrastructure, mooring facilities, and adequate channel depth. Ports compete fiercely for limited national and international markets and continually strive to upgrade their facilities. Dredging and dredged material disposal, filling of aquatic habitats to create fast land for port improvement or expansion, and degradation of water quality are the most serious perturbations arising from port development. All have well recognized implications to living marine resources and habitat.

6.3.1.4. Agricultural Development

Agricultural development can affect fisheries habitat directly through physical alteration and indirectly through chemical contamination. Fertilizers, herbicides, insecticides, and other chemicals are washed into the aquatic environment with the uncontrolled nonpoint source runoff draining agricultural lands. These chemicals can affect the growth of aquatic plants, which in turn affects fish, invertebrates, and the general ecological balance of the water body. Additionally,agricultural runoff transports animal wastes and sediments that can affect spawning areas, and generally degrade water quality and benthic substrate. Excessive uncontrolled or improper irrigation practices often exacerbate the contaminant flushing as well as deplete and contaminate ground water. One of the most serious consequences of erosional runoff is that the fre-

quent dredging of navigational channels results in dredged material that requires disposal, often in areas important to living marine resources (USDC 1985d).

6.3.1.5. Coastal and Wetland Use and Modification

Intense population pressures have adversely affected many estuarine and marine habitats along the Atlantic coast. Demand for land suitable for home sites, resorts, marinas, and industrial expansion has resulted in the loss or alteration of large areas of wetlands through dredging, filling, diking, ditching, upland construction, and shoreline modification.

As residential and commercial use of coastal lands increased, so does the recreational use of coastal waters. Marinas, public access landings, private piers, and boat ramps all vie for space. Boating requires navigational space, a place to berth for some boat owners, and boat yards for repair and storage.

As population densities increase in these areas, greater pressures are exerted to develop remaining lands, and the demand for nuisance insect control on adjacent undeveloped wetlands either through chemical or physical (i.e., ditching) methods, also intensifies.

In addition to residential and recreational development, other competing uses further contribute to the destruction or modification of wetland areas. Agricultural development can significantly affect wetlands. Common flood control measures in low lying coastal areas include dikes, ditches, and stream channelization. Wetland drainage is practiced to increase tillable land acreage. Wildlife management techniques that also destroy or modify wetland habitat include the construction of dredged ponds, low level impoundments, and muskrat ditches and dikes (USDC 1985d).

The NMFS priorities on the multiple use issues and threats to living marine resources were identified in the RAP document (USDC 1985d). Activities identified as high priority included urban and port development,ocean disposal, dams and agricultural practices. Medium priority activities included industrial waste discharges, domestic waste discharges, and OCS oil and gas development.

6.4. PROGRAMS TO PROTECT, RESTORE, PRESERVE, AND ENHANCE THE HABITAT OF THE STOCKS FROM DESTRUCTION AND DEGRADATION

The MFCMA provides for the conservation and management of living marine resources (which by definition includes habitat), principally within the EEZ, although there is concern for management throughout the range of the resource. The MFCMA also requires that a comprehensive program of fishery research be conducted to determine the impact of pollution on marine resources and how wetland and estuarine degradation affects abundance and availability of fish (section 6.5). Additionally, the MFCMA provides [302(i)] that "Each Council may comment on, or make recommendations concerning, any activity undertaken, or proposed to be undertaken, by any State or Federal agency that, in the view of the Council, may affect the habitat of a fishery resource under its jurisdiction. Within 45 days after receiving such a comment or recommendation from a Council, a Federal agency must provide a detailed response, in writing, to the Council regarding the matter."

Other NMFS programs relative to habitat conservation are found in the Marine Mammal Protection Act of 1972, the Endangered Species Act of 1973, and the Anadromous Fish Conservation Act of 1965. NMFS shares responsibilities with the FWS for conservation programs under these laws.

In addition to the above mentioned NMFS programs, other laws regulate activities in marine and estuarine waters and their shorelines. Section 10 of the River and Harbor Act of 1899 authorizes the Army Corps of Engineers (COE) to regulate all dredge and fill activities in navigable waters (to mean high water shoreline). Section 404 of the Clean Water Act of 1980 authorizes EPA to regulate the discharge of industrial and municipal wastes into waters and adjacent wetlands. EPA has delegated authority under Section 404 to the COE to administer all dredge and fill activities under one program. Section 402 of the Clean Water Act authorizes EPA, or delegated States with approved programs, to regulate the discharge of all industrial and municipal wastes. The EPA and COE also share regulatory responsibilities under the Marine Protection, Research, and Sanctuaries Act of 1972.

All of the activities regulated by these programs have the potential to adversely affect living marine resources and their habitat. NMFS, EPA, the FWS, and State fish and wildlife agencies have been mandated to review these activities, assess the impact of the activities on resources within their jurisdiction, and comment on and make recommendation to ameliorate those impacts to regulatory agencies Review and comment authority is provided by the Fish and Wildlife Coordination Act of 1934 (as amended 1958) and the National Environ-

mental Policy Act of 1969. Consultative authority extends to all projects requiring federal permits or licenses, or that are implemented with federal funds.

Other legislation under which NMFS provides comments relative to potential impacts on living marine resources, their associated habitats, and the fisheries they support include, but are not limited to, the Coastal Zone Management Act of 1972; the Marine Protection, Research, and Sanctuaries Act of 1972; and the Endangered Species Act of 1973 (Section 7 consultation).

A more detailed discussion of the pertinent legislation affecting their protection, conservation, enhancement, and management of living marine resources and habitat can be found in the NMFS Habitat Conservation Policy (48 *FR* 53142-53147).

In addition, NMFS and the other federal resource agencies are involved in other programs with the States (for example, NMFS Saltonstall-Kennedy and Wallop-Breaux programs) that provide grants to conserve fish habitats and improve fisheries management.

Individual States also regulate wetlands, which complements federal habitat conservation programs.

6.5. HABITAT CONSERVATION AND RESTORATION RECOMMENDATIONS

The Councils are deeply concerned about the effects of marine and estuarine habitat degradation on fishery resources. They have a responsibility under the MFCMA to take into account the impact of habitat degradation on bluefish. The following recommendations are made in light of that responsibility.

1. All available or potential natural habitat for migratory bluefish should be preserved by encouraging management of conflicting uses to assure access by the fish to essential habitat and maintenance of high water quality standards to protect bluefish migration, spawning, nursery, overwintering, and feeding areas.

2. Filling of wetlands should not be permitted in or near nursery areas. Mitigating or compensating measures should be employed where filling is unavoidable. Project proponents must demonstrate that project implementation will not negatively affect bluefish, its habitat, or its food sources.

3. Best engineering and management practices (for example, seasonal restrictions, dredging methods, disposal options, etc.) should be employed for all dredging and in-water construction projects. Such projects should be permitted only for water dependent purposes when no feasible alternatives are available. Mitigating or compensating measures should be employed where significant adverse impacts are unavoidable. Project proponents should demonstrate that project implementation will not negatively affect bluefish, its habitat, or its food sources.

4. The disposal of sewage sludge, industrial waste, and contaminated dredged material in bluefish habitat including the New York Bight should not be allowed. Advanced garbage, industrial waste, and sludge handling techniques are now available and must be encouraged. The Mid-Atlantic Fishery Management Council at its January 1988 meeting adopted measures to address specific problems of ocean dumping and endorsed the positions taken by the New England Council on this issue. The combination of the Mid-Atlantic Council adopted measures and the endorsed New England Council measures present a reasonable course of action that should lead to resolution of the immediate illegal area dumping problems and the longer term environmental problems associated with ocean dumping.

The measures are:

a. The Council go on record in opposition to ocean dumping of industrial waste, sludge and other harmful materials.

b. The Council insists that appropriate agencies enforce all existing laws and regulations until ocean dumping ceases. Emphasis must be placed on prevention of short dumping and required release rates.

c. The Mid-Atlantic Council request EPA to require each permitted ocean dumping vessel be required to furnish detailed information concerning each trip to the dump site. This might be in the form of transponders; locked Loran C recorder plots of trip to and from the dump site; phone call to EPA when vessel leaves and returns to port; or other appropriate method to ascertain that vessels dump only in the 106 area and take legal action to abate illegal (short or improper) material dumping.

d. The Mid-Atlantic Council request fishermen and other members of the public to report to the EPA, Coast Guard and the Mid-Atlantic Council any observance of vessels dumping other than in the ap-

proved dump sites. A list of permitted vessels would accompany this request with the additional request for reporting of any vessel not on the approved list. The report should include date, time, location (longitude, latitude, Loran bearings), vessel name of the dumping vessel, the nature of the material dumped, name of reporting individual and vessel. This would enable EPA to take appropriate action against illegal dumping.

e. Direct the Mid-Atlantic Council's Executive Director to contact necessary Congressional delegations relative to strengthening current measures being considered to cease ocean dumping by a date certain.

f. The Council strongly urges state and federal environmental agencies to reduce the amount of industrial waste, sludge and other harmful materials discharged into rivers and the marine environment, and for these agencies to increase their surveillance monitoring and research of waste discharge. The Council requests that the Environmental Protection Agency implement and enforce all legislation, rules and regulations with emphasis on the best available technology requirements and pre-treatment standards.

g. The Council take appropriate steps under the Magnuson Act and any other federal laws and regulations to assure the required responses to its concerns and opposition to dump site 106.

5. The siting of industries requiring water diversion and large volume water withdrawals should be avoided in bluefish nursery areas. Project proponents must demonstrate that project implementation will not negatively affect bluefish, its habitat, or its food supply. Where such facilities currently exist, best management practices must be employed to minimize adverse effects on the environment.

6. Dechlorination facilities or lagoon effluent holding facilities should be used to destroy chlorine at sewage treatment plants and power plants.

7. No toxic substances in concentrations harmful (synergistically or otherwise) to humans, fish, wildlife, and aquatic life should be discharged. The EPA's Water Quality Criteria Series should be used as guidelines for determining harmful concentration levels. Use of the best available technology to control industrial waste water discharges must be required in areas critical to the survival of bluefish. Any new potential discharge into critical areas must be shown not to have a harmful effect on bluefish.

8. The EPA and States should review their water quality standards relative to bluefish nursery areas and make changes as needed.

9. The EPA and States should establish water quality standards for the coastal zone specifically with respect to the habitat requirements of bluefish migratory passage and feeding.

10. The EPA should establish water quality standards for the EEZ sufficient to maintain edible bluefish.

11. Water quality standards in nursery, feeding, and areas of migratory passage should be enforced rigidly by State or local water quality management agencies, whose actions should be carefully monitored by the EPA. Where State or local management efforts (standards/ enforcement) are deemed inadequate, EPA should take steps to assure improvement; if these efforts continue to be inadequate, EPA should assume authority, as necessary.

12. Appropriate measures must be taken as soon as possible to reduce acid precipitation and runoff into estuaries and nearshore waters.

13. EPA and appropriate agencies must establish and approve criteria for vegetated buffer strips in agricultural areas adjacent to bluefish nursery areas to minimize pesticide, fertilizer, and sediment loads to these areas critical for bluefish survival. The effective width of these vegetated buffer strips varies with slope of terrain and soil permeability. The Soil Conservation Service and other concerned Federal and State agencies should conduct programs and demonstration projects to educate farmers on improved agricultural practices that would minimize the wastage of pesticides, fertilizers, and top soil and reduce the adverse effects of these materials on bluefish nursery areas.

6.6. HABITAT RESEARCH NEEDS

The new National Status and Trends Program of NOAA (OOMA 1987) should assist in making intelligent decisions involving the use and allocation of resources in the nation's coastal and estuarine regions. These decisions require reliable and continuous information about the status and trends on environmental quality in the marine environment. Four general objectives have been established for the early years of the National

Status and Trends Program (OOMA 1987). Those objectives are (1) to establish a national data base using state of the art sampling, preservation, and analysis methodologies; (2) to use the information in the data base to estimate environmental quality, to establish a statistical basis for detecting spatial and temporal change, and to identify areas of the nation that might benefit from more intensive study; (3) to seek and validate additional measurement techniques, especially those that describe a biological response to the presence of contaminants; and (4) to create a cryogenic, archival specimen bank containing environmental samples collected and preserved through techniques that will permit reliable analysis over a period of decades. While the Council concurs with these objectives, efforts by this program or other NMFS programs also must look at specific issues which include:

1. It is necessary that scientific investigations be conducted on bluefish to emphasize the long term, synergistic effects of combinations of environmental variables on, for example, reproductive capability, genetic changes, and suitability for human consumption.

2. The Councils recommend the following areas for future habitat directed investigations: field studies on the direct and indirect effects of contaminants on mortality of bluefish; studies on the interactive effects of pH, contaminants, and other environmental variables on survival of bluefish; and continued studies on the importance of factors controlling the production and distribution of food items that appear in the diet of young bluefish.

7. DESCRIPTION OF FISHING ACTIVITIES

7.1. COMMERCIAL FISHERY

Bluefish are pursued in both state and EEZ waters by a variety of commercial gears (Table 8). Coastwide, 1976 to 1987 combined, most bluefish (24%) were landed by fish otter trawls followed next by anchor gill nets (other than sea bass anchor gill nets). Fish pound nets and runaround gill nets, also took appreciable numbers of bluefish as did common and long haul seines and drift gill nets (other than shad drift gill nets). In addition, hand and troll lines took approximately 10% of the total catch. In fact, in the states of Massachusetts, New York, South Carolina, and Georgia, more bluefish were landed commercially by hand lines from 1976 to 1987 than any other gear type (Table 9).

By state, beach haul seines harvested a significant portion of bluefish in New York and South Carolina whereas fish otter trawls were predominant in Rhode Island, Connecticut, and North Carolina (Table 9). Commercial fishermen using pound nets harvested the most bluefish in Maryland and Virginia from 1976 to 1987, 37% and 63%, respectively. Some type of gill net caught significant amounts of bluefish in all states. Almost all of the bluefish in Maine and New Hampshire were caught by gill nets and this gear type was also predominant in Delaware waters. Runaround gill nets were predominant in New Jersey and Florida.

Data for specific gear types were combined into general categories to determine the relative importance of gears over time (Table 10). Since 1976, the percent of total bluefish landings attributed to otter trawls and gill nets has generally increased whereas the percent of total bluefish landings harvested by pound nets, traps, and haul seines has shown a decreasing trend. Between 1976 and 1987, the percent of bluefish caught by the other major gear types (runaround gill nets, paired trawls, purse seines, troll and hand lines) has remained relatively consistent.

Catch per unit effort (pounds of bluefish landed per day fished) varied by vessel size category and commercial gear type (Table 11). Runaround gill nets had the highest catch per unit of effort of any gear type from 1982 to 1985. In general, smaller runaround gill net vessels (5 to 50 tons) outperformed mid-sized vessels (5 to 50 tons) whereas large vessels (greater than 50 tons) had extremely variable catch rates.

Since 1979, commercial landings have averaged approximately 14 million pounds per year or 10%, on average, of the total commercial and recreational catch combined. In 1987, for example, fishermen caught approximately 124 million pounds of bluefish of which commercial landings accounted for approximately 15 million pounds (Table 12). A total of 71% of the 1987 commercial landings came from state waters (Table 13). Coastwide from 1976 to 1987, an average of 73%, with a range of 65% to almost 90%, of bluefish harvested commercially were caught in water areas under state jurisdiction. However, in 1987, commercial fishermen in several states, Maine, New Hampshire, Rhode Island, South Carolina, and Georgia caught more bluefish in EEZ waters than in waters 0-3 nautical miles from shore.

By subregion, most bluefish were caught commercially in waters under state jurisdiction except in the North Atlantic subregion in 1985, 1986, and 1987 when EEZ landings were predominant (Table 14). In 1987, 42% of landings were in state waters in the North Atlantic, 77% in the Mid-Atlantic region, and 75% in the South At-

lantic. In the North Atlantic, there was a decreasing trend in the amount of bluefish caught in state waters since 1976 with a concomitant increase in the proportion of the catch from EEZ waters. Commercial landings in the Mid-Atlantic exceeded landings in the other two subregions each year from 1976 to 1987 except 1980, 1981, 1983, and 1984, when South Atlantic landings were predominant.

Seasonally, most commercially caught bluefish were harvested in state waters from May through October, a period of time when bluefish were also available to the majority of Atlantic coast anglers (Table 15). In the EEZ, average monthly landings for the period 1976 to 1987 peaked at 409 thousand pounds in February; the greatest amount of bluefish were caught between October and April. Coastwide, in state and EEZ waters combined, landings peaked in October with an average value of 1,429 thousand pounds.

In 1987, 69% of the total commercial landings came from four states: North Carolina (31%), New Jersey (17%), New York (11%), and Virginia (10%) (Table 16). From 1976 to 1978, more bluefish were harvested in Virginia waters than any other state; North Carolina predominated from 1979 to 1987.

7.2. RECREATIONAL FISHERY

Saltwater angling surveys were conducted for the entire Atlantic coast in 1960 (Clark 1962) and 1965 (Deuel and Clark 1968) by the US Fish and Wildlife Service and in 1970 (Deuel 1973) by the National Marine Fisheries Service. Beginning in 1979 and continuing to present, the NMFS has conducted annual Marine Recreational Fishing Statistical Surveys (MRFSS). This survey is designed to expand interview data on catch and angler effort from both on site creel census and telephone surveys to state and regional levels. The MRFSS distinguishes between fish available for identification and measurement by the interviewers (Type A), fish used as bait, filleted, or discarded dead (Type B1), and fish released alive (Type B2). The sum of types A, B1, and B2 comprise the total recreational catch whereas types A and B1 constitute total recreational landings.

The 1987 MRFSS indicated bluefish were the fish most sought by marine anglers in the North Atlantic, second only to summer flounder in the Mid-Atlantic, and fourth in preference for anglers in the South Atlantic (USDC 1988b). During 1987, bluefish comprised 29% by weight of all species caught by recreational fishermen along the Atlantic coast (Table 17). This percentage was slightly more than 27%, the mean value for the years 1979 to 1987, a period when more bluefish were caught (by weight) than any other marine recreational species. The 1979 to 1987 recreational catch represents a substantial increase over the 1960 to 1970 recreational harvest when bluefish averaged approximately 10% of all species caught by marine anglers along the Atlantic coast.

Bluefish were the predominant species (number) harvested by anglers in 1987. Bluefish were also predominant from 1979 to 1983, second only to summer and winter flounder in 1984 and 1985, respectively, and third after black sea bass and Atlantic croaker in 1986. Anglers caught over 32 million bluefish in 1987 with a mean weight of approximately 3.3 lbs per fish (Table 18). The bluefish catch in 1984 represented the lowest recorded harvest during the period 1979 to 1987. The recreational catch in 1987, approximately 109.5 million pounds exceeded the catch in 1984 and 1985, but was less than the catch in all other years from 1979-1987.

An analysis of the recreational catch by subregion, indicates more bluefish (number) were caught in the Mid-Atlantic than in the North and South Atlantic every year from 1979 to 1987, with the Mid-Atlantic catch ranging from approximately 13.6 to 26.8 million bluefish during this period (Table 19). Similarly, by weight, the recreational catch in the Mid-Atlantic exceeded the values in the other two subregions each year from 1979 to 1987, except 1986, with catch weights of approximately 47.8 to 110.6 million pounds during this period. In 1986, more bluefish (by weight) were caught in the North Atlantic than in the other two subregions. However, in most years, and on average, the weight of the Mid-Atlantic catch exceeded the New England and South Atlantic catch (Table 19).

Recreational fishermen harvested more bluefish (number) in inland and territorial sea waters than in the EEZ in 1987, with 81, 80, and 93% of all bluefish caught in state waters of the North, Middle, and South Atlantic, respectively (Table 20). In 1987, 72% and 65% of bluefish (by weight) were caught in state waters of the North Atlantic and Mid-Atlantic, whereas over 74% were caught in similar waters in the South Atlantic. By weight, the mean bluefish catch for the period 1979 to 1987 was almost equally divided between state and EEZ waters with 55%, 51%, and 62% of bluefish harvested in inland and territorial sea waters of the North Atlantic, Mid-Atlantic, and South Atlantic, respectively. In addition, as might be expected by migration patterns (Freeman and Turner 1977), mean weight of bluefish increased concomitant with increasing distance from shore in most years in all three subregions (Table 21). In 1987, the smallest and largest mean weights were measured for bluefish caught in the South Atlantic: 1.15 lbs for bluefish caught in inland waters and 8.11 lbs for bluefish caught in the EEZ.

In 1987, recreational fishermen using private/rental boats in state waters harvested approximately 3.5 and 9.3 million bluefish in the North Atlantic and Mid-Atlantic, respectively (Table 22). This mode represented the largest portion of the catch by mode and distance from shore in these subregions, and also accounted for most of the bluefish harvested along the entire Atlantic Coast, state and federal waters combined. In the South Atlantic, the greatest number of bluefish, over 2.1 million, were harvested in state waters by shore based anglers.

Coastwide, the largest biomass of bluefish, approximately 53.5 million lbs, was caught by anglers fishing from private or rental boats in state waters (Table 23). This predominance was observed in the North Atlantic and Mid-Atlantic subregions but not in the South Atlantic where anglers fishing from shore in state waters harvested the most bluefish by weight, approximately 3.6 million lbs. Although the mode party/charter ranked second in importance as a portion of the total coastwide catch, state and federal waters combined, anglers fishing from these boats caught the smallest amount of bluefish in the South Atlantic.

Directed fishing effort (trips) on bluefish increased steadily from 1960 (9.2 million) through 1980 (36.7 million), declined to 26.4 million trips in 1981, and then generally increased to the highest level of fishing effort, 36.9 million trips in 1987 (Table 24). Catch per effort (lbs/trip) peaked in 1981 and then trended downward to 2.97 in 1987.

Fishing effort on bluefish from 1979 through 1987 was highest in the Mid- Atlantic, intermediate in the South Atlantic and lowest in the North Atlantic subregion (Table 25). Although the total coastwide fishing effort on bluefish was consistently higher for the boat than for the shore-based fishery, the ratio of boat to shore effort differed among the three subregions. In the North Atlantic and Mid-Atlantic subregions, fishing effort by the boat fishery was usually two to three times greater than the effort expended by the shore fishery, but in the South Atlantic the reverse was usually true.

Anglers in New York harvested the highest percentage of all bluefish caught by recreational fishermen along the Atlantic coast, landing 23.4 and 24.7% of the total number of bluefish caught by Atlantic coast anglers in 1986 and 1987, respectively (Table 26). Other states in which recreational fishermen caught more than 10% of the total coastwide harvest of bluefish included Massachusetts, Rhode Island, and New Jersey in 1986 and Connecticut, New Jersey, and Maryland in 1987. In 1986, bluefish comprised nearly a quarter of all fish caught by anglers in the states of Connecticut, Rhode Island, and New York. In 1987, bluefish were most important to Rhode Island, Connecticut, New Jersey, and New York anglers, comprising over 20% of all marine fish caught by anglers in those states.

7.3. FOREIGN FISHING ACTIVITIES

The amount of bluefish taken by foreign fishing vessels has varied over the past 8 years, from a low of 40,300 pounds in 1985 to a high of 170,500 pounds in 1982 (Table 27). Bluefish is a prohibited species for harvest by foreign vessels and no quota exists for this species. As a result, the foreign catch of bluefish is incidental to other directed fisheries. Monthly catch data for 1985 indicates most bluefish were caught by foreign vessels fishing for squid in late fall and squid and mackerel in winter.

8.0. DESCRIPTION OF ECONOMIC CHARACTERISTICS OF THE FISHERY

8.1. COMMERCIAL FISHERY

The ex-vessel value of Atlantic bluefish landings increased steadily from $1.1 million in 1976 to $3.7 million in 1982 and has since decreased to $3.2 million in 1987 (Table 28). The average price per pound (1987 adjusted dollars) varied from $0.18 to $0.27 per pound from 1976 to 1987 with the prevailing ex-vessel price in 1987 of $0.21 per pound. In 1987, bluefish comprised 0.9% of the Atlantic coast total commercial landings by value. Bluefish ex-vessel value was highest for North Carolina in 1987 ($820,000), but relative to total landings by state, bluefish were most important to Delaware, contributing 9.8% of the ex-vessel value of all commercial landings in the state (Table 29).

The coastwide average ex-vessel bluefish price per pound for the period 1976 through 1987 varied by month with the lowest prices received in the fall (Table 30). With the exception of June through November, prices paid for bluefish landed from state waters were lower than prices paid for bluefish caught in the EEZ.

Although a time series of ex-vessel price data is available, a statistically significant and economically meaningful demand schedule is not evident. This is likely due to the undeveloped nature of the bluefish market, and the fact that most commercial landings are bycatch in fisheries directed at other species (for example, weakfish). Seemingly, commercial fishermen who choose not to discard bluefish bycatch are price takers in a limit-

ed spot market influenced by many changing factors. Hence, significant trends or shifts in the determinants of ex-vessel demand are not discernible at this time.

Employment in the commercial harvesting sector attributable to bluefish activity is difficult to determine. Since most landings are bycatch, it can be assumed that only a small amount of total Atlantic coast fishing vessel employment is dependent on bluefish.

8.2. RECREATIONAL FISHERY

Bluefish are important to the party and charter boat business along the Atlantic coast. In 1985, a total of 528 party and 1,997 charter boats operated out of Atlantic coast ports from Maine through Florida (Table 31). These vessels generated a yearly revenue of $160 million. However, documentation of the demand for bluefish fishing on party and charter boats and cost breakdowns per trip for specific regions along the coast are lacking.

In addition to party and charter boats, MRFSS data indicate 36% of bluefish (by weight) were caught recreationally from private vessels in 1985 (USDC 1986b). Private vessels range in size from small skiffs to large luxury yachts. It is not possible to determine either 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 a sizable initial investment and upkeep. Most private vessels are no doubt utilized for several different purposes and fish for several different species. Therefore, any expenditure and cost data would have to be prorated for bluefish fishing to account for this multi-purpose use.

Because of the importance of bluefish to recreational anglers, a 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. In 1985, Atlantic coast direct sales related to recreational fishing amounted to $2.6 billion (Table 32). These sales and services required 42 thousand person years of labor and generated wages of $522 million (SFI 1988a).

The report also included estimates of the economic activity specifically associated with bluefish. The estimates disaggregate the regional economic impacts to the particular species based on the percent of total trips where bluefish were reported as the target species. The minimum estimate uses the target percent as given. The maximum estimate assumes that those individuals, who did not identify a target species, have the same distribution of species preferences as those who did express a preference. The resultant ranges of estimates of the economic activity associated with the 1985 recreational bluefish fishery on the Atlantic coast are: retail sales -- $390.7 to $574.1 million; person years of employment -- 6,412 to 9,445; and wages and salaries -- $79.7 to $117.0 million (Table 32).

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.

Although a recreational demand curve for bluefish is unavailable, some studies have estimated the value of a recreational fishing day. Rockland (1983) presented value per trip for marine recreational fishing at nine sites in Delaware. This study used the Travel Cost Method with a variety of estimation approaches. The range of average values for the boat fishing sites was $20.58 to $39.90 per day, whereas the range for shore fishing was $37.47 to $62.53 per day. A study of recreational striped bass fishing on the Atlantic Coast presented estimates of $39 to $169 per day (Norton *et al.* 1983) A 1982 study conducted for the State of Florida derived estimates of $18.97 to $57.99 per day for all marine species (Bell *et al.* 1982).

The NMFS estimated that 2,512,000 shore-based and 4,300,000 boat based trips targeted bluefish in 1985 (USDC 1986b). An estimate of total expenditures made fishing for bluefish can be made by multiplying the number of trips by an estimate of average cost per day, but it is impossible to estimate the total non-monetary benefit without more sophisticated statistical techniques enabling an estimate of the marginal value per trip.

It is important to note that the average cost of a bluefish trip or fishing day is not equivalent to the marginal value of a recreationally caught bluefish. The distinction is sometimes overlooked when estimating economic impacts. Attributes of a recreational fishing day other than catching fish are valued by anglers, so all expenditures are not dependent on bluefish catch. The marginal value of bluefish catch must be estimated, and as with any normal good, marginal value declines with increasing quantity. Agnello (1989) determined the marginal value of recreationally caught bluefish by considering fishing success as a shift factor in the demand for bluefish trips. Using the travel cost method, estimates of marginal value for the first bluefish caught by the average angler ranged from $1.82 to $5.71 (1987 dollars) depending on the specification of the regression model. Estimates for the average bluefish, about four fish per angler, ranged from $.43 to $1.36, indicating a declining marginal value for each successive bluefish kept.

Clearly, the economic impacts associated with Atlantic coast recreational fishing for bluefish are significant. Estimates of aggregate economic value are not currently available, however.

8.3. PROCESSING

Bluefish is primarily a fresh fish product. It is generally iced both on board the vessel and at the dock during unloading before it is shipped to market. The limited extent of the fresh fish market has been one of the major factors constraining the commercial harvest of bluefish. Should methods become available to maintain a quality product over longer periods of time, and current efforts to develop markets in the central portions of the country prove successful, the demand for bluefish and bluefish products could increase. At a local level, demand for bluefish by processors is relatively low and the market can be saturated quickly. When this occurs, the price for bluefish drops to a low level and, consequently, fishermen target other species (LoVerde, Schaefer, and R. Ross pers. comm.).

A relatively small amount of bluefish is filleted and smoked each year. Slightly more than 2% of bluefish landed in 1983 were processed in this manner (USDC 1984). A number of inquires to NMFS indicates interest in processing bluefish has increased in 1986 and 1987 (R. Ross pers. comm.). Most of these inquires concern cured bluefish or bluefish pate rather than fillets. A decrease in New England groundfish stocks and an increase in consumer demand for fish may explain this increased interest.

Along the Atlantic coast, major bluefish processing occurs in Florida and Maryland (USDC 1987). Other Atlantic coast states in which bluefish processing has been reported during the 1979-1985 period (USDC 1987) are South Carolina (average of 2 plants), Pennsylvania (average of 3 plants), and Massachusetts (average of 1 plant).

In Florida, between 1979 and 1985, 82,000 to 470,000 pounds of bluefish were processed each year with a value of $152,000 to $656,000 (in nominal dollars). The number of processing plants handling bluefish averaged 7, total employment at these plants averaged 112 people, and bluefish comprised an average of 1.9% of the total output value and 2.2% of the total output weight. Only one plant processed cured bluefish and only a few produced frozen fillets.

Maryland plants processed 30,000 to 155,000 pounds of bluefish valued at $30,000 to $171,000 (in nominal dollars) between 1979 and 1985. There were an average of 5 processing plants in Maryland during this period with an increasing trend in the number of plants since 1979. Bluefish comprised an average of 4.6% of the overall value and 7.8% of the overall weight of these plants' output. Only one plant processed a cured bluefish product.

The price per pound of processed bluefish varies by product type (Table 33). Fresh fillets, the most common form of processed bluefish product along the Atlantic coast, were processed at an average of 13 plants and averaged $1.43 per pound, wholesale, in constant 1985 dollars. Frozen fillets were processed at an average of 2 plants and averaged $0.96 per pound whereas smoked bluefish were processed at an average of 2 plants and averaged $3.62 per pound. Smoked bluefish comprised an average of 14% of the total value of the output from the plants that processed them while the fresh and frozen fillets averaged 2% and 1%, respectively.

8.4. CONSUMPTION

Four surveys were conducted between 1970 and 1981 which determined per capita consumption of various species of fish. The surveys did not collect usable data on home consumption of recreationally caught fish so results must be interpreted only for seafood obtained through commercial channels. Findings of the four surveys were collated and summarized by Hu (1985) in order to investigate how socio-demographic and economic factors related to seafood consumption over time. Hu found that annual home consumption of bluefish (nationwide) increased from .068 lbs per capita in 1973-74 to .252 lbs per capita in 1977-78, and then declined to .026 lbs per capita in 1981 (though the latter survey measured net edible meat weight only).

In general, more bluefish was consumed by blacks, though consumption by whites increased over time. Also, per capita seafood consumption ranked highest for the Atlantic coast region and urban dwellers generally consumed more than suburban/rural residents. These observations are consistent with marketing practices for fresh bluefish. While per capita consumption of seafood in general exhibited a positive association with income, findings specific to bluefish showed negative income elasticities for both expenditures and quantity consumed. The 1981 survey indicated that most (78.8%) bluefish was consumed at home rather than away from home.

An August 1987 survey of Atlantic States retailers selling bluefish revealed an average price for bluefish fillets of $2.46/lb (Table 33). Based on a ratio of 2.5 pounds of round fish to one pound of fillets, the 1987 commercial bluefish landings were worth $14.5 million retail. This estimate assumes all bluefish landings become bluefish fillets, though in fact some fish are sold whole and a small portion of landings are processed into other products (see Section 8.3). The estimate of retail value presented here may be high or low, depending on the actual proportions sold as each product type (i.e. whole, smoked, etc.) and the relative values and quantity sold in each state.

Sufficient data at the retail level (supermarkets, food service and restaurants) are not available to estimate a demand schedule for bluefish by final consumers. Such a schedule is necessary to estimate total willingness to pay for bluefish products. The marginal retail value (taken to be $2.46/lb by the assumptions above) can be used to assess impacts of changes in commercial landings, however, for small changes in quantity.

Several factors could expand consumer demand for bluefish. Heightened awareness of the healthfulness of fishery products has generated an increase in per capita seafood consumption to record levels in the U.S. (USDC 1987). In addition, regional dishes such as blackened fish have increased restaurant purchases of certain species. Changes in consumer preferences could increase the demand for commercially caught bluefish. Prices, income and the availability of substitute seafood products will undoubtedly affect further development of the bluefish market, however.

8.5. INTERNATIONAL TRADE

Bluefish are widely distributed (Figure 1) and are caught by a number of countries in most of the world's oceans (Table 34). World-wide, most commercially landed bluefish come from the Mediterranean and Black Seas, a contribution of over 27 million pounds in 1986. The highest commercial landings of bluefish have been in Turkey with 58% and 25% of the world-wide commercial landings attributed to this country in 1982 and 1983, respectively. The U.S. is normally the second largest commercial supplier although Brazil exceeded it in 1982. Other major commercial suppliers have been Senegal and the USSR.

Dougherty and Brown (1982) reported that 1.4 million lbs of bluefish were inspected by NMFS for export between 1 October 1980 and 30 September 1981. Of this total, 1.0 million pounds were destined for Venezuela, 77,000 pounds for Nigeria, and 338,000 pounds for the West Indies. Though over 50% of the fish exported from the southeastern U.S. were Federally inspected (Dougherty and Brown 1982), the lack of complete coverage leaves open the possibility that more bluefish were exported out of this region.

United States bluefish exports from 1981 to 1986 were much lower than the 1980 level and varied from 2,400 pounds valued at $1,500 in 1983 to 205,900 pounds valued at $91,900 in 1986 (Table 35). Exports have averaged less than 1% of commercial landings over this period, indicating either saturation of the world market or its inaccessibility to U.S. processors. Most exports were frozen; only 8,400 pounds of fresh bluefish were shipped from 1981 to 1986. Countries importing bluefish from the US, in order of cumulative pounds received, include Japan, United Kingdom, Canada, Kuwait, France, Greece, and Bermuda. Some of these countries purchased bluefish in a single year while others, such as Japan, have increased purchases each year since 1981.

9. FISHERY MANAGEMENT PROGRAM

9.1. MEASURES TO ATTAIN MANAGEMENT OBJECTIVES

9.1.1. Specification of OY, DAH, DAP, JVP, and TALFF

Section 303(a)(3) of the MFCMA requires that FMPs assess and specify the OY from the fishery and include a summary of the information utilized in making such specification. OY is to be based on MSY, or on MSY adjusted for social, economic, or ecological reasons. The most important limitation on the specification of OY is that the choice of OY and the conservation and management measures proposed to achieve it must prevent overfishing.

Current estimates of MSY for bluefish range from 140 to 150 million pounds (Section 5.4). MSY is the largest average annual catch or yield in terms of weight of fish caught by both commercial and recreational fishermen that can be taken from a stock under existing ecological and environmental conditions.

OY is specified as all bluefish caught by US fishermen pursuant to this FMP. The Council has concluded that US vessels have the capacity to, and will, harvest the OY on an annual basis, so DAH equals OY. The Council has also concluded that US fish processors, on an annual basis, will process that portion of the OY that will be harvested by US commercial fishing vessels, so DAP equals DAH and JVP equals zero. Since US fishing vessels have the capacity and intent to harvest the entire OY, there is no portion of the OY that can be made available for foreign fishing, so TALFF also equals zero.

9.1.2. Specification of Preferred Management Measures

9.1.2.1. Permits and fees

Any person selling a bluefish is identified as a commercial fisherman and must have a commercial fishing permit that allows the sale of bluefish. This commercial definition would include, among others, all hook and line fishermen who sell bluefish, regardless of fishing mode (that is, fishing from shore, man-made structures, private boats, party boats, or charter boats). For states without a permit, a federal permit is required to sell bluefish.

The federal costs of implementing an annual permit system for the sale of bluefish shall be charged to permit holders as authorized by section 303(b) (1) of the Magnuson Act. In establishing the annual fee, the NMFS Regional Director will ensure that the fee does not exceed the administrative costs incurred in issuing the permit, as required by section 304(d) of the Magnuson Act. Proper accounting for administrative costs will include labor costs (salary and benefits of permitting officers plus prorated share of secretarial support and supervision at both the NMFS regional and headquarters levels), computer costs for creating and maintaining permit files (prorated capital costs, time share and expendable supplies), cost of forms and mailers (purchase, preparation, printing and reproduction), and postage costs for application forms and permits.

States without a permit system are encouraged to implement a permit system. States are encouraged to implement fees for a commercial permit at a level sufficient to prevent recreational fishermen from purchasing the permit simply to avoid adherence to the possession limit.

9.1.2.2. Time and area restrictions

Time and area restrictions are not proposed.

9.1.2.3. Catch limitations

9.1.2.3.1. Anglers would be restricted to a possession limit of no more than ten bluefish or the equal or more stringent possession limit at the state of landing, if such a limit exists.

This measure implements a possession limit of ten bluefish and also allow for states to respond to localized conditions of overfishing and waste by implementing an equal or more stringent limit, as determined by the Bluefish FMP Review and Monitoring Committee (section 9.4), for bluefish in waters under state jurisdiction. On vessels with several passengers, the number of bluefish contained on the vessel may not exceed ten (or the adjusted limit) times the number of people aboard the vessel.

Anglers are restricted to a possession limit of no more than ten bluefish or the equal or more stringent possession limit at the state of landing, if such a limit exists. On vessels with several passengers, the number of bluefish contained on the vessel may not exceed ten (or the adjusted limit) times the number of people aboard the vessel, excluding persons with commercial permits and their catch. Those with commercial permits are required to keep their bluefish separated from the pooled catch and in their possession at all times.

Commercial hook and line fishermen may take more than the possession limit if they have a commercial permit to sell bluefish. Without a permit, fishermen using hook and line gear are restricted to the possession limit.

Based on a recommendation by the Council and ASMFC, the Regional Director, and the Atlantic States in their respective jurisdictions, may modify the possession limit to between 0 and 15 bluefish per angler. This adjustment would be based on the recommendations of the Bluefish FMP Review and Monitoring Committee.

9.1.2.3.2. The commercial fishery, on a coastwide basis, would be limited to 20% of the total catch (recreational catch plus commercial landings) each year.

The decision to implement commercial controls on the bluefish fishery would be based on two separate indices (detailed in A and B below) and a two tier approach (Fig. 4).

The first tier:

A. A three year moving average of both the commercial landings and total bluefish catch (recreational catch and commercial landings) will be used to derive a time-series projection of the commercial share for the upcoming year. If the projected commercial share is 20% or above, then commercial controls will be implemented at the start of the upcoming year. If this percentage is between 17% and 20%, then policy makers will use the criteria of the second tier to determine if commercial controls will be implemented.

B. The percent of commercial landings in the total bluefish catch will be calculated for each year and compared to the commercial share for the previous year. If the change in the commercial percentage equals or exceeds 50%, then policy makers will use the criteria of the second tier to determine if commercial controls will be implemented.

The second tier:

If the projected commercial share based on the average catch for the previous three years is between 17% and 20% OR the commercial share increased 50% or more from the previous year, then the following steps will be used to determine if controls on the commercial fishery will be implemented for the upcoming year:

1. The most recent, complete year of data will be used to determine what factors led to the increase in commercial share.

2. In-season data will then be investigated to determine if the trends exhibited in the previous year are continuing. These data will include commercial landings by state, month, and gear and recreational catch by wave (2 month periods).

3. If an increasing trend in commercial landings was indicated for the current year then commercial controls will be implemented the following year. The type of control will be determined from examination of the above data.

Commercial controls:

If the catch in the commercial fishery is projected to equal or exceed the 20% limit during the upcoming year, then a state allocation system will be implemented. This entails the use of landings data from the most recent ten year period for each state to determine the average percentage of coastwide commercial landings (Table 36). These percentages will be used to determine the amount of the coastwide quota allocated to each state. Quotas apply to landings in each state regardless of where the bluefish are caught.

If no state of landing exists as the result of each coastal state fulfilling the individual quota, then the EEZ will be closed to commercial fishing. In addition, if whole bluefish are processed into fillets at sea, then fillet weight will be converted to whole weight at the state of landing using a 1:2.5 ratio. If whole bluefish are headed and gutted at sea, then the conversion factor is 1:1.5.

Individual states are responsible for ensuring that their individual quotas are not exceeded and as such may design specific management measures best suited to their state. Because bluefish are highly migratory, this method of allocation prevents a single state from harvesting all of the coastwide quota before bluefish are available to other more northern or southern states. States are encouraged to develop regimes that will provide fishing opportunities throughout the season for all bluefish fisheries.

If the increase in commercial landings is attributed to the use of a highly efficient gear (purse seines, pair trawls, or runaround gill nets), then the highly efficient gear responsible for the increase in commercial land-

ings will be regulated for the taking of bluefish in EEZ waters. Regulations to be considered include trip limits, area closures or restrictions, and other measures that may be appropriate, including gear prohibition. The Regional Director will implement specific management measures based on a recommendation by the Council and ASMFC. The states are encouraged to implement companion regulations to regulate that gear in state waters.

Commercial controls will remain in effect until conditions in either the recreational or commercial fishery warrant a retraction. The Bluefish FMP Review and Monitoring Committee (section 9.4), will annually review landing statistics to determine if commercial controls will be suspended.

The projections and proposed allocations will be published in the ***Federal Register*** with an opportunity for public comment.

9.1.2.4. Other measures.

OY is all bluefish caught by US fishermen pursuant to this FMP, so retention of bluefish by foreign fishermen is prohibited. Foreign nations catching bluefish shall be subject to the incidental catch regulations set forth in 50 *CFR* 611.13, 611.14, and 611.50.

9.1.3. Specification and Sources of Pertinent Fishery Data.

9.1.3.1. Domestic and foreign fishermen.

Section 303(a)(5) of the MFCMA requires that, at a minimum, specific information must be submitted to the Secretary with respect to the bluefish fishery including the type and quantity of fishing gear used, catch by species in numbers of fish or weight thereof, areas in which fishing was engaged in, time of fishing, and number of hauls. In order to achieve the objectives of this FMP and to manage the fishery for the maximum benefit of the US, it is necessary that, at a minimum, the Secretary collects on a continuing basis and make available to the Councils: (1) bluefish catch, effort, and ex-vessel value and the catch and ex-vessel value of those species caught in conjunction with the bluefish commercial fishery provided in a form that analysis can be performed at the trip, water area, gear, month, year, principal (normal) landing port, landing port for trip, and State levels of aggregation; (2) catch, landing and directed effort information for the recreational fishery; (3) the number of recreational fishermen that sell bluefish and the amount and value of bluefish sold by recreational fishermen; (4) adequate information on length, weight, age, and sex of bluefish caught in both the commercial and recreational fisheries for stock assessment purposes; and (5) coastwide indices of juvenile and adult relative abundance, including appropriate expansion to the South Atlantic, for stock assessment purposes. The FMP includes no requirements as to how these data are to be submitted to the Secretary. The Secretary may implement necessary data collection procedures through amendments to the regulations. It is mandatory that these data be collected for the entire management unit on a compatible and comparable basis.

Foreign fishermen are subject to the reporting and recordkeeping requirements in 50 *CFR* 611.50(d).

9.1.3.2. Processors. Section 303(a)(5) of the MFCMA requires that, at a minimum, both the estimated and actual processing capacity utilized by US fish processors must be submitted to the Secretary. In addition to the information required by the MFCMA, information on bluefish processors including processed product form, mark up by product type, and amount destined for domestic consumption and export is needed to track the market development potential for bluefish. The FMP includes no requirements as to how these data are to be submitted to the Secretary. The Secretary may implement necessary data collection procedures through amendments to the regulations.

9.2. ANALYSIS OF BENEFICIAL AND ADVERSE IMPACTS OF ADOPTED MANAGEMENT MEASURES

9.2.1. The FMP Relative to the National Standards

Section 301(a) of the MFCMA states: "Any fishery management plan prepared, and any regulation promulgated to implement any such plan, pursuant to [the national fishery management program] shall be consistent with the following national standards for fishery conservation and management." The following is a discussion of the standards and how this FMP meets them:

9.2.1.1. Conservation and management measures shall prevent overfishing while achieving, on a continuous basis, the optimum yield from each fishery.

National Standard 1 requires that "Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery...The most important limitation on the specification of OY is that the choice of OY - and the conservation and management measures proposed to achieve it - must prevent overfishing."

Overfishing is a level or rate of fishing mortality that jeopardizes the long term capacity of a stock or stock complex to produce MSY on a continuing basis. Each FMP must specify, to the maximum extent possible, an objective and measurable definition of overfishing for each stock or stock complex covered by that FMP, and provide an analysis of how the definition was determined and how it relates to reproductive potential."

Overfishing in the Bluefish FMP is defined as a level of fishing that exceeds the fishing mortality rate that results in the highest sustainable yield or MSY. The best available information indicates that highest sustainable yields occur at fishing mortality rates (F) of between 0.3 and 0.4 (annual rates of 26% and 33%) (section 5.4). The current best estimate of fishing mortality, 0.35 (30% annually), which is the mid-point of these values, suggests that the stock is fully exploited (as of 1987). Fishing rates that exceeded 0.4 for more than a few years would result in a decline in sustainable yield and recruitment. These declines would become more drastic if fishing rates (F) exceeded 0.5 (39%) for extended periods. The stock would collapse completely if F increased beyond 0.6 (55%). The reason for the collapse at high F values (F greater than 0.5) is that long term recruitment drops rapidly as spawning stock biomass is depleted, so that recruitment cannot replace the heavy losses to the adult stock.

Overfishing would occur if fishing rates exceeded a fishing mortality rate of 0.35 to 0.4. The use of a range of F values would account for the uncertainty associated with the estimation of the mortality rates. Furthermore, this definition would "enable the Council and the Secretary to monitor and evaluate the condition of the stock relative to the definition." NMFS recreational and commercial catch statistics and data, as well as state specific data, will be used to update a stock assessment each year. Fishing mortality rates will be determined using the methodology and data sets (with current data) presented in section 5.3.5.

The management measures proposed in the FMP will prevent overfishing. Because the recreational fishery accounts for approximately 90% of the catch, the purpose of the possession limit is to stabilize or cap the fishing mortality rate at current levels and prevent overfishing of the bluefish stock. In addition, the 20% allocation limit on the commercial fishery will protect the stock from a rapid increase in commercial harvest.

To further protect the spawning stock, a Bluefish FMP Review and Monitoring Committee will annually review the possession limit and recommend appropriate adjustments to the possession limit as warranted by evidence of stock condition. Based on a recommendation by the Council and ASMFC, the Regional Director may modify the possession limit to between 0 and 15 bluefish per angler. The decision to implement commercial controls on the bluefish fishery will be based on two separate indices and a two tier approach (section 9.1.2.3.2). This system allows for flexibility in determining when to implement commercial controls by accounting for both steady and rapid changes in the fishery.

9.2.1.2. Conservation and management measures shall be based upon the best scientific information available.

This FMP is based on the best and most recent scientific information available. Additional analyses will be conducted in the future in order to evaluate the effectiveness of the management measures proposed in this FMP.

9.2.1.3. To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

The FMP's management unit is bluefish throughout their range along the Atlantic coast from Maine through Florida, including the EEZ, territorial sea, and internal waters. This specification is considered to be consistent with National Standard 3.

9.2.1.4. Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

The FMP does not discriminate among residents of different States. It does not differentiate among US citizens, nationals, resident aliens, or corporations on the basis of their State of residence. It does not incorporate or rely on a State statute or regulation that discriminates against residents of another State.

9.2.1.5. Conservation and management measures shall, where practicable, promote efficiency in the utilization of the fishery resources; except that no such measure shall have economic allocation as its sole purpose.

The management regime is intended to allow the fishery to operate at the lowest possible cost (e.g., fishing effort, administration, and enforcement) given the objectives of the FMP. The cooperative nature of this plan ensures compatibility with ASMFC and State regulations. The FMP places no restrictions on the use of efficient techniques of harvesting and does not interfere with processing or marketing practices. Regulation of highly efficient gears occurs only when necessary for conservation purposes and does not represent economic allocation.

9.2.1.6. Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The proposed possession limit will allow states to respond to localized conditions of overfishing and waste by implementing an equal or more stringent limit for bluefish in waters under state jurisdiction. To determine if the possession limit is successful, the Bluefish FMP Review and Monitoring Committee will monitor the fishery each year.

The allocation of 20% of the total catch to the commercial fishery will allow for an approximate doubling of current commercial catches and account for any contingencies in commercial development. In addition, it ensures that 80% of the catch will be allocated to recreational fishermen.

The decision to implement commercial controls on the bluefish fishery is based on two separate indices and a two tier approach. This system allows for flexibility in determining when to implement commercial controls by accounting for the potential of both steady and rapid changes in the fisheries. If commercial controls were implemented, individual states would be responsible for ensuring that their individual quotas were not exceeded and as such could design specific management measures best suited to their state. States would be encouraged to develop regimes that would provide fishing opportunities throughout the season for all bluefish fisheries.

9.2.1.7. Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

The management regime was developed to be compatible with the management efforts of ASMFC and the States. State agencies will be relied upon to a great extent to enforce possession limits and commercial gear restrictions/quotas. Because these agencies represent a regulatory and enforcement infrastructure that is already in place, increase in costs should be negligible.

9.2.2. Cost/Benefit Analysis

The Bluefish FMP establishes an allocation of 80%/20% to the recreational and commercial fisheries, respectively. This allocation recognizes the long term importance of bluefish as the principal marine sport fish along the Atlantic coast. Although the allocation allows for some growth in the commercial share of total catch relative to historical practices, it will prevent expansion of the industry to such a point where it adversely affects recreational fishing opportunities.

A commercial allocation above the historic level is warranted because of two current practices in the fisheries: sale of bluefish by recreational anglers and discarding of bluefish at sea by commercial fishermen. Individuals involved in these two practices probably account for greater than 10% of current fishing mortality, but since neither practice results in bluefish entering commercial landings statistics, commercial landings have averaged 10% of total catch. It is anticipated that the requirement for a permit to sell will cause some recreationally caught fish to be reclassified as commercial. It is also anticipated that expansion in domestic seafood consumption could increase the likelihood that commercial fishermen will land bluefish bycatch rather than discard it at sea. Allowing the commercial share to increase to 20% will thus correctly account for bluefish enter-

ing commerce and reduce waste without significantly increasing fishing mortality. In addition, allowance for a greater commercial share will enable an increase in the supply of low cost bluefish to those individuals who wish to enjoy the nutritional benefits of seafood but who cannot afford to fish for themselves.

In the previous (rejected) Bluefish FMP (MAFMC 1984), the Council maintained that the 80/20 allocation was a policy decision which recognized the greater economic importance of the recreational fishery relative to commercial fishing. Among the justifications put forth for this policy decision were: 1) bluefish are the principle marine sport fish for the east coast, a species which is growing in importance over time as substitute species become fully exploited or experience declines in abundance, and; 2) the recreational industry has significant economic impacts annually, while the commercial catch is small both in volume and value to east coast states and is primarily bycatch in the New England and Mid-Atlantic regions. The relative allocation to recreational and commercial fisheries was not a reason for rejecting the original plan. In fact, the 80/20 split was seen as a "valid exercise of the Council's judgement" (R. Schaefer pers. comm.). In addition, allowance for a greater commercial share will enable an increase in the supply of low cost bluefish to those individuals who wish to enjoy the nutritional benefits of seafood but who cannot afford to fish for themselves.

In the analysis which follows, the benefits and costs of alternative relative shares to the recreational and commercial sectors are not considered. Data which would enable the estimation of the marginal value of bluefish to each sector are not available at this time. Therefore, based on the traditional 90/10 split in catch share, the estimated greater relative economic impact of the recreational sector, and the allowance for commercial expansion, the proposed 80/20 split is considered a valid exercise of Council judgement. Only the impacts of the measures designed to implement this allocation are analyzed as to costs and benefits. Although it is not possible to estimate the total economic surpluses attributable to recreational and commercial fishing for bluefish given the aforementioned data limitations, the changes in these surpluses due to the proposed measures can be predicted given currently available information. Also, impacts on employment and expenditures can be estimated for each sector.

9.2.2.1. Commercial fishery

The commercial fishery harvested an average of 10% of the combined total bluefish catch over the 1979-87 period (Table 12). Although the average has increased to about 12% since 1985, it is not likely the 20% limit on commercial allocation would become a constraint in the near future. Based on 1979 through 1987 data, the projected 1989 commercial share would be 12% (Figure 5). The projection equation for 1989 (using data from 1979 to 1987; Table 37) is $y = 0.218x - 421.5$, where y is the percentage and x is the year (for example 1989). No action would have been taken since the share was less than 17%. In addition, no action would have been taken based on index B because the increase in commercial share from 1986 to 1987 was 23% (Table 38).

In order to implement controls on commercial fishing, either the recreational fishery must decline significantly or the bluefish market must expand to almost twice its current level. Given current information, both are unlikely events when considered independently. The likelihood of implementing controls on commercial effort increases, however, if both trends should occur concurrently.

Three scenarios were developed to estimate the magnitude of changes which need occur in the bluefish fishery in order to trigger controls on the commercial sector. Although an infinite number of permutations are possible given the use of a three year moving average, the discussion here is limited to changes which could have occurred in 1987 to trigger the two tiered process.

1. Recreational catch remains constant and commercial catch increases. The actual commercial catch in 1987 was about 15 million pounds. If the commercial catch had been 18 million pounds, the change in commercial share from 1986 to 1987 would have been over 50%. This would have triggered an examination of the catch data, though the projected catch for 1989 would only have risen slightly to 12.6%. Depending on the cause of the increase, and the likelihood of its continuance, controls may or may not have been necessary. To trigger automatic controls, a fivefold increase in commercial catch to 77 million pounds would have had to occur in 1987 before the projected commercial share for 1989 exceeded 20%.

2. Recreational catch declines and commercial catch remains constant. The actual recreational catch in 1987 was about 110 million pounds. If catch had been 87.5 million pounds the commercial share would have increased by more than 50% from 1986 to 1987, thus triggering an examination of commercial fisheries data. Depending on the cause of decline in recreational landings, controls may have been implemented for the commercial sector. The 1986 recreational catch would have had to decrease by more than 50% and the 1987 catch to zero before the projected commercial share for 1989 exceeded 20%.

3. Recreational catch declines while commercial catch increases. If the 1987 recreational catch declined to 97.5 million pounds and the commercial catch increased to 16.5 million pounds, the change in commercial share from 1986 to 1987 would have exceeded 50%. However, the projected commercial share for 1989 would be approximately 12.3%. Examination of the fisheries would have been necessary under the two tiered system, but controls may not have been needed. Even if 1987 recreational catch had been reduced to the historic (1979-87) low of 86 million pounds, concurrent with a commercial increase to the historic (1979-87) high of 16.5 million pounds, the 20% limit would not have been binding and automatic controls would not have been necessary.

From the above three scenarios, it can be seen that a substantial change in the fisheries in one year is not likely to trigger automatic imposition of commercial controls. Instead, consistent trends are necessary to bring the projected commercial share to 20%. Given the sensitivity of the 17%/50% indicators and the two tiered approach, it is highly likely that any developing allocation conflicts in the fisheries would be evident well in advance of requiring automatic controls. The two tiered approach should therefore facilitate the resolution of allocation conflicts before over investment in the commercial sector could occur.

Whether recreational catch declines or not depends on the demand for fishing trips, fishing success and bluefish stock abundance. Preliminary NMFS data for 1988 indicate that recreational catch has declined considerably from the 1987 level. If such a decline in recreational catch is sustained, the increase in commercial share may be sufficient to require controls on fishing mortality.

The possibility of controls being imposed because of commercial fishery expansion is less likely, however. It seems that current market potential is weak. This is evidenced by low ex-vessel prices and little directed effort. Although it was once thought that an export market for frozen bluefish would develop, recent trends in exports do not indicate steady growth (Table 35). In fact, no bluefish at all were exported through the first six months of 1987 (R. Ross pers. comm.).

In the event that the commercial share of bluefish catch increases to the point where it is projected to meet or exceed the 20% allocation limit, a state by state allocation scheme would control commercial landings. Each state would be assigned a share of coastwide commercial quota based on past participation in the fishery. The individual states would be responsible for controlling catch at the allotted level and could tailor regulations to specifically address the particular concerns of individual states.

If the allocation had been in effect in 1989, based on 1985, 1986, and 1987 catch data, slightly over 25 million pounds of bluefish would have been allocated to the commercial fishery coastwide. This hypothetical allocation, though limiting the commercial sector to a 20% share of the total catch, would allow considerable expansion of the commercial fishery in each state when compared to 1978-1987 historical levels (Table 39).

By adhering to state quotas, the individual states are expected to design specific management measures best suited to their particular circumstances. If necessary to control fishing effort, restrictions on certain gears for the taking of bluefish in EEZ waters could be implemented in conjunction with the state catch allocations. These restrictions could include trip limits, area closures, gear prohibition, or other measures that may be appropriate, to assist state management efforts. It is anticipated that state quotas and state regulations to effect quota management will adequately control the commercial catch, thereby reducing the likelihood of that gear restrictions, trip limts or area closures would be required in EEZ waters. Adverse impacts attributable to federal regulations are therefore expected to be minimal.

Based on their highly efficient characteristics, purse seines, runaround gill nets, and pair trawls are the gears most likely to cause a rapid increase in commercial landings of bluefish. Historically, purse seines and pair trawls harvested slightly more than 1% of the total commercial bluefish catch for the years 1976 to 1987 combined. However, for this same period, runaround gill nets accounted for approximately 15% of the landings. In addition, runaround gill nets were important in Massachusetts, New Jersey, South Carolina, and Florida, accounting for 8%, 44%, 10%, and 70% of the 1976-87 individual state landings, respectively.

Delaware is the only state which currently prohibits all three gears. Several states prohibit one or two of these gears and several others have season and area closures that affect the use of these gears.

Imposition of gear restrictions in the EEZ and the issuance of consistent regulations in state waters, would result in similar controls throughout the management unit, thus complying with National Standard 4. Since some states currently allow gear which could become regulated in complying with ASMFC bluefish recommendations or the federal FMP, some fishermen may be adversely impacted. However, these fishermen would have prior knowledge of potential regulations (including trip limits, area closures and prohibition) since gear restrictions would occur only after the allocation limit was reached. Careful monitoring of com-

mercial catch and coordination of state and federal gear regulations should enable industry to avoid expensive gear modifications specifically targeted at bluefish, thus minimizing the impacts of gear restrictions.

If, under the state allocation system, no state of landing existed due to fulfillment of all individual quotas, the coastwide commercial fishery would be closed. Relative to current value, the magnitude of adverse impact to the commercial sector would be least if a closure resulted from expansion of the commercial fishery and greatest if the closure was due to a decline in recreational catch. In either case, negative impacts of a commercial closure would be outweighed by preservation of benefits to the recreational fishery. It is anticipated that individual state actions would serve to reduce the likelihood of a commercial closure and to mitigate adverse impacts to commercial fishermen.

In summary, should recent trends in the recreational and commercial fisheries continue, controls on commercial harvest of bluefish from EEZ waters could be required. If controls are necessitated by expansion of the commercial fishery, there will be no negative economic impacts relative to the current fishery situation. Ex-vessel value and retail supplies of bluefish could be increased by significant amounts before being restricted by management measures. This would result in higher economic surpluses and greater economic impact. On the other hand, if controls are implemented due to declining recreational catch, the imposition of state quotas and possible regulation or prohibition of highly efficient gears may result in adverse impacts for the commercial sector. Given the importance of bluefish to the recreational fishery, however, negative impacts in the commercial sector would be outweighed by benefits to recreational anglers.

9.2.2.2 Recreational fishery

Data from the 1987 MRFSS indicate that coastwide, approximately 93% of anglers catching bluefish landed 10 or less bluefish per day (Table 40). Thus, about 7% of successful recreational angler trips coastwide would be affected by the proposed 10 fish possession limit. Assuming more successful anglers have higher fishing avidity (that is, take more individual trips), the number of affected anglers would be even less than 7%. Therefore, the change in aggregate economic surplus associated with the proposed 10 fish limit will most likely be extremely small. Though this cannot be demonstrated quantitatively due to the lack of data, generally accepted theories on the demand for recreational fishing support this statement.

Anglers enjoy fishing for many reasons apart from catching fish: experiencing nature, socializing, etc. A study by Dawson and Wilkins (1981) examined the preferences of boating anglers in New York and Virginia in 1980. They found that catching fish was important, but consistently ranked below most of the less quantifiable aspects of a fishing trip. A large percentage of anglers in New York (93%) and Virginia (88%) did not feel they had to catch a lot of fish to be satisfied with a trip as long as they caught something.

Also, for some anglers, the species of fish caught is not the most significant determinant of satisfaction. The 1981 Marine Recreational Socio-economic Survey concluded that "about half (of the anglers) reported a preferred species while fishing, and most of these said they would continue to fish if they knew their preferred species was not available." (KCA 1983).

Although the species, number and size of fish are important determinants of sportfishing demand and satisfaction, the marginal value per fish caught declines with each successive fish. Following the methodology of Agnello (1989) an 11th bluefish would be worth $.17 - $.52 (1987 dollars) to the average angler, depending on the choice of regression model, much lower values than Agnello's estimates of $1.82 to $5.71 for the first bluefish. Given that most anglers would not value the retention of an 11th bluefish very highly, and assuming the magnitude of non-catch-related benefits is unaffected, the possession limit is not likely to negatively impact fishing satisfaction, even of the few anglers who consistently keep more than ten bluefish. The possession limit does not prohibit fishing after 10 bluefish are boated, only the retention of additional fish. Release of live fish will encourage a conservation ethic and reduce waste which has been identified in the fishery.

A study by the Sport Fishing Institute (SFI 1988c) projected that the number of saltwater days fished by Atlantic coast residents would increase by 8% from 1985 to 1990, and increase another 6% by 1995. These projections assume that age specific participation rates remain constant and increases in angler days are related to population growth and changing demographics. The projections also implicitly assume that the quality of the fishing experience remains constant. If serious stock depletion occurs, participation rates and fishing avidity may decrease. Capping fishing mortality at current levels may prevent serious stock depletion, enabling the vast majority of anglers who ordinarily retain less than ten bluefish to benefit from continued fishing success.

In summary, from what is generally known about participation in recreational fisheries, and from the catch rates of anglers targeting on bluefish, it can be inferred that very few trips, if any, will be cancelled due to the 10 bluefish possession limit. There should be little change in expenditures made to fish for bluefish, thus the impacts on employment and incomes in recreational fishing related businesses will be negligible. Further, given 1) the small percentage of anglers affected by the limit, 2) the probable low marginal value of an 11th fish on a particular trip, 3) the fact that the opportunities to continue to catch and release bluefish and to continue to retain other species are unaffected, and 4) the significance of non-catch related attributes of recreational fishing trips, the change in non-monetary benefits associated with bluefish fishing will in all likelihood be extremely small.

Based on a recommendation by the Council and ASMFC Policy Board, the Regional Director and the states in their respective jurisdictions, could modify the possession limit to between zero and 15 bluefish per angler. The possession limit would be revised according to specific criteria and only to account for changes in stock abundance. Short term impacts due to restrictive possession limits would be outweighed by the long term benefit of conserving the stock for future generations of recreational anglers.

The possession limit could be raised to a maximum of 15 bluefish. However, an increase in the possession limit would only occur under circumstances of increased bluefish abundance. Since the prevailing rate of fishing success would reflect increased stock abundance, the number of anglers catching their limit would be high for overly restrictive possession limits. Raising the possession limit to 15 bluefish would therefore decrease the number of affected anglers and have less adverse impact than the limit in force at the time.

In situations of low stock abundance, catch rates for recreational anglers would decline regardless of a specific possession limit. Adverse impacts would therefore be measured against the prevailing rate of fishing success and would not be as great as when bluefish are abundant. Although it is not possible to estimate exact impacts for hypothetical levels of bluefish abundance, it is clear that restrictive possession limits would have substantially less impact than a closure precipitated by stock collapse.

A zero bag limit would prohibit retention of bluefish by recreational fishermen and would have significant impacts, depending on the level of fishing success currently operative and the value anglers place on retention of catch. The bluefish recreational fishery would still be open to catch and release fishing, however, while the commercial fishery would have no allocation. Even in the event of a zero possession limit, bluefish anglers could still enjoy all non-catch related benefits as well as catch and release benefits associated with the fishery. In time, conservation management would restore the benefits of retaining bluefish catch for home consumption.

9.2.2.3. Annual permit

The federal costs of implementing an annual permit system for the sale of bluefish shall be charged to permit holders as authorized by section 303(b)(1) of the Magnuson Act. In establishing the annual fee, the NMFS Regional Director will ensure that it does not exceed the administrative costs incurred in issuing the permit, as required by section 304(d) of the Magnuson Act. Proper accounting for administrative costs will include labor costs (salary and benefits of permitting officers plus prorated share of secretarial support and supervision at both the NMFS regional and headquarters levels), computer costs for creating and maintaining permit files (prorated capital costs, time share and expendable supplies), costs of forms and mailers (purchase, preparation, printing and reproduction), and postage costs for application forms and permits.

Respondent costs are simply the permit fee and the value of time required to complete the application/renewal form. The MAFMC estimates that completing the form will take approximately five minutes per individual. An estimate of total burden hours was arrived at as follows:

Only four Atlantic coast states (NH, NJ, VA, NC) do not require a permit to sell bluefish at the current time. It is anticipated that these states will implement a permit requirement in compliance with the interstate Bluefish Plan adopted by the ASMFC. A federal permit will be required only in the event that any of the four states choose not to comply with the majority or during the period before complying state legislation can be implemented.

A number of recreational anglers from the above four states would be reclassified as commercial fishermen under the definition in the FMP. These anglers would need a permit to sell bluefish should they wish to continue the practice. An estimate was made from the best available recreational fishing statistics and projections of demand for recreational fishing.

State	1990 Angler days	Percent Bluefish	Bluefish Days	% Bluefish Catch EEZ	% Sell	Affected Trips
NH	374,499	21	78,645	19	3.9	583
NJ	8,963,201	23	2,061,536	20	0.7	2,886
VA	5,922,976	23	1,362,284	20	0.7	1,907
NC	6,617,468	5	330,873	7	1.7	394
TOTAL						5,770

Notes: 1990 saltwater angler days fished by coastal residents estimated by SFI. Regional percent targeting on bluefish, percent bluefish caught in the EEZ, and percent selling bluefish estimated from MRFSS data.

An estimated 5,770 trips in the four states would involve the sale of bluefish. To the extent that some individuals take more that one trip per year, however, the number of affected fishermen would be less. The frequency of fishing by individuals dependent on income from the sale of bluefish would likely be greater than fishing frequency for the average recreational angler. Therefore, it is assumed that persons who would ordinarily sell bluefish less than five times per year would discontinue the practice and would not apply for a permit. If all trips involving sale of bluefish were made by fishermen taking five trips per year, 1,154 is a maximum estimate of the number of affected individuals. The true number would probably be less, depending on the extent to which hook and line fishermen continue to sell bluefish, and the total number of trips each individual takes. Given the above maximum estimate, however, at five minutes per angler, 96 total burden hours are calculated. Should any of the above four states implement legislation requiring a permit to sell bluefish, federal burden hours will be reduced accordingly.

There are several benefits to instituting an annual permit system for the sale of bluefish. The most direct benefit would be more complete information available to the Council on the number of commercial fishermen harvesting bluefish and the amount of bluefish entering commercial channels. An accurate accounting of commercial catch is essential for monitoring the fishery to maintain the 20% commercial catch allocation. A second benefit would be improved impact assessments of amendments to the FMP by being able to identify participants in the commercial fishery. Another benefit would be a reduction in enforcement costs due to the availability of the permit for presentation to enforcement agents. Without a permit requirement, commercial hook and line fishermen could be unfairly subjected to the 10 bluefish possession limit or recreational fishermen, posing as commercial fishermen, could evade the possession limit. A permit clearly identifying an individual as a commercial fishermen, would reduce the time required for enforcement contacts and increase the effectiveness of enforcement.

The information collected under the permit system will be used by NMFS, the MAFMC, and the ASMFC to monitor the commercial fishery such that appropriate conservation and management actions may be taken in a timely manner. Incomplete statistics on bluefish commercial landings would severely impede the ability of the Council to make informed decisions, and would put at risk the biological and economic productivity of the commercial and recreational fisheries for bluefish.

No other similar source exists which has the potential of providing the necessary information. Permits issued in the four states potentially covered by the federal permitting system will provide information on a cross-section of fishermen selling bluefish coastwide. Because the information collected by state permitting agencies is not easily accessible to the Council and NMFS, a representative subsample of these fishermen is of value to the Council in assessing regulatory impacts. Should complete information on the number of Atlantic coast commercial bluefish fishermen be needed, the federal permit will fill in the gaps where state permits are not currently required.

9.2.2.4. Enforcement

Enforcement costs (NMFS and USCG) for the recreational possession limit would be minimal since the limit would be primarily enforced dock side. No dedicated effort for at-sea enforcement is foreseen, although the possession limit would be enforced at-sea in conjunction with other at-sea activities.

Enforcement costs for the commercial allocation limit would depend on market expansion. If the market for bluefish does not develop such that commercial landings increase to 20% of the total catch, no new enforcement costs are attributable to the proposed management measures. The individual Atlantic coast states would continue to enforce state regulations. Should enforcement of the commercial allocation limit be necessary, however, the extent to which federal enforcement costs increase will depend on the ability to make use of existing state resources to enforce state quotas and possible gear restrictions.

9.2.2.5. Summary of anticipated costs and benefits

The intent of the proposed regulations is to preserve the traditional uses of the bluefish stock and prevent potential overfishing problems. Since historical catch proportions are to be maintained, the anticipated costs in terms of reduced economic surpluses in either the commercial or recreational fisheries are negligible. Likewise, employment and incomes in either sector are not likely to be adversely impacted to any significant extent and can in fact be increased somewhat in the commercial sector should the bluefish market expand. Enforcement costs are likely to be small from the federal perspective, since maximum use of existing state resources will occur.

The benefits of the proposed management measures, though not fully quantifiable at this time, are likely to be greatly in excess of any costs. The 10 bluefish possession limit will cap fishing mortality at the current level and foster a conservation ethic, thus preserving and enhancing a valuable recreational fishery for future generations of anglers. In the absence of conservation measures, reported waste in the fishery may continue, harming the resource and impacting all user groups. The allocation limit for the commercial fishery precludes adverse impacts on a traditional and valuable recreational fishery, yet allows for some expansion in a moderately valuable food fish industry. This expansion would result chiefly through increased landing of bycatch which is currently discarded. Taken together, the 10 bluefish possession limit and the 20% commercial allocation should prevent waste, protect the bluefish stock from overfishing, preserve traditional uses of the stock, and enhance the economic value of the fisheries through stability and orderly development.

In addition, the FMP will encourage Atlantic coast states to manage bluefish consistently throughout its range. The individual states, through the ASMFC, will adopt regulations for territorial waters consistent to those proposed for the EEZ. This FMP will ensure that state efforts will succeed. Failure to implement conservation measures at this time may result in serious disruption of the bluefish fisheries, wholesale reallocation to non-traditional uses, collapse of a valuable recreational fishery, need for emergency action, and the difficult prospect of coordinating the regulatory actions of the Atlantic coast states under trying circumstances with little more information than exists at present.

9.3. RELATION OF RECOMMENDED MEASURES TO EXISTING APPLICABLE LAWS AND POLICIES

9.3.1. FMPs

This FMP is related to other plans to the extent that all fisheries of the northwest Atlantic share the same general geophysical, social, and economic characteristics. US fishermen often are active in more than a single fishery. Thus, regulations implemented to govern harvesting of one species, or a group of related species, may impact on other fisheries by causing transfers of fishing effort. In addition, because many fisheries of the northwest Atlantic cause significant fishing mortality on non-target species, each FMP must consider the impact of non-directed fishing on other stocks.

Since 1 March 1977, the foreign, but not domestic, fishery for bluefish has been managed by the Preliminary Fishery Management Plan for the Foreign Trawl Fisheries of the Northwest Atlantic (PMP). No other federal management program for bluefish exists or has existed in the past. The original PMP established an OY for 'other finfish' of 606 million lbs. Within that OY, separate OYs of 22 million lbs of river herring (alewife and blueback herring) and 40 million lbs of butterfish were established. The PMP established US Capacities (USCAP) of 28 million lbs of butterfish and 21 million lbs of river herring. The TALFF for these species were, therefore, 12 million lbs of butterfish (the Butterfish FMP had not been prepared in 1977) and 2.2 million lbs of river herring. Of the remaining 545 million lbs, 412 million lbs was reserved for USCAP, and 132 million lbs was allocated to TALFF. The overall TALFF for 'other finfish' for 1977 was, therefore, 146 million lbs (42 FR 9978).

The 'other finfish' TALFF was intended to take into account the incidental foreign catch of species caught in other directed foreign fisheries for fish managed under separate PMPs (hence 'other finfish'). The 1977 PMP also restricted the foreign bycatch of individual species of bluefish, scup, sea bass, weakfish, river herring, croaker, spot, American shad, and tautog to 1% or 5,500 lbs (whichever was greater) of all fish on board or collectively, for all bycatch species, to 7.5% or 26,400 lbs (whichever was greater) of all fish on board. No directed fishery for, or retention of, bluefish was permitted. Foreign fishing was also restricted to specific areas designated separately for each species for which foreign fishermen were allowed to conduct directed, large-scale fisheries. The PMP was implemented by 50 CFR Part 611, published in the Federal Register on 11 February 1977 (42 FR 8813-8845). These regulations also prohibited retention of Continental Shelf Fishery Resources (611.13a).

The final foreign fishing regulations for 1978 were published on 28 November 1977 (42 FR 60681-60699). These established the 1978 TALFF as 8.8 million lbs of butterfish, 1 million lbs of river herring, and 103 million

lbs of 'other finfish'. 'Other finfish' was defined to exclude all species with specific TALFFs (butterfish, red and silver hakes, river herring, Atlantic mackerel, and long-finned and short-finned squids) as well as American shad, Atlantic cod, Atlantic menhaden, Atlantic redfish, Atlantic salmon, billfish, black sea bass, bluefish, haddock, scup, sharks (except dogfishes), spot, tilefish, yellowtail flounder, weakfish, and Continental Shelf Fishery Resources. Directed fisheries for, and retention of, any of these species by foreign fishermen have thus been prohibited since 1 January 1978.

On 2 November 1978 NMFS published changes to the PMP for 1979 which contained proposed changes to the foreign fishing regulations (43 FR 51053-51109). The only substantive amendments were changed the butterfish OY from 40 to 35 million lbs and the butterfish DAH from 31 to 26 million lbs. In the accompanying regulations (611.50b), 'other finfish' was defined to include all species except silver and red hakes, short-finned and long-finned squids, Atlantic mackerel, river herring (including alewife, blueback herring, and hickory shad), butterfish, American shad, Atlantic cod, Atlantic herring, Atlantic menhaden, Atlantic redfish, Atlantic salmon, all billfish, black sea bass, bluefish, croaker, haddock, pollock, scup, sea turtles, sharks (except dogfishes), spot, tilefish, yellowtail flounder, weakfish, Continental Shelf Fishery Resources, and other invertebrates (except unallocated squids). (This list amounts to species covered by other FMPs or by other PMPs or species which foreign fishermen were not allowed to retain.) The final foreign fishing regulations for 1979 were published 19 December 1978 (43 FR 59291 -59325). Subsequent amendments to the Foreign Trawl PMP have taken place on 7 August 1979 (44 FR 46285), 27 December 1979 (44 FR 76539), 4 March 1980 (45 FR 14045), 8 December 1980 (45 FR 80845), and 4 January 1981 (45 FR 1738). No changes with respect to bluefish were made by these amendments. The most recent change (1 January 1981) extended the PMP in perpetuity, unless otherwise amended. After this FMP is approved, the PMP will be amended to delete bluefish from its text.

9.3.2. Treaties and International Agreements

The U S. Department of State, in cooperation with the National Oceanic and Atmospheric Administration, can negotiate a Governing International Fishery Agreement with any foreign country which desires to fish within the US EEZ. No treaties or international agreements, other than GIFAs entered pursuant to the MFCMA, relate to this fishery.

9.3.3. Federal law and policies.

9.3.3.1. Marine Mammals and Endangered Species.

The Regional Director has been requested to decide whether endangered or threatened species or critical habitat are present in the area affected by the proposed action and, if present, how they will be affected by the FMP.

Numerous species of marine mammals and sea turtles occur in the northwest Atlantic Ocean. The most recent comprehensive survey in this region was done from 1979-1982 by the Cetacean and Turtle Assessment Program (CETAP), at the University of Rhode Island (University of Rhode Island 1982), under contract to the Minerals Management Service (MMS), Department of the Interior. The following is a summary of the information gathered in that study, which covered the area from Cape Sable, Nova Scotia, to Cape Hatteras, North Carolina, from the coastline to 5 nautical miles seaward of the 1000 fathom isobath.

Four hundred and seventy one large whale sightings, 1547 small whale sightings and 1172 sea turtles were encountered in the surveys (Table 41). The "estimated minimum population number" for each mammal and turtle in the area, as well as those species currently included under the Endangered Species Act, were also tabulated.

CETAP concluded that both large and small cetaceans were widely distributed throughout the study area in all four seasons, and grouped the 13 most commonly seen species into three categories, based on geographical distribution. The first group contained only the harbor porpoise, which is distributed only over the shelf and throughout the Gulf of Maine, Cape Cod, and Georges Bank, but probably not southwest of Nantucket. The second group contained the most frequently encountered baleen whales (fin, humpback, minke, and right whales) and the white-sided dolphin. These were found in the same areas as the harbor porpoise, and also occasionally over the shelf at least to Cape Hatteras or out to the shelf edge. The third group indicated a "strong tendency for association with the shelf edge" and included the grampus, striped, spotted, saddleback, and bottlenose dolphins, and the sperm and pilot whales.

Loggerhead turtles were found throughout the study area, but appeared to migrate north to about Massachusetts in summer and south in winter. Leatherbacks appeared to have had a more northerly distribution.

CETAP hypothesized a northward migration of both species in the Gulf Stream with a southward return in continental shelf waters nearer to shore. Both species usually were found over the shoreward half of the slope and in depths less than 200 feet. The northwest Atlantic may be important for sea turtle feeding or migrations, but the nesting areas for these species generally are in the South Atlantic and Gulf of Mexico.

Pound nets in Maryland and Virginia take over 35% of the commercial bluefish landings in each of these states (Table 10). An investigation of the causes of sea turtle (loggerhead and some ridley) mortality in Chesapeake Bay indicated pound nets accounted for about 19% of the deaths (Musick *et al.* 1985). Other identifiable causes accounted for 11% of the mortalities with the cause of death undetermined for the remaining 70%.

The winter trawl fishery for summer flounder, which takes place principally off the coast of North Carolina, and occasionally has a bluefish bycatch, may contribute to the mortality of loggerhead sea turtles (classified as "threatened") and Kemp's ridley sea turtles (classified as "endangered"). Studies at the Virginia Institute of Marine Science (VIMS) (Musick *et al.* 1985, Bellmund *et al.* 1987, Lutcavage and Musick 1985) have shown that large juveniles of these two sea turtles use Chesapeake Bay as a foraging area during the summer. Both species emigrate from the Bay with the onset of northeast storms and falling water temperatures, usually in October. These turtles then migrate south along the coast to the vicinity of Capt Hatteras, North Carolina. Migration south of the Cape usually occurs in early December. The winter trawl fishery usually operates from early October to April in Carolina waters. Thus, there is a potential for incidental capture of sea turtles in the fishery during some years.

This problem may become acute when climatic conditions result in concentration of turtles and fish in the same area at the same time. These conditions apparently are met when temperatures are cool in October but then remain moderate into mid-December and result in a concentration of turtles between Oregon Inlet and Cape Hatteras, North Carolina. In most years sea turtles leave Chesapeake Bay and filter through the area a few weeks before the summer flounder fishery becomes concentrated. Efforts are currently under way (by VIMS and the US Fish and Wildlife Service refuges at Back Bay, Virginia, and Pea Island, North Carolina) to more closely monitor these mortalities due to trawls. Fishermen are encouraged to carefully release turtles captured incidentally and to attempt resuscitation of unconscious turtles as recommended in the 1981 *Federal Register* (pages 43976 and 43977).

The only other endangered species occurring in the northwest Atlantic is the shortnose sturgeon (*Acipenser brevirostrum*). The Councils urge fishermen to report any incidental catches of this species to the Regional Director, NMFS, One Blackburn Drive, Gloucester, MA 01930, who will forward the information to persons responsible for the active sturgeon data base.

The range of bluefish and the above mentioned marine mammals and endangered species overlap and there always exists a potential for an incidental kill. Except in unique situations, such accidental catches should have a negligible impact on marine mammal or abundances of endangered species, and the Councils do not believe that implementation of this FMP will have any adverse impact upon these populations.

Pound nets in New York waters take 13% of the commercial bluefish landings for that State (Table 10). Current research being conducted in New York waters indicates that large numbers of loggerhead and Kemp's ridley sea turtles are caught in these nets, but rarely, if ever, killed (Steve Morreale, Okeanos. pers comm).

Commercial and recreational fisheries lose thousands of pounds of fishing gear annually. Incidences of entanglement in and ingestion of this gear is common among sea turtles and marine mammals, and may result directly or indirectly in some deaths.

9.3.3.2. Marine Sanctuaries.

There is one national marine sanctuary in the area covered by the FMP: the USS *Monitor* National Marine Sanctuary off North Carolina. The Sanctuary was officially established on 30 January 1975 under the Marine Protection, Research, and Sanctuaries Act of 1972. Rules and regulations have been issued (15 CFR 924) that prohibit deploying any equipment in the Sanctuary, fishing activities which involve "anchoring in any manner, stopping, remaining, or drifting without power at any time" (924.3 (a)), and "trawling" (924.3(h)). The Sanctuary is clearly designated on all National Ocean Survey charts by the caption "protected area". This minimizes the potential for damage to the Sanctuary by fishing operations. Details on sanctuary regulations may be obtained from the Director, Sanctuary Programs Office, Office of Coastal Zone Management, NOAA, 3300 Whitehaven Street NW, Washington, DC 20235.

9.3.3.3. Indian Treaty Fishing Rights

No Indian treaty fishing rights are known to exist for this fishery.

9.3.3.4. Oil, Gas, Mineral, and Deep Water Port Development

Although Outer Continental Shelf (OCS) development plans may involve areas overlapping those contemplated for offshore fishery management, no major conflicts have been identified to date. The Councils, through involvement in the Intergovernmental Planning Program of the Marine Mineral Service (MMS), monitor OCS activities and have opportunity to comment and to advise MMS of the Councils' activities. Potential conflict exists if communication between interests is not maintained or if the efforts of each organization are not appreciated. Potential conflicts include, from a fishery management perspective: (1) exclusion areas, (2) adverse impacts to sensitive biologically important areas, (3) oil contamination, (4) substrate hazards to conventional fishing gear, and (5) competition for crews and harbor space. The Councils are not aware of any pending deep water port plans which would directly impact offshore fishery management goals in the areas under consideration or, alternatively, potential effects of offshore FMPs upon future development of deep water port facilities.

9.3.3.5. Vessel Safety

Section 303(a)(6) of the MFCMA requires that FMPs consider access to the fishery for vessels otherwise prevented from harvesting because of weather or other ocean conditions which would affect the safety of vessels. The proposed management measures of this FMP do not limit the times or places when or where such vessels may fish. Therefore, the Council has concluded that the proposed FMP will not impact or effect the safety of vessels fishing in this fishery.

9.3.4. State, Local, and Other Applicable Law and Policies.

9.3.4.1. State management activities.

States that have regulatory power related to bluefish fisheries include New Hampshire, Massachusetts, Rhode Island, Connecticut, New Jersey, Delaware, Virginia, North Carolina, South Carolina, Georgia, and Florida. All other Atlantic states must adopt legislation pertaining to the recreational or commercial harvest of bluefish.

In addition to the coastal states, the Potomac River Fisheries Commission has regulatory authority for all commercial and recreational fisheries of the tidal Potomac between Washington D.C. and the Chesapeake Bay. State laws and regulations, applicable to bluefish fisheries, are summarized in Table 42.

9.3.4.2. State action necessary to implement measures within State waters to achieve FMP objectives, consequences of State inaction or contrary action, and recommendations.

The management regime was developed cooperatively by the Councils and ASMFC and is compatible with the management efforts of ASMFC and the States. The success of the management measures is predicated on the cooperation of all the Atlantic coast states. The Councils recommend that the Regional Director take the appropriate action to see that states adhere to the possession limit and commercial gear restrictions/quotas if and when commercial controls are implemented.

9.3.4.3. Impact of Federal regulations on State management activities.

The FMP's objectives and management measures are nearly identical to those proposed by ASMFC for the coastal states.

9.3.4.4. Coastal Zone Management Program Consistency.

The CZM Act of 1972, as amended, provides measures for ensuring stability of productive fishery habitat while striving to balance development pressures with social, economic, cultural, and other impacts on the coastal zone. It is recognized that responsible management of both coastal zones and fish stocks must involve mutually supportive goals.

The Councils must determine whether the FMP will affect a State's coastal zone. If it will, the FMP must be evaluated relative to the State's approved CZM program to determine whether it is consistent to the maximum extent practicable. The States have 45 days in which to agree or disagree with the Councils' evaluation. If a State fails to respond within 45 days, the State's agreement may be presumed. If a State disagrees, the issue may be resolved through negotiation or, if that fails, by the Secretary.

The Council determined that this rule will be implemented in a manner that is consistent, to the maximum extent practicable, with the approved coastal zone management programs of Maine, New Hampshire, Massa-

chusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. For Pennsylvania, the Council determined that this rule will not affect the coastal zone. This determination was submitted for review by the responsible State agencies under section 307 of the Coastal Zone Management Act on 7 July 1989. As of 30 October 1989 all of the States had concurred with the Council's finding except Rhode Island, Maryland, Virginia, North Carolina, and Georgia, which States did not respond.

9.4. COUNCIL REVIEW AND MONITORING

A Bluefish FMP Review and Monitoring committee composed of MAFMC staff, NMFS personnel, and ASMFC representatives would be established to annually review the best available stock assessment information and fisheries data. This committee would make recommendations to the MAFMC and ASMFC regarding the framework provision of the possession limit, implementation of commercial controls, and possible amendments to the FMP.

This review will be based on best available data including, but not limited to, commercial and recreational catch/landing statistics, and current estimates of fishing mortality, stock abundance, and juvenile recruitment. As indicated in the Bluefish FMP, there are uncertainties associated with this stock assessment information. Until additional data are collected, or alternative techniques available to provide a more accurate determination of stock status, the methods used in the development of the FMP will be used for this review. A discussion of data needs is included in section 9.1.3.1 of the FMP.

A number of research topics have been have been identified as appropriate by MAFMC and ASMFC:

1. A hooking mortality study that investigates the magnitude of this mortality by gear type, fish size, and water temperature.

2. Investigate data from previous bluefish tagging studies and, if necessary, develop coastwide tagging study to investigate migratory patterns and corroborate estimates of fishing and natural mortality.

3. A study to quantify the level of waste in both the commercial (discards) and recreational bluefish fisheries.

4 A study to investigate the principal environmental variables (e.g. currents, temperature anomalies, Eckman transport) affecting year class strength and availability of bluefish.

5. A study to compare bluefish otoliths and scales as valid ageing structures.

6 A study to collect coastwide information on time of bluefish spawning, spawning location, and distribution of recruits.

7. A study to assess the significance of PCB contamination in bluefish.

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Table 1. Mean total lengths (in)[a] of bluefish by age class collected by the states of New Hampshire (NH), Connecticut (CT), North Carolina (NC), New York (NY), and Maryland (MD), as well as coastwide estimates (Atl.). All estimates of mean length were back-calculated values except for the Maryland data, which are mean lengths at capture. N = sample size.

		Age									
	N	1	2	3	4	5	6	7	8	9	10	11
NH[1]	76	10.3	18.3	24.1	27.8	30.5	32.5	33.9	35.1			
CT[2]	1087	11.1	17.8	22.1	26.0	29.4	31.7	33.2	34.4			
NC[3]	1062	11.1	20.1	26.5	28.6	30.7	32.5	33.5	34.7	35.1	36.1	37.0
Atl.[4]	7425	9.3	14.9	19.7	24.5	28.0	29.9	32.0				
NY[5]	64	10.3	17.7	21.8	25.9	28.5	30.7	31.6				
MD[6]	976	15.6	20.1	24.4	25.9	28.5	33.9	34.9	36.5	37.5		

[a] - Total lengths (TL) were calculated from fork lengths (FL) using the equation (Bonzek and Morin 1987): TL = 1.129 (FL) + 0.005, N = 814, r^2 = 0.99

1 - 1986, Robert Fawcett pers. comm.
2 - 1984-1985, Howell-Heller and Simpson (1986)
3 - 1982-1985, Jeff Ross pers. comm.
4 - Wilk (1977)
5 - Richards (1976)
6 - 1985-1986, Bonzek and Morin (1987)

Table 2. Theoretical growth parameters (with correlation coefficients) of bluefish collected in several studies. Parameters were derived from back-calculated total lengths (in) presented in Table 1.

	L-inf	K	t_0	r^2
New Hampshire 1986	37.30	0.351	0.083	0.999
Connecticut 1984-85	39.25	0.258	-0.293	0.999
No. Carolina 1982-85	36.77	0.373	-0.013	0.996
Atlantic (Wilk 1977)	40.85	0.216	-0.152	0.998
New York (Richards 1976)	35.34	0.322	-0.079	0.998

Table 3. Age frequency (number) of bluefish caught in the North Carolina winter trawl fishery, 1982 to 1987.

	Age									
Winter	0	1	2	3	4	5	6	7	8	9+
82-83	41104	39826	3733	2400	2888	2508	1099	459	64	14
83-84	5112	4100	499	206	342	170	105	44	13	5
84-85	14262	6218	1330	2060	2650	3465	2260	1057	230	51
85-86	43679	15554	551	111	88	90	62	29	6	1
86-87	22863	9875	813	101	229	263	179	90	23	3

Source: J. Ross pers. comm.

Table 4. Estimated age compostion of Atlantic coast bluefish (number) from the Marine Recreational Fishery Statistical Survey 1979-1987. Data were aged with a coastwide age length key (Crecco *et al.* 1987).

	Proportion at age								
Year	0	1	2	3	4	5	6	7	8+
1979	.2208	.2674	.1792	.1305	.0789	.0445	.0399	.0227	.0160
1980	.3174	.2330	.1573	.1048	.0790	.0374	.0323	.0217	.0171
1981	.3523	.2287	.1170	.0901	.0719	.0441	.0453	.0397	.0209
1982	.3597	.2245	.1217	.0809	.0630	.0568	.0366	.0244	.0324
1983	.2632	.3622	.1082	.0433	.0579	.0646	.0508	.0261	.0237
1984	.4280	.2518	.0924	.0542	.0454	.0399	.0398	.0258	.0227
1985	.2747	.3250	.1638	.0532	.0472	.0415	.0403	.0271	.0272
1986	.2329	.2171	.2285	.1151	.0683	.0459	.0460	.0249	.0210
1987	.2437	.2343	.1876	.1373	.0779	.0449	.0379	.0202	.0163

	Number (000's) at age								
Year	0	1	2	3	4	5	6	7	8+
1979	7893	9558	6406	4665	2820	1591	1426	811	572
1980	13267	9739	6575	4380	3302	1563	1350	907	715
1981	11274	7319	3744	2883	2301	1411	1450	950	669
1982	11850	7396	4009	2665	2075	1871	1206	804	1068
1983	11222	15443	4613	1846	2469	2754	2166	1113	1010
1984	12762	7508	2755	1616	1354	1190	1187	769	677
1985	7424	8783	4427	1438	1276	1122	1089	732	735
1986	7485	6971	7357	3695	2185	1475	1478	803	675
1987	7992	7684	6152	4503	2555	1472	1243	662	534

Source: Crecco *et al.* 1987, M. Terceiro pers. comm.

Table 5. Overall mean age composition of Atlantic coast bluefish by subregion and fishing mode from 1979 through 1985.

		Catch proportion at age								
Area	Mode	0	1	2	3	4	5	6	7	8+
North	Shore	.790	.096	.038	.015	.019	.020	.016	.007	.002
	Boat	.068	.108	.234	.188	.147	.088	.077	.051	.040
Middle	Shore	.765	.169	.033	.009	.005	.003	.002	.002	.010
	Boat	.143	.272	.183	.105	.083	.060	.046	.027	.031
South	Shore	.463	.462	.036	.004	.003	.003	.010	.010	.008
	Boat	.251	.474	.075	.006	.016	.039	.060	.042	.033

Boat: party/charter + private/rental
Shore: man-made + beach/bank

Source: Crecco *et al.* 1987.

Table 6. Estimates of total (Z) and instantaneous fishing (F) mortality rates of adult bluefish based on fisheries-independent surveys in Connecticut and the Atlantic coast. Data from North Carolina are from the commercial trawl fishery. Fishing mortality rates were estimated by subtracting a natural mortality rate of 0.35 from Z.

Source	Year	Ages	Z	SE	F
Connecticut	1984	1-8	0.728	0.139	0.378
Trawl Survey[1]	1985	1-8	0.642	0.102	0.292
Year	1986	1-8	0.756	0.043	0.406
	1987	1-8	0.861	0.080	0.511
Connecticut	1980	4-7	0.720	0.150	0.370
Trawl Survey[1]	1981	3-6	0.720	0.130	0.370
Year-class	1982	2-5	0.870	0.100	0.520
	1983	1-4	0.590	0.200	0.240
New York Sport Fishery[2]	1986	1-9	0.700	0.091	0.350
New Jersey	1978	3-9	0.769	0.073	0.419
Sport Fishery[3]	1979	3-8	0.874	0.062	0.524
Delaware Bay Sport Fishery[4]	1982-1986	1-9	0.650	0.088	0.300
North Carolina	1983	2-9	0.760	0.146	0.410
Winter Trawl	1984	2-9	0.620	0.083	0.270
Fishery[5]	1985	2-9	0.437	0.161	0.087
	1986	2-9	0.752	0.120	0.402
	1987	2-9	0.661	0.173	0.311

[1] = Data from Howell-Heller and Simpson (1987).
[2] = Data from D. Conover pers. comm.
[3] = Data from Boreman (1983).
[4] = Data from R. Seagraves pers. comm.
[5] = Data from Jeff Ross pers. comm.

Table 7. Relative population size of Atlantic coast bluefish based on 1974-1987 juvenile indices (Crecco et al. 1987) and a total mortality value (Z) of 0.7 (M = 0.35, F = 0.35).

Year	Relative Population Size
1982	57.96
1983	37.55
1984	28.22
1985	49.94
1986	36.00
1987	30.86
1988	20.29

Table 8. Total commercial bluefish landings (lbs) for the U.S. Atlantic coast by gear, 1976 to 1987 combined.

	Landings	% of Total
Common Haul Seines	7,361,953	4.5
Long Haul Seines	5,444,631	3.4
Long (Danish) Haul Seines	200	*
Stop Nets	605	*
Herring Purse Seines	52,700	*
Mackerel Purse Seines	200	*
Menhaden Purse Seines	15,500	*
Tuna Purse Seines	191,800	0.1
Other Purse Seines	1,075,900	0.7
Crab Otter Trawls	70,764	*
Fish Otter Trawls	38,293,137	23.6
Lobster Otter Trawls	12,100	*
Scallop Otter Trawls	2,355	*
Shrimp Otter Trawls	987,985	0.6
Other Otter Trawls	243,900	0.2
Midwater Trawls	1,396,600	0.9
Midwater Pair Trawls	910,300	0.6
Bottom Pair Trawls	162,700	0.1
Scottish Seine Trawls	2,200	*
Weirs	17,200	*
Fish Pound Nets	26,400,196	16.3
Other Pound Nets	69,500	*
Floating Traps	912,200	0.6
Fish Fyke Nets	48,800	*
Blue Crab Traps	3,366	*
Eel Pots	27,400	*
Fish Traps	30,500	*
Lobster Pots	200	*
Sea Bass Anchor Gill Nets	54,061	*
Other Anchor Gill Nets	29,187,558	18.0
Shad Drift Gill Nets	300	*
Other Drift Gill Nets	6,673,117	4.1
Runaround Gill Nets	23,716,647	14.6
Stake Gill Nets	21,100	*
Smelt Gill Nets	180,100	0.1
Hand Lines	10,989,339	6.8
Tuna Troll Lines	7,500	*
Other Troll Lines	4,484,262	2.8
Long Lines	300,274	0.2
Other Lines	2,737	*
Sea Scallop Dredge	613	*
Rakes	900	*
Unknown	2,716,319	1.7
Total	162,069,619	100.0

* = <0.1%

Source: NMFS General Canvas Data.

Table 9. Commercial bluefish landings (% of state total) by state and gear type, 1976-1987. Only gears which took more than 5% of the total landings in any state are listed.

	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	SC	GA	FL
Common Haul Seines	*	*	*	*	*	21	*	*	*	4	4	27	*	5
Long Haul Seines	*	*	*	*	*	*	*	*	*	*	12	*	*	*
Other Purse Seines	*	*	5	*	*	*	3	*	*	*	*	*	*	*
Fish Otter Trawls	1	1	5	66	47	19	28	*	13	7	42	2	2	*
Midwater Otter Trawls	*	*	*	*	*	*	5	*	*	1	*	*	*	*
Fish Pound Nets	*	*	7	*	*	13	11	*	37	63	3	*	*	*
Floating Traps	*	*	*	11	*	*	*	*	*	*	*	*	*	*
Other Gill Nets	97	95	16	9	*	22	1	72	28	6	35	11	*	*
Other Drift Gill Nets	*	*	*	*	5	*	2	28	*	19	*	*	*	*
Runaround Gill Nets	*	*	8	*	*	1	44	*	*	*	*	10	*	70
Hand Lines	1	3	41	8	46	24	*	*	15	*	*	44	56	1
Other Troll Lines	*	*	13	1	*	*	*	*	*	*	3	*	39	9
Unknown	*	*	*	*	2	*	*	*	*	*	*	*	*	15

* < 1.0%
Source: NMFS General Canvas Data.

Table 10. Commercial bluefish landings for the U.S. Atlantic coast by major gear types, 1976-1987. Data are the percent of total coastwide landings.

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
Otter Trawls	9	19	22	30	28	36	22	33	24	28	23	16
Gill Nets	11	9	13	14	17	17	27	24	27	30	31	39
Runaround Gill Nets	11	15	15	15	16	16	19	15	21	10	11	11
Pound Net & Traps	38	28	24	21	20	15	13	10	11	14	12	10
Haul Seines	19	14	10	9	6	4	7	6	7	9	4	4
Paired Trawls	3	2	2	*	1	2	1	1	*	1	*	*
Purse Seines	1	2	1	*	*	*	*	*	*	*	8	*
Troll Line	2	3	3	4	4	3	4	3	1	*	1	1
Hand Line	6	7	9	8	6	6	8	6	7	6	6	6

* = < 0.5%
Source: NMFS General Canvas Data.

Table 11. Bluefish catch per unit effort (pounds/day fished) by vessel tonnage class for selected gears, 1982-1985.

Year	Vessel	Other Hand Line	Finfish Otter Trawl	Floating Trap	Anchor Gill Net	Runaround Gill Net
1982	< 5	186	326	301	111	7,696
	5-50	312	376	144	208	5,741
	> 50	1,986	496	0	301	0
1983	< 5	202	192	619	122	22,242
	5-50	532	251	123	229	4,978
	> 50	0	445	0	58	35,000
1984	< 5	344	218	406	270	23,099
	5-50	113	257	352	159	4,296
	> 50	0	403	0	38	6,170
1985	< 5	234	184	20	226	19,660
	5-50	*	241	205	211	4,755
	> 50	1,547	538	0	720	138,975
Average	< 5	231	230	218	171	13,031
	5-50	480	278	194	204	4,869
	> 50	1,892	473	0	402	60,048

* = unknown
Source: NEFC, NMFS weighout data.

Table 12. Commercial bluefish landings and recreational bluefish catch ('000 lbs), 1979-1987.

Year	Commercial Landings	Recreational Catch *	Total	% Commercial
1979	12,410	140,565	152,975	8
1980	15,118	153,468	168,586	9
1981	16,460	128,344	144,804	11
1982	15,944	124,722	140,666	11
1983	15,773	138,580	154,353	10
1984	11,862	86,701	98,563	12
1985	13,255	99,157	112,412	12
1986	13,951	130,877	144,828	10
1987	14,767	109,510	124,277	12
1979-1987 mean	14,393	123,547	137,940	10

* Type A, B1, and B2 fish
Source: USDC 1980, 1981, 1982, 1983, 1984a, 1984b, 1985b, 1985c, 1986a, 1986b, 1987a, 1987b, 1988a, 1988b.

Table 13. Commercial bluefish landings ('000 lbs) for the US Atlantic coast from state and EEZ water areas, 1976-1987.

Year	State	EEZ	Total	% caught in state
1976	8,983	1,042	10,024	90
1977	8,673	1,949	10,586	82
1978	8,338	2,645	10,986	76
1979	8,862	3,550	12,410	71
1980	11,275	3,844	15,118	75
1981	10,806	5,656	16,460	66
1982	11,746	4,199	15,944	74
1983	10,214	5,557	15,773	65
1984	9,171	2,691	11,862	77
1985	9,279	3,974	13,255	70
1986	9,700	4,251	13,951	70
1987	10,486	4,281	14,767	71
1976-1987 mean	9,795	3,637	13,428	73

Source: USDC 1976, 1977, 1978, 1979, 1980, 1981, 1982, 1983, 1984a, 1985a, 1986a, 1987a, 1988a.

Table 14. Commercial bluefish landings ('000 lbs) for the US Atlantic coast by subregion, 1976-1987. Data presented are: total subregion landings (EEZ + state waters); total subregion landings as a percent of total coastwide landings (EEZ + state waters); total state landings in subregion; and total state landings as a percent of total subregion landings.

	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
NA												
Total	715	762	1262	1008	1206	1621	2537	1764	1887	2543	3219	2287
% Coast	7	7	11	8	8	10	16	11	16	19	23	15
State	575	582	885	611	770	887	1534	1119	1002	997	1474	969
% State	80	76	70	61	64	55	61	63	53	39	46	42
MA												
Total	6572	6109	6438	6634	6307	6067	7097	5752	4828	6472	6189	6312
% Coast	66	58	59	53	42	37	45	37	41	49	44	43
State	5873	4839	5213	5156	5145	4849	5536	4538	3748	4557	4222	4879
% State	89	79	81	78	82	80	78	79	78	70	68	77
SA												
Total	2737	3715	3286	4768	7605	8772	6310	8257	5147	4240	4543	6168
% Coast	27	35	30	38	50	53	40	52	43	32	33	42
State	2536	3216	2240	3095	5360	5070	4676	4557	4421	3725	4004	4638
% State	93	87	68	65	71	58	74	55	86	88	88	75
Coastwide												
Total	10025	10586	10986	12410	15118	16460	15944	15773	11862	13255	13951	14767
% Coast	100	100	100	100	100	100	100	100	100	100	100	100
State	8983	8637	8338	8862	11275	10806	11746	10214	9171	9279	9700	10486
% State	90	82	76	71	75	66	74	65	77	70	70	71

NA = North Atlantic, MA = Mid-Atlantic, SA = South Atlantic
Source: NMFS General Canvas Data.

Table 15. Commercial bluefish landings ('000 lbs) for the US Atlantic coast from state and EEZ water areas. Values represent the average monthly landings for the years 1976 through 1987, combined.

Month	State	EEZ	Total
Jan	231	280	765
Feb	257	409	889
Mar	277	338	869
Apr	449	278	1,113
May	882	114	1,178
Jun	702	233	1,025
Jul	671	310	1,091
Aug	692	229	1,075
Sep	829	271	1,281
Oct	839	362	1,429
Nov	451	370	954
Dec	341	289	772

Note: Table does not include landings data from Connecticut, Delaware, Florida 1976, New Hampshire 1976-1980, and Maryland 1976-1979.

Source: NMFS General Canvas Data.

Table 16. Commercial bluefish landings ('000 lbs) by state, 1976-1987.

State	1976	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	
ME	*	*	33	67	96	90	165	170	48	90	103	19	
NH	0	*	2	*	2	45	67	31	18	23	61	128	
MA	450	504	798	567	694	820	1409	974	702	555	1608	793	
RI	242	245	374	323	365	354	596	519	1019	1693	1143	1185	
CT	23	13	55	51	49	312	300	70	100	182	304	162	
NY	600	986	1747	1611	1488	1280	1723	1687	1636	2133	1616	1563	
NJ	1280	1398	1585	1589	1401	1835	1981	1924	1692	1989	2898	2532	
DE	12	32	40	50	164	196	511	290	157	188	180	350	
MD	513	524	325	319	437	416	289	331	185	509	439	363	
VA	4167	3169	2741	3065	2817	2340	2593	1520	1158	1653	1056	1504	
NC	1356	2331	1948	3407	5443	6610	4291	6747	3560	3604	3450	4562	
SC	1	10	2	13	4	3	9	11	2	2	8	3	
GA	*	1	*	*	*	1	2	*	*	*	1	3	
FL[a]	1380	1373	1336	1348	2158	2158	2008	1499	1585	634	1084	1600	
TOTAL	10024	10586	10986	12410	15118	16460	15944	15773	11862	13255	13951	14767	

* = less than 500 pounds.
a = east coast only.
Source: NMFS General Canvas Data.

Table 17. Estimated total weight[a] (millions of pounds) and percent of total recreational catch of several species caught by marine recreational anglers, US Atlantic coast, 1960-1987.

	Bluefish		Summer/[b] Winter Flounder		Weakfish/ Seatrout		Striped Bass		Scup/ Porgies		Sea Bass/ Groupers		Total	
	lbs	%	lbs	%	lbs	%	lbs	%	lbs	%	lbs	%	lbs	%
1960	50.6	7	108.7	15	26.9	4	37.5	5	36.7	5	12.6	2	731.9	100
1965	90.5	11	63.6	8	20.5	2	56.9	7	37.6	4	10.9	1	836.5	100
1970	119.2	13	65.9	7	40.7	4	73.3	8	28.5	3	19.7	2	917.6	100
1979	140.6	26	56.1	11	19.6	4	8.9	2	13.0	2	10.4	2	534.4	100
1980	153.5	30	84.0	17	48.0	9	2.2	T	12.0	2	12.7	2	510.2	100
1981	128.3	30	35.8	8	17.8	4	1.5	T	7.5	2	9.5	2	426.4	100
1982	124.7	32	47.2	12	14.3	4	12.9	3	19.0	5	27.0	7	396.1	100
1983	138.6	28	71.9	15	15.4	3	5.2	1	9.5	2	13.2	3	494.5	100
1984	86.7	24	69.8	19	8.8	2	4.8	1	5.9	2	15.1	4	365.8	100
1985	99.2	25	50.3	13	9.4	2	5.0	1	9.8	2	10.9	3	397.4	100
1986	130.9	22	45.9	8	17.1	3	15.1	2	16.4	3	20.1	3	608.6	100
1987	109.5	29	52.4	14	13.1	3	16.1	4	8.9	2	10.5	3	374.3	100
60-70 MEAN	86.8	10	79.4	10	29.4	3	55.9	7	34.3	4	14.4	2	828.7	100
79-87 MEAN	123.6	27	57.0	12	18.2	4	8.0	2	11.3	2	14.4	3	456.4	100

T = less than 0.5%
a. Calculated from total number of type A + B1 + B2 fish multiplied by the mean weight of type A fish.
b. In 1960, summer and winter flounder were listed with other species under "flatfishes."
Sources: Clark 1962, Deuel and Clark 1968, Deuel 1973, USDC 1984b, 1985b, 1985c, 1986b, 1987b, 1988b

Table 18. Total number ('000) and weight ('000 lbs) of bluefish caught by marine recreational anglers, US Atlantic coast, 1979-1987.

Year	Catch Number	Catch Weight*
1979	35,746	140,565
1980	41,515	153,468
1981	31,999	128,344
1982	32,665	124,722
1983	42,636	138,580
1984	29,852	86,701
1985	27,029	99,157
1986	32,126	130,877
1987	32,796	109,510

* Type A, B1, and B2 fish
Sources: USDC 1984b, 1985b, 1985c, 1986b, 1987b, 1988b.

Table 19. Estimated total number ('000) and weight ('000 lbs) of bluefish caught by marine recreational fishermen in each Atlantic coast subregion, 1979-1987.

	Number			Weight		
	NA	MA	SA	NA	MA	SA
1979	5,326	24,308	6,112	24,553	102,974	13,038
1980	7,423	26,830	7,262	27,756	110,604	15,108
1981	9,083	17,755	5,161	54,975	62,389	10,981
1982	10,295	14,998	7,372	59,066	55,171	10,485
1983	13,765	18,843	10,028	49,152	55,307	34,121
1984	6,343	17,308	6,201	21,043	50,144	15,514
1985	7,933	13,644	5,452	32,518	47,876	18,764
1986	10,646	18,379	3,101	64,198	59,908	6,770
1987	8,073	20,489	4,234	32,930	67,898	8,681
79-87 MEAN	8,537	19,227	6,513	40,688	68,030	14,829

NA = North Atlantic, MA = Mid-Atlantic, SA = South Atlantic
Sources: USDC 1984b, 1985b, 1985c, 1986b, 1987b, 1988b.

Table 20. Percent of total number and total weight of bluefish caught by marine recreational fishermen in state waters (inland + territorial sea) and the Exclusive Economic Zone (EEZ) in each Atlantic coast subregion, 1979-1987.

		% of Total Number			% of Total Weight	
Subregion	Year	State	EEZ	Unknown	State	EEZ
NA	1979	74	20	6	54	47
	1980	73	20	7	47	53
	1981	69	29	2	60	40
	1982	62	37	1	27	74
	1983	69	20	11	52	48
	1984	85	15	-	73	26
	1985	72	28	1	61	39
	1986	65	35	-	52	48
	1987	81	19	-	72	28
	MEAN	72	25	3	55	45
MA	1979	63	35	2	41	59
	1980	58	28	14	51	49
	1981	58	41	1	41	59
	1982	80	18	2	61	39
	1983	70	12	17	56	43
	1984	59	25	16	36	63
	1985	73	27	*	56	44
	1986	75	22	3	53	42
	1987	80	20	-	65	35
	MEAN	68	25	6	51	48
SA	1979	67	32	*	22	77
	1980	67	1	32	97	3
	1981	82	2	16	97	3
	1982	70	27	2	53	47
	1983	59	39	1	47	53
	1984	86	13	1	46	54
	1985	75	25	*	28	72
	1986	97	3	-	95	5
	1987	93	7	-	74	26
	MEAN	77	17	6	62	38

* = <1.0%
NA = North Atlantic, MA = Mid-Atlantic, SA = South Atlantic
Source: USDC 1984b, 1985b, 1985c, 1986b, 1987b, 1988b.

Table 21. Mean weight (lbs) of bluefish caught by marine recreational fishermen by subregion and distance from shore, 1979-1987.

Year	Water Area	North Atlantic	Middle Atlantic	South Atlantic
1979	Internal Water	1.10	2.65	1.10
	Territorial Sea	4.19	3.53	1.54
	EEZ	7.05	7.94	8.38
1980	Internal Water	1.76	3.09	1.54
	Territorial Sea	6.17	5.73	5.73
	EEZ	8.16	7.50	3.75
1981	Internal Water	1.32	3.09	0.88
	Territorial Sea	6.61	3.97	1.32
	EEZ	6.39	7.28	1.32
1982	Internal Water	1.98	1.32	1.32
	Territorial Sea	3.75	3.97	1.10
	EEZ	12.13	6.17	2.65
1983	Internal Water	1.98	1.98	1.10
	Territorial Sea	5.29	3.53	2.87
	EEZ	8.82	9.92	4.19
1984	Internal Water	3.09	1.98	0.88
	Territorial Sea	5.51	3.09	1.54
	EEZ	8.16	7.50	10.14
1985	Internal Water	2.91	2.38	1.01
	Territorial Sea	5.14	3.77	1.41
	EEZ	5.82	5.78	10.03
1986	Internal Water	3.29	1.82	0.83
	Territorial Sea	6.15	3.49	2.85
	EEZ	8.40	6.31	3.38
1987	Internal Water	2.67	2.73	1.15
	Territorial Sea	5.28	2.67	1.87
	EEZ	5.90	5.73	8.11

Source: R. Essig pers. comm.

Table 22. Estimated number ('000) of bluefish caught by recreational anglers in state waters (inland + territorial sea) and the Exclusive Economic Zone (EEZ) by subregion and mode, 1987.

Region	Mode	State	EEZ	Total
North Atlantic	Shore	2,927	-	2,927
	Party/Charter	99	392	491
	Private/Rental	3,510	1,145	4,655
Mid-Atlantic	Shore	4,702	-	4,702
	Party/Charter	2,329	1,745	4,074
	Private/Rental	9,326	2,386	11,712
South Atlantic	Shore	2,129	-	2,129
	Party/Charter	60	102	162
	Private/Rental	1,788	156	1,944
Total	Shore	9,758	-	9,758
	Party/Charter	2,488	2,239	4,727
	Private/Rental	14,624	3,687	18,311
	Total	26,870	5,926	32,796

Source: R. Essig pers. comm.

Table 23. Estimated weight ('000 lbs) of bluefish caught by recreational anglers in state waters (inland + territorial sea) and the Exclusive Economic Zone (EEZ) by subregion and mode, 1987.

Region	Mode	State	EEZ	Total
North Atlantic	Shore	4,121	-	4,121
	Party/Charter	560	2,845	3,405
	Private/Rental	19,139	6,264	25,404
Mid-Atlantic	Shore	4,263	-	4,263
	Party/Charter	8,435	8,443	16,877
	Private/Rental	31,546	15,213	46,758
South Atlantic	Shore	3,628	-	3,628
	Party/Charter	171	891	1,062
	Private/Rental	2,790	120	3,991
Total	Shore	12,012	-	12,012
	Party/Charter	9,166	12,179	21,345
	Private/Rental	53,475	22,679	76,153
	Total	74,653	34,858	109,510

Source: R. Essig pers. comm.

Table 24. Recreational catch ('000 lbs), effort (directed bluefish trips*) and catch per effort (CPUE) for 1960, 1965 and 1970 and from 1979 through 1987.

Year	Catch ('000 lbs)	Effort ('000)	CPUE (lbs/trip)
1960	25298	9200	2.75
1965	45243	11400	3.97
1970	59564	16900	3.52
1979	140565	30208	4.65
1980	153468	36754	4.18
1981	128344	26442	5.99
1982	124722	29569	4.22
1983	138580	35357	3.92
1984	86701	34778	2.49
1985	99157	32893	3.02
1986	130877	36549	3.58
1987	109510	36845	2.97

* Directed bluefish effort in 1960, 1965, and 1970 was estimated indirectly by subregion and mode by multiplying the total number of fishing trips in each of those years by the overall mean percentage of fishing trips that caught bluefish between 1979 and 1986. For 1979 to 1986, the number of fishing trips where at least one bluefish was caught (as derived from MRFSS data), was expanded annually by subregion, mode and area cells, and used as an index of directed fishing effort.

Source: Crecco *et al.* 1987, M. Terceiro pers. comm.

Table 25. Estimated total number (000's) of fishing trips in subregion and mode with recorded bluefish catch, 1979 - 1987.

		Year								
Region	Mode	1979	1980	1981	1982	1983	1984	1985	1986	1987
North	Shore	1163	830	1101	1545	2228	1400	1519	2189	1950
	Boat	2798	3162	2814	3076	4205	2491	3571	4638	4426
	Total	3961	3992	3915	4621	6433	3891	5090	6827	6376
Middle	Shore	3486	6165	3067	4350	5011	3766	4027	6227	4626
	Boat	12270	15138	8451	8856	13056	13015	10080	12829	11836
	Total	15756	21303	11518	13206	18067	16781	14107	19056	16462
South	Shore	6410	6964	4267	6064	6052	7051	8368	4846	5457
	Boat	4081	4505	1742	5678	4805	7055	5328	5819	8530
	Total	10491	11469	6009	11742	10857	14106	13696	10665	13987
All Regions	Shore	11059	13959	8435	11959	13291	12217	13914	13262	12053
	Boat	19149	22795	13007	17610	22066	22561	18979	23287	24792
	Total	30208	36754	21442	29569	35357	34778	32893	36549	36845

North: ME to CT
Middle: NY to VA
South: NC to FL
Boat: party/charter + private/rental
Shore: man-made + beach/bank
Source: Crecco *et al.* 1987, M. Terceiro pers. comm.

Table 26. The estimated number ('000) of bluefish (BF) caught by recreational fishermen in each state as a percent of both the total Atlantic coast catch of bluefish and the total recreational catch of all marine fish (AF) in each state, 1986-1987.

	1986				1987			
State	BF	% TBF[a]	AF	% TAF[b]	BF	% TBF[a]	AF	% TAF[b]
ME	240	0.7	2,507	9.6	581	1.8	2,617	22.2
NH	110	0.3	683	16.1	115	0.4	733	15.7
MA	3,813	11.9	26,033	14.6	2432	7.4	20,199	12.0
RI	3,784	11.8	13,954	27.1	1630	5.0	6,943	23.5
CT	2,699	8.4	13,477	20.0	3314	10.1	9,431	35.1
NY	7,512	23.4	35,443	21.2	8115	24.7	37,997	21.4
NJ	6,001	18.7	62,599	9.6	7481	22.8	31,899	23.5
DE	233	0.7	5,102	4.6	210	0.6	3,031	6.9
MD	3,064	9.5	21,656	14.1	3756	11.5	25,052	15.0
VA	1,569	4.9	38,869	4.0	927	2.8	24,365	3.8
NC	1,861	5.8	16,195	11.5	2467	7.5	17,687	13.9
SC	159	0.5	7,527	2.1	197	0.6	6,828	2.9
GA	40	0.1	2,880	1.4	91	0.3	4,199	5.1
Fl	1,041	3.2	32,444	3.2	1480	4.5	32,281	4.6

a = % TBF = state percent of total bluefish caught along Atlantic coast.
b = % TAF = the percentage of bluefish in the total recreational catch of all fish caught in each state.
Source: USDC 1987b, 1988b.

Table 27. Bluefish (thousand pounds) caught by foreign vessels, 1978-1987. Catch is estimated using foreign fleet observers' reports and reported catch of permitted fish categories by foreign fishing vessels.

Year	Catch
1978	77.9
1979	62.2
1980	51.4
1981	156.5
1982	170.5
1983	73.1
1984	148.9
1985	40.3
1986	61.8

Source: Unpublished preliminary NMFS data.

Table 28. The ex-vessel value and average price per pound of commercial bluefish landings.

Year	Value	Average Price per Pound	
		Nominal	1987* Adjusted
1976	$1,063,000	$0.11	$0.22
1977	1,193,000	0.11	0.21
1978	1,559,000	0.14	0.24
1979	2,097,000	0.17	0.27
1980	2,388,000	0.16	0.22
1981	3,246,000	0.20	0.25
1982	3,658,000	0.23	0.27
1983	2,378,000	0.15	0.17
1984	2,204,000	0.19	0.21
1985	2,269,000	0.17	0.18
1986	2,412,000	0.17	0.18
1987	3,254,000	0.21	0.21

* Adjusted with consumer price index.
Source: USDC 1977, 1978, 1979, 1980, 1981, 1982, 1983a, 1984a, 1985a, 1986a, 1987a, 1988a.

Table 29. The ex-vessel value (thousands of $) of commercial bluefish landings and their relative importance (% of the total value of all fish landings) in each state, 1987.

State	Value	% Total
ME	2	*
NH	22	0.5
MA	149	0.1
RI	213	0.6
CT	41	0.9
NY	524	2.1
NJ	664	3.0
DE	52	9.8
MD	58	1.4
VA	285	0.6
NC	820	2.8
SC	2	*
GA	1	0.1
FL[a]	336	2.1

* = < 0.1
[a] Florida east coast only.
Source: NMFS General Canvas data.

Table 30. Average ex-vessel price (adjusted 1987 $) of Atlantic coast bluefish by month and water area, 1976-1987 combined.

	State	EEZ	Coastwide
January	0.21	0.25	0.23
February	0.20	0.21	0.21
March	0.22	0.27	0.25
April	0.22	0.25	0.23
May	0.17	0.17	0.17
June	0.25	0.22	0.24
July	0.27	0.23	0.26
August	0.27	0.22	0.26
September	0.23	0.17	0.21
October	0.20	0.13	0.18
November	0.18	0.15	0.17
December	0.19	0.20	0.19

Note: Table does not include landings data from Connecticut, Delaware, Florida 1976, New Hampshire 1976-1980, or Maryland 1976-1979.
Source: NMFS General Canvas data.

Table 31. Estimated number of party and charter boats operating along the Atlantic coast and associated revenues by state, 1985.

State	Charter	Party	Revenues ('000 1985 $)
Maine	35	10	2,696
New Hampshire	19	21	3,226
Massachusetts	136	41	10,717
Rhode Island	78	6	4,164
Connecticut	46	15	3,753
New York	300	100	24,723
New Jersey	375	100	28,074
Delaware	80	12	2,511
Maryland	221	109	11,307
Virginia	200	30	5,196
North Carolina	136	10	4,376
South Carolina	66	21	3,163
Georgia	17	0	467
Florida	288	53	55,764
Total	1,997	528	160,137

Source: Sport Fishing Institute 1988a.

Table 32. Economic activity associated with marine recreational fishing by subregion for all species and bluefish, 1985.

		North Atlantic	Mid-Atlantic	South Atlantic	Coastwide
Retail Sales	All	495.4	1,048.8	1,016.0	2,560.2
(millions 1985 $)	Bluefish	101.9-131.0	242.7-337.1	46.1-106.0	390.7-574.1
Employment	All	8,133	17,114	17,189	42,436
(person-years)	Bluefish	1,672-2,150	3,960-5,501	780-1,794	6,412-9,445
Wages	All	101.1	213.8	207.2	522.1
(millions 1985 $)	Bluefish	20.8-26.7	49.5-68.7	9.4-21.6	79.7-117.0

Source: Sport Fishing Institute 1988a, b.

Table 33. The average price per pound paid for blue fish and processed bluefish products in retail establishment in each Atlantic coastal state, August, 1987.

State	Whole	Fillet	Smoked
ME	0.99	1.89	5.99
NH	0.88	2.84	6.50
MA	0.99	1.99	4.50
RI	*	*	*
CT	1.10	2.50	4.00
NY	1.06	2.99	4.49
NJ	0.88	1.60	*
DE	1.49	2.39	*
MD	1.56	3.64	6.95
VA	*	*	*
NC	1.29	2.36	2.50
SC	*	*	*
GA	1.47	*	*
FL	1.30	2.39	1.99

* = unavailable
Source: telephone survey.

Table 34. Worldwide bluefish commercial landings ('000 lbs), 1976

	North west Atlantic	North east Atlantic	West Central Atlantic	East Central Atlantic	Mediterranean & Black Sea	South west Atlantic	South east Atlantic	Indian Ocean	Pacific	Total
1976	7,875	73	4,603	30,283	8,816	21,971	0	154	778	74,556
1977	7,352	141	6,367	31,844	22,430	27,593	240	82	756	96,805
1978	8,195	362	4,910	26,253	9,974	24,249	0	77	668	74,673
1979	8,774	265	5,430	13,984	33,574	24,489	172	88	756	87,532
1980	10,362	331	6,488	12,948	23,001	10,172	0	90	68	64,073
1981	11,568	247	6,164	8,272	40,858	16,636	0	79	833	84,658
1982	11,773	366	5,333	15,269	72,600	17,655	13	68	300	123,377
1983	10,831	238	6,656	27,796	69,130	16,261	745	602	139	132,399
1984	9,440	245	4,076	9,132	26,832	12,524	1,164	152	196	63,762
1985	11,228	417	3,254	9,808	19,185	17,469	410	344	207	62,322
1986	11,614	2,987	3,126	10,205	27,721	17,736	855	112	203	74,560

Source: FAO 1979,1980,1981,1982,1983,1984,1985,1986.

Table 35. Yearly exports of bluefish from Atlantic and Gulf coast ports, 1981-1986.

Year	Pounds	Value ($)	$/lb
1981	30,423	16,020	0.53
1982	130,952	66,690	0.51
1983	2,425	1,476	0.61
1984	126,543	62,162	0.49
1985	53,131	33,167	0.62
1986	205,908	91,920	0.45

Source: USDC 1987a.

Table 36. A ten year average of commercial landings by state, 1978-1987

State	Average landings ('000 lbs)	% of total
ME	88.1	0.627
NH	37.7	0.268
MA	892.0	6.348
RI	757.1	5.388
CT	158.5	1.128
NY	1648.4	11.730
NJ	1942.6	13.824
DE	212.6	1.513
MD	361.3	2.571
VA	2044.7	14.550
NC	4362.2	31.042
SC	5.7	0.041
GA	0.7	0.005
FL	1541.0	10.966
Total	14052.6	100.000

Table 37. Index A of bluefish projection methodology (catch and landings are in thousands of pounds)

Year	Rec. Catch	Comm. Landings	Total Catch	3 yr ave Comm.	3 yr ave Total	% Comm.
1979	140565	12410	152975			
1980	153468	15118	168586			
1981	128344	16460	144804	14663	155455	9.4
1982	124722	15944	140666	15841	151352	10.5
1983	138580	15773	154353	16059	146608	10.9
1984	86701	11862	98563	14526	131194	11.1
1985	99157	13255	112412	13630	121776	11.2
1986	130877	13951	144828	13023	118601	11.0
1987	109510	14767	124277	13991	127172	11.0

Table 38. Index B of bluefish projection methodology (catch and landings are in thousands of pounds)

Year	Rec. Catch	Comm. Landings	Total Catch	% Comm.	% Change
1979	140565	12410	152975	8.1	-
1980	153468	15118	168586	9.0	10.5
1981	128344	16460	144804	11.4	26.8
1982	124722	15944	140666	11.3	-0.3
1983	138580	15773	154353	10.2	-9.8
1984	86701	11862	98563	12.0	17.8
1985	99157	13255	112412	11.8	-2.0
1986	130877	13951	144828	9.6	-18.3
1987	109510	14767	124277	11.9	23.4

Table 39. Potential bluefish commercial quotas for each state based on a coastwide quota of 25.434 million pounds

State	Quota ('000 lbs)	Average 1978-87 landings ('000 lbs)
ME	159.4	88.1
NH	68.2	37.7
MA	1614.4	892.0
RI	1370.3	757.1
CT	286.9	158.5
NY	2983.5	1648.4
NJ	3515.9	1942.6
DE	384.8	212.6
MD	653.9	361.3
VA	3700.7	2044.7
NC	7895.2	4362.2
SC	10.3	5.7
GA	1.3	0.7
FL*	2789.1	1541.0

* = Florida east coast only.

Table 40. The estimated percent of successful anglers landing 1 to 50 bluefish (A + B1 fish) per day, coastwide, 1987.

Landings/Angler	Cumulative %
1	46.3
2	59.7
3	68.2
4	74.2
5	78.9
6	82.3
7	85.0
8	89.0
9	90.3
10	92.7
11	93.2
12	94.2
13	95.0
14	95.4
15	96.2
20	97.7
25	98.6
30	99.0
35	99.3
40	99.4
45	99.6
50	99.8

Table 41. Cetaceans and Turtles Found in Survey Area

Scientific name	Common name	Est. Minimum Number in Study Area	Endangered	Threatened
LARGE WHALES				
Balaenoptera physalus	fin whale	1,102	X	
Megaptera novaeangliae	humpback whale	684	X	
Balaenoptera acutorostrata	minke whale	162		
Physeter catodon	sperm whale	300	X	
Eubalaena glacialis	right whale	29	X	
Balaenoptera borealis	sei whale	109	X	
Orcinus orca	killer whale	unk		
SMALL WHALES				
Tursiops truncatus	bottlenose dolphin	6,254		
Globicephala spp.	pilot whales	11,448		
Lagenorhynchus acutus	Atl. white-sided dolphin	24,287		
Phocoena phocoena	harbor porpoise	2,946		
Grampus griseus	grampus (Risso's) dolphin	10,220		
Delphinus delphis	saddleback dolphin	17,606		
Stenella spp.	spotted dolphin	22,376		
Stenella coeruleoalba	striped dolphin	unk		
Lagenorhynchus albirostris	white-beaked dolphin	unk		
Ziphius cavirostris	Cuvier's beaked dolphin	unk		
Stenella longirostris	spinner dolphin	unk		
Steno bredanensis	rough-toothed dolphin	unk		
Delphinapteras leucas	beluga	unk		
Mesoplodon spp.	beaked whales	unk		
TURTLES				
Caretta caretta	logggerhead turtle	4,017		X
Dermochelys coriacea	leatherback turtle	636	X	
Lepidochelys kempi	Kemp's ridley turtle	unk	X	
Chelonia mydas	green turtle	unk		X

Source: University of Rhode Island 1982.

Table 42. Synoptic overview of bluefish laws and regulations, Maine to Florida.

Maine

Size limits	None
Gear restrictions	New fish weirs must be constructed at least 2,000 feet from existing weirs; seines cannot be set within 2,000 feet of a licensed weir in operating condition; purse seines may not be set within 2,000 feet of a licensed weir in operating condition; it is unlawful to use dynamite or any poisonous or stupefying substance for taking fish. Other gear restrictions for specific areas/waters are listed under Department regulations.
Area closures	Unlawful to drag or trawl along the seabed in areas containing underwater cables or pipelines; dragging prohibited in certain portions of the Frenchboro area. Other closures for specific areas/waters are listed under Department regulations.
Seasons	Unlawful to use fish spawn, grapnel, spear, trawl, weir, gaff, gill net, trap, or set line in the Pleasant River and tributaries and in Addison between May 1 and December 1; in the St. Croix River, otter and beam trawls may only be used above the Quoddy Head Lighthouse between May 1 and December 15; unlawful to fish any type of net, fish trap, weir, in the tidal waters of Union River, Boz and Lower Union River between April 15 and August 1. Other seasonal restrictions are listed under Department regulations.
License	Commercial fishing license required to fish for, possess, transport, or sell fish; no sport fishing license required. A $20/resident or $200/nonresident license is required to sell fish caught by hook and line.

New Hampshire

Size limits	None
Gear restrictions	None
Area closures	Use of otter trawl, mid-water trawl, beam trawl, or drag seine prohibited in Piscataqua River or its tributaries north of the Portsmouth Memorial Bridge.
Seasons	Mobile gear, which includes, but is not limited to otter trawls, mid-water trawls, beam trawls, pair trawls, drag seines, purse seines, and Scottish seines, cannot harvest bluefish between June 1 and September 15.
License	Commercial fishing license; no sport fishing license. Residents are not required to have a license to sell fish caught by hook and line, but a $200 minimum license is required for nonresidents.

Massachusetts

Size limits	None
Gear restrictions	Cod-end mesh size for otter trawls, beam trawls, and bottom pair trawls must be at least 5"; gill nets may not exceed 1,500 feet; mesh size of gill nets must be greater than 6" stretched measure; 5" minimum on drift nets.
Area closures	Seining prohibited within 3 miles of the shore of Barnstable County; specific areas closed to gill netting due to conflicts between charter boats and gill net boats; fishing with any type of net prohibited in certain inshore waters unless the net is less than 200 square feet and used exclusively to obtain bait fish.
Seasons	Commercial fishing prohibited from February 1 to April 30 in estuarine waters open to net fishing and in waters 1-2 miles from shore, New Hampshire border to Provincetown; seasonal fishing restrictions on Scottish, Danish, and pair seines in specific areas; no gillnetting April 1 to November 15 south of Cape Cod; no otter, beam, or pair trawling within 3 miles of the coast May 1 to October 31 north of Cape Cod and in certain areas east and south of Cape Cod.
License	Commercial fishery permits; specific permit required to gill net bluefish; no sport fishing license. A $35 license is required to sell fish caught by hook and line except rod and reel fishermen may sell 100 lbs and one fish per day.

Rhode Island

Size limits	None
Gear restrictions	Numerous specific gill net regulations by geographic location and season; fyke net leaders must not exceed 100 feet in length; stretched mesh of fyke nets must not be greater than 2.5".
Area closures	Cannot set, haul, and/or maintain a seine within 0.5 mile of the seaward entrance of several ponds/rivers; specific areas closed to otter trawls, pair trawls, beam trawls, fyke nets and gill nets. Significant portion of the state is closed to various forms of netting.
Seasons	None except as noted above.
License	Commercial food fishing license to operate fish traps, gill nets, and trawls; $25 license allows hook-and-line fishermen to sell catch; no sport fishing license. A $100 license is required to sell fish caught by hook and line.

Connecticut

Size limits	Only bluefish greater than 9" may be retained in the commercial fishery.
Gear restrictions	Roller rig gill nets prohibited; gill net mesh must be larger than 3.5".
Area closures	Purse seines are prohibited within 2 miles of shore and in portions of Long Island Sound.
Seasons	None
License	Commercial license; no sport fishing license. A $25 license is required to sell fish caught by hook and line.

New York

Size limits	Only bluefish greater than 9" may be retained in the commercial fishery.
Gear restrictions	Use of purse seines to harvest food fish is prohibited.
Area closures	Trawls (defined to include, but not be limited to otter trawl, beam trawl, Paranzella or two-boat trawl, pair trawl, Danish and Scottish seines) are prohibited within some specified areas off the coast and in all connecting tidal waters.
Seasons	None
License	Commercial license; no sport fishing license. A $100 license is required to sell fish caught by hook and line.

New Jersey

Size limits	Only bluefish greater than 9" total length may be sold.
Gear restrictions	Gill nets may not exceed 2400 feet in length from February 1 through May 15 and may not exceed 1200 feet in length from May 16 through December 15.
Area closures	Purse seining, otter or beam trawling are prohibited within two miles of the coast; gill netting is limited to the Atlantic Ocean and Delaware Bay.
Seasons	Gill nets cannot be fished from December 16 through February 1.
License	Commercial gears are licensed; no sport fishing license. No license is required to sell fish caught by hook and line.

Delaware

Size limits	None
Gear restrictions	Purse seines, power operated seines, trawls, and runaround gill nets are prohibited; a single gill net cannot exceed 200 yards in length; a series of gill nets cannot exceed 500 yards; a fyke net cannot exceed 72" in diameter.
Area closures	Areas within a 0.5 mile sector at the mouths of all major tributaries to the Delaware River and Bay are closed to all fixed gear; numerous, specific areas closed to commercial fishing.
Seasons	From April 1 to May 10 commercial fishermen cannot set over 1000 yards of fixed gill net from one vessel; from May 10 to September 30 commercial fishermen cannot set over 1000 yards of drifting gill net from one vessel; drift gill nets cannot be set from 2400 hours Friday through 1600 hours Sunday during this period; specific seasonal closures for gill nets in certain areas.
License	Commercial food fishing license; license to sell catch; food fishing equipment permits; recreational gill net permit; no hook and line sport fishing license. A $150 license is required to sell fish caught by hook and line.

Maryland

Size limits	Only bluefish greater than 8" may be retained in both the commercial and recreational fisheries.
Gear restrictions	Use of monofilament gill net webbing prohibited; minimum-maximum gill net mesh is 2.5"/6". Purse seines are prohibited; otter trawls prohibited in Chesapeake Bay; otter and beam trawls prohibited within 1.5 miles of the Atlantic coast.
Area closures	None
Seasons	Anchor gill nets are prohibited from March to May 31 within Chesapeake Bay and its tributaries north of the Bay Bridge.
License	Commercial fishing license; license to sell catch; sport fishing license to fish Chesapeake Bay waters. A $25 license is required to sell fish caught by hook and line.

Virginia

Size limits	None
Gear restrictions	Purse seines, encircling gill nets, and trawls are prohibited; pound net mesh less than 2" prohibited; 3" mesh required for haul seines.
Area closures	Use of drag nets in Chesapeake Bay is prohibited.
Seasons	None
License	Commercial fishing license; no sport fishing license. No license is required to sell fish caught by hook and line.

North Carolina

Size limits	None
Gear restrictions	Unlawful to use fish trawl nets in internal coastal fishing waters; use of purse seines prohibited except for taking of menhaden or Atlantic thread herring; no net may be pulled or towed by more than one boat except in long-haul fishing operations.
Area closures	Numerous specific gear restrictions by geographic area.
Seasons	Several specific seasonal restrictions pertaining to gill nets, purse seines, and channel nets.
License	Commercial fishing license; inland sport fishing license for some portions of tidal waters. A license is required to sell fish caught by hook and line, but there is a 500 lb exemption.

South Carolina

Size limits	None
Gear restrictions	Seine mesh less than 2.5" is prohibited. Numerous local gear restrictions.
Area closures	Purse seines prohibited in inland waters and in the ocean less than 300 yards beyond the beach; several, specific area restrictions.
Seasons	None
Licenses	Commercial fishing license; land and sell license; no sport fishing license. A $25 license is required to sell fish caught by hook and line.

Georgia

Size limits	None
Gear restrictions	Directed gill netting for bluefish prohibited in Georgia waters. Bluefish caught incidentally in shrimp trawls may be kept.
Area closures	None
Seasons	None
License	Commercial gears are licensed; license to sell catch; no sport fishing license. A $10 license is required to sell fish caught by hook and line.

Florida

Size limits	Only bluefish greater than 10" in length may be retained by commercial and recreational fisheries.
Gear restrictions	Use of purse seines is prohibited in state waters.
Area closures	None
Seasons	None
Licenses	Gillnets, trawls and seines are licensed. Salt water products license to sell catch; no sport fishing license. A $25/resident and $50/nonresident license is required to sell fish caught by hook and line.

Potomac River Fisheries Commission

Size limits	Only bluefish greater than 8" TL may be retained in both the commercial and recreational fisheries.
Gear restrictions	The use of purse seines, buck nets, beam or otter trawls, trammel, troll or drag nets, spears, gigs or gig irons is prohibited. The minimum/maximum gill net mesh size is 3.75"/7". Minimum mesh size for pound nets and haul seines is 1.5". There is a moratorium on all new gill net and commercial hook and line licenses. All gill nets and pound nets are licensed for a fixed location only.
Area closures	None
Seasons	Use of gill nets is prohibited from December 1 to May 30. Pound nets may not be used from December 16 to February 14 and haul seines are prohibited on weekends.
Licenses	Commercial fishing license; license to sell catch; no sport fishing license. A $25 license is required to sell fish caught by hook and line.

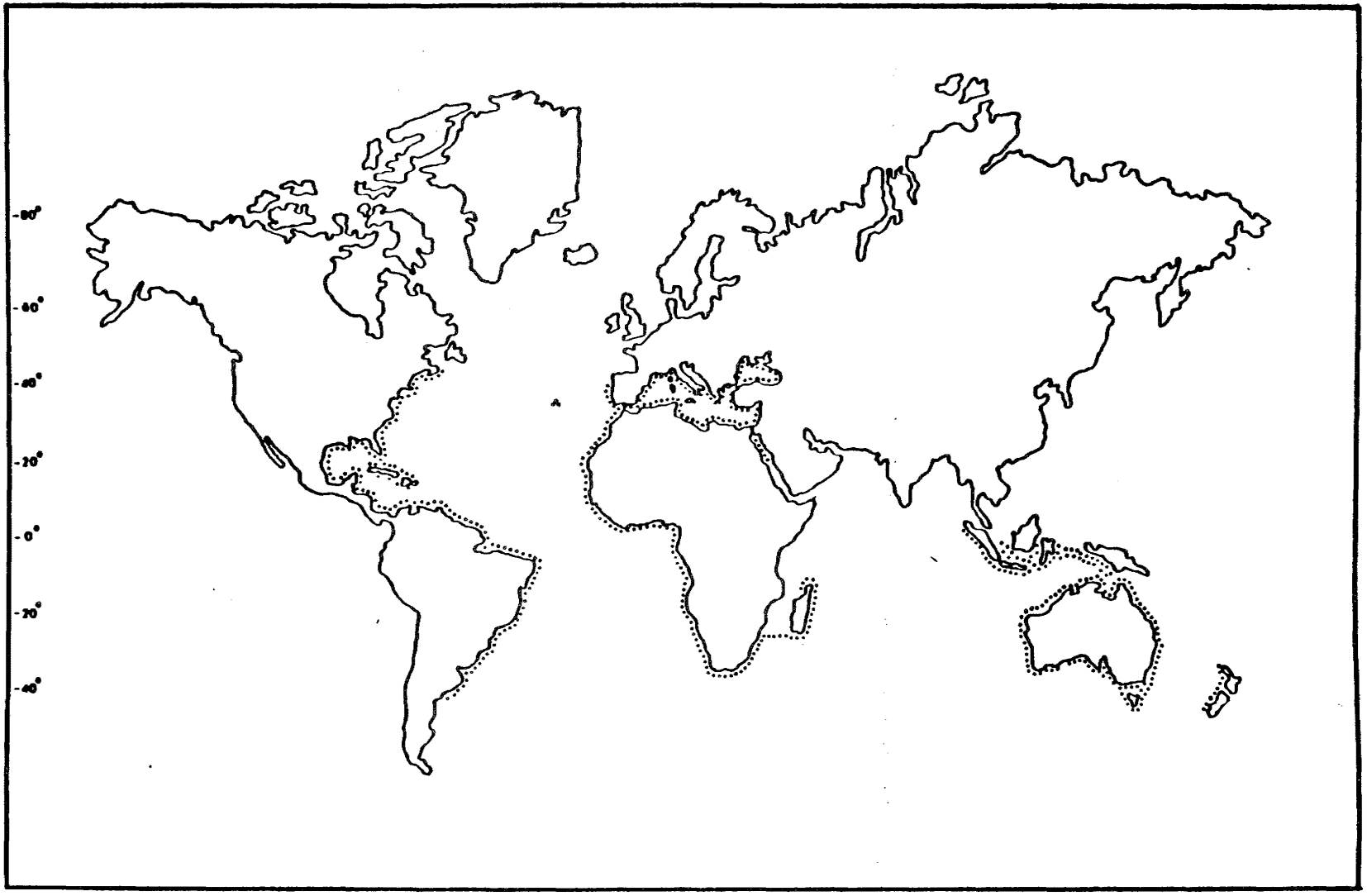

Figure 1. The world distribution of Pomatomus saltatrix, indicated by the dotted areas. The figure is from van der Elst (1976).

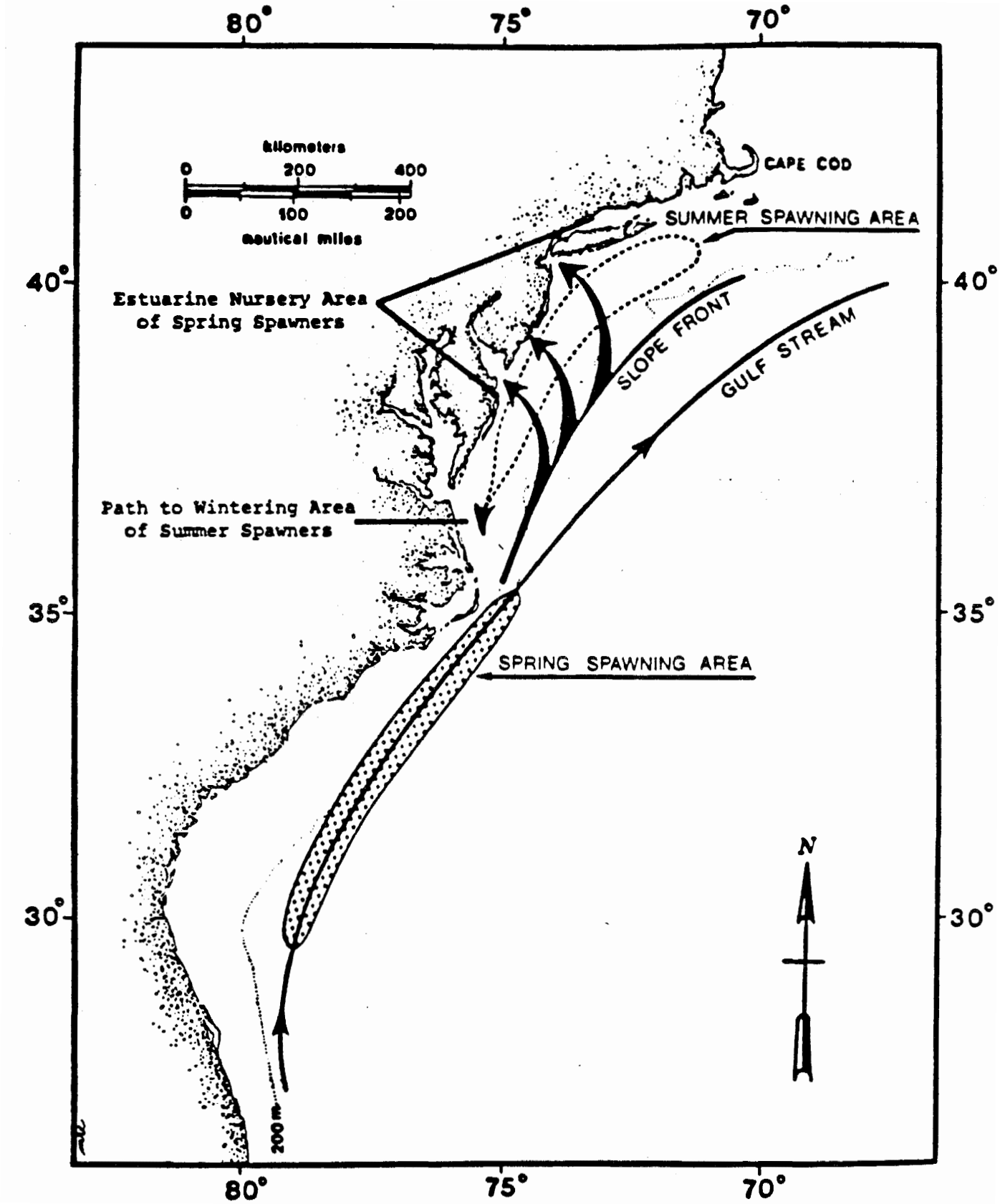

Figure 2. Diagrammatic representation of the early life history of bluefish, Pomatomus saltatrix, along the U.S. Atlantic coast. The figure is from Wilk (1977).

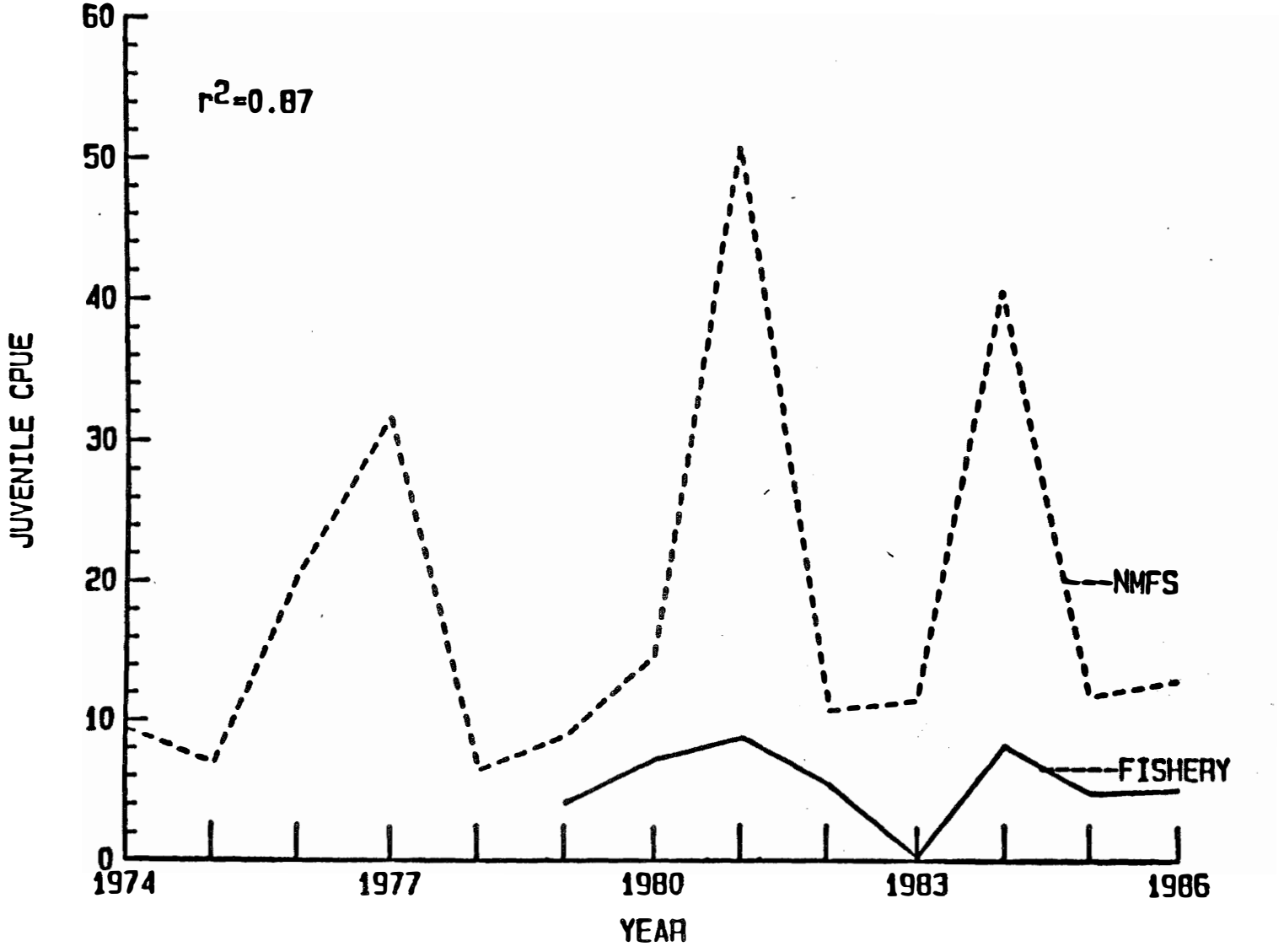

Figure 3. Time series changes in the geometric mean juvenile index from the NMFS trawl survey and the CPUE of juvenile bluefish from the coastwide shore fishery. The figure is from Crecco et al. (1987).

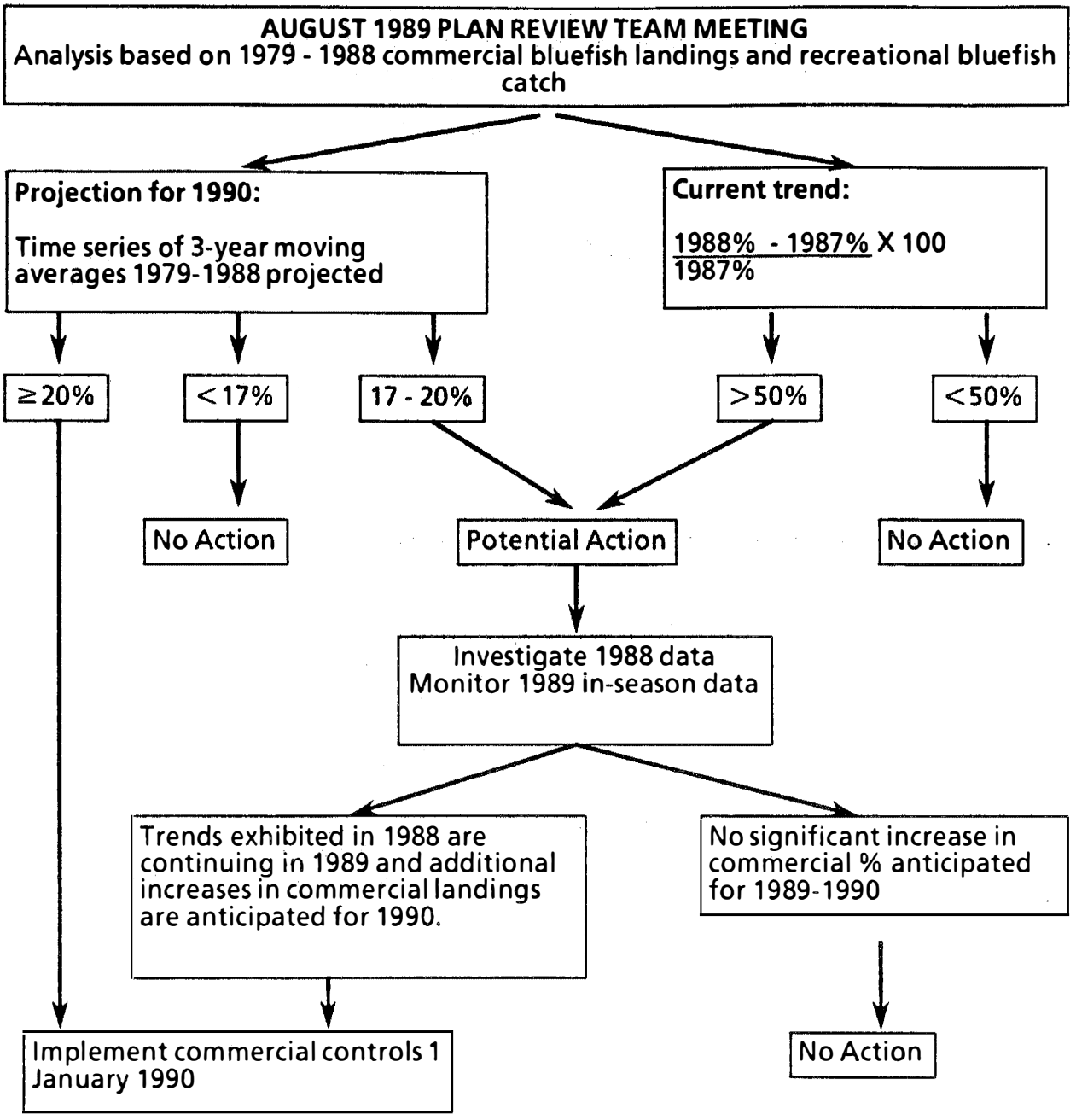

Figure 4. A schematic detailing the two separate indices and two tiered approach that will be used to decide if controls should be implemented for the commercial bluefish fishery.

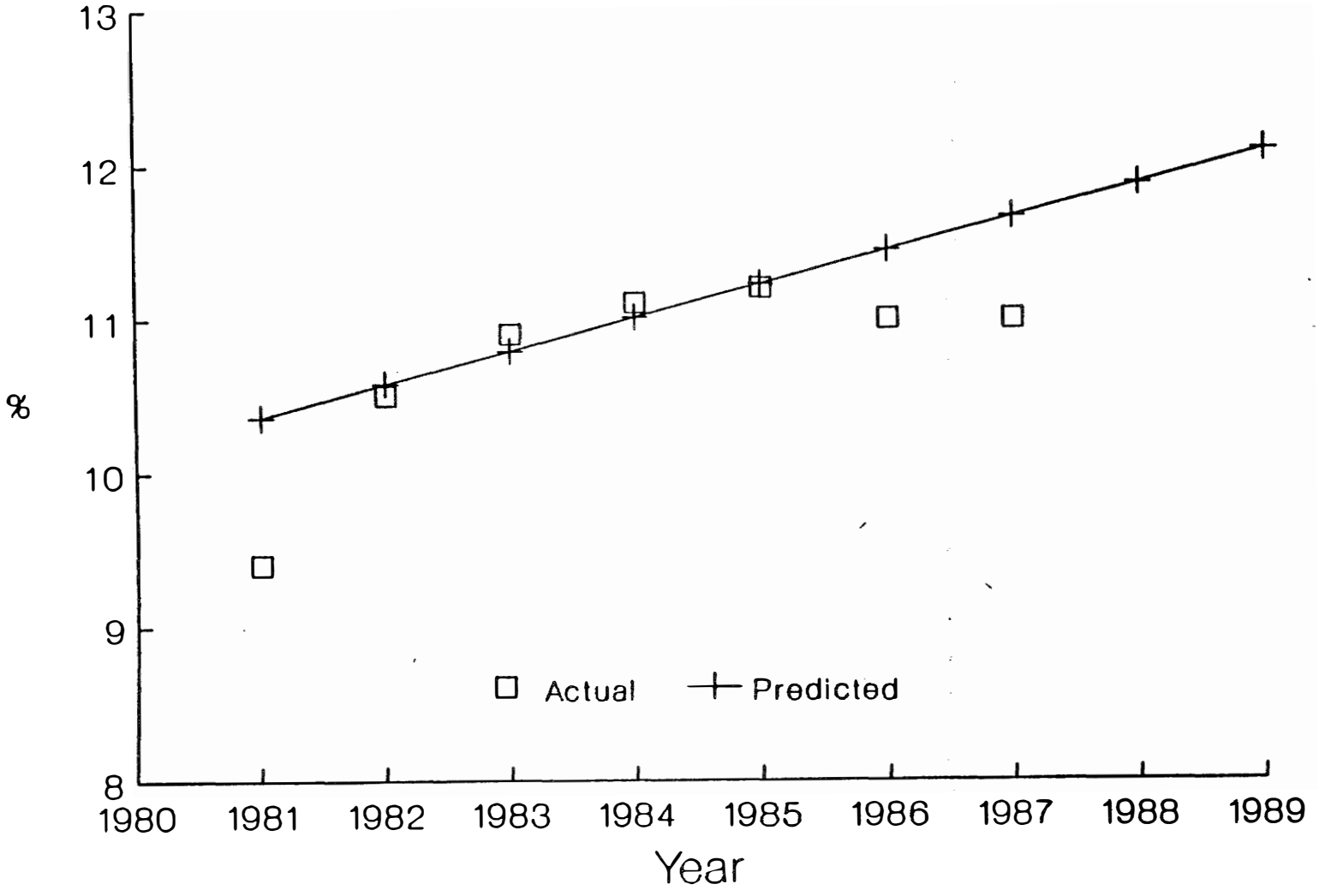

Figure 5. Actual commercial share, based on a three year moving average of commercial landings and total catch, and the predicted commercial share derived from a regression equation using the actual values (Index A of the projection system).

APPENDIX 1. ALTERNATIVES FOR THE PROPOSED FMP

1. Take no action at this time

1.1. Description

To take no action at this time would mean that the 1977 PMP would remain in effect. The PMP regulates only foreign fishing and prohibits foreign fishermen from retaining bluefish.

1.2. Analysis

Stock assessment indicates that the bluefish stock is fully exploited. If current trends continue, recreational and commercial fishing pressure will likely increase in the near future. Unregulated harvest, coupled with the possibility that no strong year class has been produced since 1984, could lead to excessive levels of fishing mortality that will result in stock decline and, at excessive levels, possible collapse. Should commercial effort increase relative to recreational effort, a reallocation of the resource from its traditional use will occur, adversely and significantly impacting the principle Atlantic Coast sport fishery. Emergency measures would be required under Section 305(e) of the MFCMA in order to prevent overfishing. Such measures would have to be implemented under stressful circumstances without the benefit of much more information than exists at present. Clearly, it would be better to implement the foundations of rational management prior to stock decline.

2. Alternatives to the Possession Limit

2.1. Anglers would be restricted to a possession limit of no more than 5 bluefish or the more stringent possession limit at the state of landing, if such a limit exists.

2.1.1. Description

Anglers would be restricted to a possession limit of no more than five bluefish.

2.1.2. Analysis

Approximately 79% of successful coastwide anglers landed 5 or less bluefish per trip in 1987 (Table 40). Potentially, this possession limit could affect 21% of the recreational effort, resulting in a significant decrease in the economic surplus associated with recreational fishing and adversely impacting expenditures, income and employment in associated and dependent industries.

Although the bluefish stock is fully exploited, stock assessment does not indicate any evidence of overfishing at the present time (1987). Thus, such a drastic reduction in recreational effort is probably not justified. Given the lack of justification, the adoption of uniform, complementary state regulations is not likely, rendering the federal FMP unenforceable.

2.2. Anglers would be restricted to a possession limit of no more than 15 bluefish or the more stringent possession limit at the state of landing, if such a limit exists.

2.2.1. Description

Anglers would be restricted to a possession limit of no more than fifteen bluefish.

2.2.2. Analysis

Approximately 96% of successful coastwide anglers landed 15 or less bluefish per trip in 1987 (Table 40). Thus, this recreational possession limit would have little effect on effort and bluefish catch. No benefits are attributable to such an ineffective measure, so it is not likely that the costs of enforcing the 15 fish possession limit are worthwhile.

2.3. Anglers would be restricted to a possession limit of no more than 10 bluefish 12" TL or larger and 20 bluefish less than 12" TL or the more stringent possession limit at the state of landing, if such a limit exists.

2.3.1. Description

Anglers would be restricted to a possession limit of no more than ten bluefish 12" TL or larger and 20 bluefish less than 12" TL.

2.3.2. Analysis

A size of 12" TL corresponds approximately to the average size at which the first annulus is formed for bluefish. Thus, this size differential would allow for a more restrictive limit on age 1 and older bluefish and a more liberal limit on age 0 fish.

The F on age 0 bluefish may be low, primarily because snappers are available to the majority of recreational fishermen for only a short period during the year. Although the fishing mortality rates on age 0 bluefish are low, a possession limit on this size group would serve to foster a conservation ethic and prevent waste. The apparent difference in fishing mortality rates between juvenile and adult bluefish would justify the size differential in the possession limit.

Based on MRFSS intercepts of measured fish, approximately 95% of the successful anglers landed 20 or less bluefish less than 12" TL in 1987 (Table 1.1). Approximately 94% of recreational anglers catching bluefish coastwide, landed 10 or less bluefish 12" TL or greater (Table 1.2). This possession limit would allow anglers to possess a total of 30 bluefish. Analysis of MRFSS data of all fish enumerated in the intercept portion of the survey (which can not be divided by size) indicated that 99% of the successful anglers landed 30 or less bluefish in 1987. Thus, this limit would have a negligible impact on recreational effort and bluefish catch.

Apart from the inability to prevent overfishing, the size differential would complicate enforcement since anglers could possess a total of 30 bluefish in two size categories. It is not likely that the individual Atlantic States would uniformly adopt such a measure given the enforcement costs and difficulties. Without complementary state regulations the FMP could not be enforced without costly at-sea enforcement or the pre-emption of state management.

2.4. Anglers would be restricted to a possession limit of no more than 10 bluefish 12" TL or larger or the more stringent possession limit at the state of landing, if such a limit exists.

2.4.1. Description

Anglers would be restricted to a possession limit of no more than ten bluefish, 12" TL or larger, at the point of landing.

2.4.2. Analysis

A size of 12" TL corresponds approximately to the average size at which the first annulus is formed for bluefish. Thus, this size differential would allow for a more restrictive limit on age 1 and older bluefish and unlimited harvest of age 0 fish.

In 1987, approximately 94% of recreational anglers catching bluefish coastwide, landed 10 or less bluefish 12" TL or greater (Table 1.2). Although this possession limit could decrease fishing effort and catch of age 1 and older bluefish it would allow for unlimited harvest of age 0 fish. Potentially, this limit could cause anglers to shift more of their effort to age 0 fish, increasing fishing mortality on this age group. Increased harvest of age 0 bluefish could decrease recruitment to the adult spawning stock and eventually impact long-term yields from the fishery.

As with the size differential analyzed above, it is again unlikely that uniform state adoption is possible given costly and complex enforcement. Without complementary state regulations the federal FMP would be unenforceable.

2.5. Anglers would be restricted to a possession limit of 15 bluefish per angler of which only 5 fish could be 18" TL or larger or the more stringent possession limit at the state of landing, if such a limit exists.

Approximately 93% of the coastwide anglers landed 10 bluefish that were 18" TL or smaller in 1987 (Table 1.3). In addition, approximately 77% of successful anglers coastwide landed 5 or less bluefish that were 18" TL or larger (Table 1.4). Potentially, this limit could impact over 23% of the angler effort for larger fish resulting in a significant decrease in the economic surplus associated with recreational fishing and adversely impacting expenditures, income and employment in associated and dependent industries.

Potentially, this limit could cause anglers to shift more of their effort to age 0 fish since anglers could keep a total of 15 bluefish less than 18" TL. This could increase fishing mortality on this age group. Increased harvest of age 0 bluefish could decrease recruitment to the adult spawning stock and eventually impact long-term yields from the fishery.

2.6. Anglers would be restricted to a possession limit of 10 bluefish per angler of which only 5 fish could be 12" TL or larger or the more stringent possession limit at the state of landing, if such a limit exists.

Approximately 79% of successful coastwide anglers landed 5 or less bluefish that were 12" TL or larger in 1987 (Table 1.2). Approximately 71% of the successful anglers landed 5 or less bluefish that were 12" TL or smaller (Table 1.1). Potentially, this possession limit would affect a significant portion of the recreational fishermen who prefer larger fish, resulting in a significant decrease in the economic surplus associated with recreational fishing and adversely impacting expenditures, income and employment in associated and dependent industries.

Although the bluefish stock is fully exploited, stock assessment does not indicate any evidence of overfishing at the present time (1987). Thus, such as drastic reduction in recreational effort is probably not justified. Given the lack of justification, the adoption of uniform, complementary state regulations is not likely, rendering the federal FMP unenforceable.

3. Alternatives for limiting the commercial fishery to 20% of the total catch.

3.1. Control the use of all gear except hook and line, traps, hauls seines, and pound nets to conduct a directed fishery for bluefish.

3.1.1. Description

US fishermen using hook and line, traps, haul seines, and pound nets to conduct a directed fishery for bluefish would be allowed to harvest bluefish without limit under this alternative. Once the 20% commercial limit was projected or reached then the use of all other gear to conduct a directed fishery for bluefish would be prohibited unless a waiver of the prohibition were granted by NMFS.

NMFS could grant waivers to the gear prohibition if they concluded that the waivers were consistent with the objectives of the FMP, that is, that they provided the highest availability of bluefish to US fishermen while maintaining, within limits, traditional uses of bluefish. Specifically, NMFS would be required to attempt to maintain the historical catch distribution in granting such waivers. NMFS would be allowed to specify the amount of bluefish that could be caught by gear waivers with permits.

In order to provide a basis for granting any waivers to the gear prohibition, it would be necessary to annually estimate landings. NMFS, in consultation with the Council, prior to the beginning of each year, would be required to project the total bluefish catch, recreational catch, and catch by the permitted gear types (hook and line, traps, haul seines, and pound nets). From these projections, the amount of bluefish available for catch by the prohibited gear types could be estimated, thus providing a basis for granting waivers from the gear prohibition.

Bluefish can be a bycatch in other fisheries. Therefore, implementation of this alternative would provide that incidental catches of bluefish in directed fisheries for other species by fishermen without waivers using gear other than hook and line, traps, haul seines, and pound nets would be limited to 10% of the total catch on board a vessel at the end of a fishing trip.

3.1.2. Analysis

This measure would prohibit the use of non-traditional, highly efficient gear thereby preserving traditional fishing methods while restricting commercial harvest to the 20% limit. Similar gear restrictions would exist throughout the management unit, thus complying with National Standard 4. Since some States currently allow gear which would become prohibited in complying with the majority, some fishermen might be adversely impacted.

The provision for waivers of gear restrictions means that NMFS would incur additional costs in administering and enforcing a gear exemption program should waivers be requested.

3.2. Impose quotas on the commercial fishery.

3.2.1. Description

Under this alternative, the Council, in consultation with NMFS, would prepare and submit to NMFS, prior to the beginning of each year, projections of (1) the total bluefish catch; (2) the recreational bluefish catch; and (3) the commercial bluefish catch for the upcoming year using the best available data, including the Marine Recreational Fishery Statistics Survey and data collected pursuant to this FMP.

No more than 20% of the total projected bluefish catch would be allocated to the commercial fishery. The Regional Director would close the commercial fishery when 80% of the allowable commercial harvest has been caught, if such closure was necessary to prevent the allowable commercial harvest from being exceeded. The closure would stay in effect for the remainder of the fishing year. The Regional Director would publish a notice in the Federal Register that fishing would cease on that date. During a period of closure, the bluefish trip limit would be 10% by weight of the total amount of fish on board a vessel at the end of a trip.

3.2.2. Analysis

This option would preserve the recreational share of total catch most directly, though at much greater cost than gear restrictions. Commercial landings would need to be carefully monitored in-season to insure the quota is not exceeded. Administering a commercial quota would prove to be costly, due not only to the real time information requirements but also to the allocation problems which would most certainly result. Since bluefish seasonally migrate up the east coast, high levels of harvest early in the season in southerly states could close down the commercial fishery before northerly participants have had access to the stock. Assuming rational profit incentives, all commercial participants would strive to take the greatest possible share of the quota prior to closure, accelerating the likelihood of a closure and exacerbating data collection problems. The fairness and equity questions, allocational issues, and information requirements would therefore make the application of commercial quotas difficult and costly.

3.3. Impose trip limits on the commercial fishery

3.3.1. Description

Under this alternative, the Council, in consultation with NMFS, would prepare and submit to NMFS, prior to the beginning of each year, projections of (1) the total bluefish catch; (2) the recreational bluefish catch; and (3) the commercial bluefish catch for the upcoming year using the best available data, including the Marine Recreational Fishery Statistics Survey and data collected pursuant to this FMP.

No more than 20% of the total projected bluefish catch would be allocated to the commercial fishery. The Regional Director would propose a trip limit designed to ensure that the commercial fishery allocation would not be exceeded. In order to implement a trip limit system, the Regional Director would require that commercial fishermen have a permit to harvest bluefish. Commercial fishermen would also be required to submit logbooks.

The projections, proposed allocations, and trip limit would be published in the Federal Register with an opportunity for public comment.

3.3.2. Analysis

This option shares all of the informational and allocational problems of a quota and, in addition, incurs the costs of determining trip limits for many different gear types. For example, defining a trip for a pound net is not quite as easy as for a purse seine. If the number of trips is not limited, there is no assurance that commercial landings can be restricted to the 20% allocation without eventually reducing trip limits to uneconomic levels. On the other hand, if the number of trips is specified, trip limits will amount to individual quotas without limited entry. An escalation of the number of participants would undoubtedly result, favoring those gear types which could most economically fish under the assigned trip limit. Enforcement of trip limits for many participants and gear types would prove extremely costly and would most likely be impossible without consistency among all Atlantic States.

3.4. Impose Seasonal or Area Closures on the Commercial Fishery

3.4.1. Description

The intent of this measure is to control the commercial harvest of bluefish by imposing season or area closures on the commercial fishery.

3.4.2. Analysis

Under this alternative, the Council, in consultation with NMFS, would prepare and submit to NMFS, prior to the beginning of each year, projections of (1) the total bluefish catch; (2) the recreational bluefish catch; and (3) the commercial bluefish catch for the upcoming year by season or area using the best available data, including the Marine Recreational Fishery Statistics Survey and data collected pursuant to this FMP.

No more than 20% of the total projected bluefish catch would be allocated to the commercial fishery. The Councils, in consultation with the Regional Director, would propose season or area closures designed to ensure that the commercial fishery allocation would not be exceeded.

Should it be applied, this option shares many of the same difficulties as a quota or trip limits. The real time informational requirements are excessive. Given the interannual variability in both stock size and migration pattern of bluefish, it will be difficult to determine area/season closures which will be effective, equitable and consistent from year to year. Unanticipated closures will be unfair to local fisheries if restrictions are due to excess effort in other areas. Allocation problems between gear types and residents of different states will be too costly to resolve.

4. Impose an individual transferable quota system

4.1. Description

Under this alternative, the bluefish resource would be allocated through the use of individual transferable bluefish quotas. The Council, in consultation with NMFS, would prepare and submit to NMFS, prior to the beginning of each year, projections of (1) the total bluefish catch; (2) the recreational bluefish catch; and (3) the commercial bluefish catch for the upcoming year using the best available data, including the Marine Recreational Fishery Statistics Survey and data collected pursuant to this FMP.

The historical catch records for bluefish would be used to allocate the resource among segments of the fishery in the form of transferable quotas. The individual quotas would be in the form of a percentage of the total allowable catch (TAC), which would be established on an annual basis. Annual quotas would be established in terms of weight or in terms of individual fish, in which case tags would be issued to account for all landed fish. It is possible that this system would apply only to bluefish in commerce.

4.2. Analysis

An allocation of the allowable bluefish harvest among the present participants in the fishery would establish the recognition of the traditional uses of bluefish which has been identified as a major objective of the bluefish management plan. In contrast to the preferred alternative, re-allocation of the resource over time, based upon future developments, would take place through the free market in transferable quotas. The value of the resource to each sector of the fishery would be expressed through the willingness to pay the price for the quota, rather than through policy determinations. Changes in the overall allocation would likely take place gradually and voluntarily, insuring an orderly and responsible evolution of the fishery to its best use, as determined by the free market. Allocation would become more rational while the resource would be protected through the total quota.

However, the magnitude of the recreational fishery, as well as the large number of commercial gears used to harvest bluefish, would likely make implementation of this measure difficult if not impossible.

5. Allow US fishermen unrestricted catches of bluefish but impose a 16" TL minimum size limit

5.1. Description

OY would equal all bluefish 16" in length or larger caught in the EEZ by US fishermen. Therefore, foreign fishermen would not be permitted to retain bluefish.

5.2. Analysis

The minimum fish size is equivalent to 50% spawning size; a size at which at least 50% of age 1 bluefish are sexually mature. This management measure would prevent fishermen from harvesting bluefish less than 16" TL.

There is no evidence to indicate that the bluefish population has experienced either growth or recruitment overfishing in recent years (as of 1987). Thus, a size limit would probably not be appropriate at this time.

In addition, approximately 36% of the fish caught by anglers in 1987 were 16" TL or smaller. Thus, this size limit could impact a significant portion of the recreational fishermen, especially anglers fishing from shore. Over 75% of the bluefish caught by shore based anglers, from 1979 to 1985, were age 0 fish in the North and Middle Atlantic (Table 5). Over 90% of the fish caught by similar anglers in the South Atlantic were age 0 and age 1 bluefish. Furthermore, age 0 bluefish can comprise over 50% of the bluefish caught in the winter trawl

fishery in North Carolina. Thus, if this alternative were imposed, significant adverse effects on economic surpluses and impacts associated with recreational and commercial fishing are likely.

At-sea enforcement of the 16" size limit would be too costly, and it would be impossible to enforce dockside without uniform adoption by the Atlantic States. Given the low probability of support for a size limit that would have extensive impacts on the recreational fishery and lacks biological justification, it is not likely that complementary state regulations would be forthcoming. A 16" size limit would therefore be ineffective with benefits far outweighed by costs.

6. Allow US fishermen unrestricted catches of bluefish but impose a 20" TL minimum size limit

6.1. Description

OY would equal all bluefish 20" in length or larger caught in the EEZ by US fishermen. Therefore, foreign fishermen would not be permitted to retain bluefish.

6.2. Analysis

This minimum fish size is equivalent to the size that maximizes yield per recruit. This management measure would prevent fishermen from harvesting bluefish less than 20" TL.

There is no evidence to indicate that the bluefish population has experienced either growth or recruitment overfishing in recent years (as of 1987). Thus, a size limit would probably not be appropriate at this time.

In addition, more than 65% of the bluefish caught by anglers in 1987 were less than 20" TL and it is probable that fish of a similar size comprise a significant portion of the commercial catch. Thus, this size limit could impact a significant portion of anglers and commercial fishermen coastwide, resulting in significant reductions in the economic surplus and impacts associated with the recreational fisheries for bluefish.

At-sea enforcement of the 20" size limit would be too costly, and it would be impossible to enforce dockside without uniform adoption by the Atlantic States. Given the low probability of support for a size limit that would have extensive impacts on the recreational and commercial fishery and lacks biological justification, it is not likely that complementary state regulations would be forthcoming. A 20" size limit would therefore be ineffective with benefits far outweighed by costs.

7. Implement a Permit System to Collect Data

7.1. Description

In order to achieve the objectives of the Plan and to manage the fishery, it is necessary that certain data be collected. At a minimum, NMFS must provide the Council with statistically valid data on: (1) bluefish catch, effort, and ex-vessel value and the catch and ex-vessel value of those species caught in conjunction with bluefish for the commercial fishery provided in a form that analysis can be performed at the trip, water area, gear, month, year, and State levels of aggregation; (2) catch and effort for the recreational fishery provided in a form that analysis can be performed at the trip, water area, mode (man made, beach and bank, party and charter boat, and private and rental boat), month, year, and State levels of aggregation; (3) the number of anglers that sell bluefish and the amount of bluefish sold by anglers; and (4) biological samples from both the commercial and recreational fisheries.

To enhance the collection of data and facilitate operation of the management system, certain vessels fishing for bluefish are required to obtain permits from the Regional Director, as follows:

1. Any fishing vessel of the US harvesting bluefish for sale must have a permit.
2. All party and charter boats of the US harvesting bluefish must have permits.

All persons applying for a permit must agree that their fishing activity will be bound by the prevailing federal management measures unless they land in a State with more stringent regulations, in which case the State regulations would apply, once the Federal FMP is implemented.

7.2. Analysis

The costs of instituting an annual permit system for commercial fishermen harvesting bluefish would be minimal. There would be no start-up costs since the NMFS Northeast Regional Office implemented an annual permit system in 1987 in response to amendments to the Atlantic Mackerel, Squid, and Butterfish FMP

(MAFMC) and the Multi-Species FMP (NEFMC). In addition, the process and costs of annual maintenance would be minimal.

A renewal application would be sent to each permit holder which contained all the standard information concerning his vessel. The permit holder would then simply update the form by noting any changes (e.g. change in gear, owner's address, etc.) as well as the total catch of bluefish for the past year. NMFS would process the application upon its return and issue a renewed permit. In 1987 the total cost of issuing a permit was $12.00 (Wang pers. comm.).

Unlike the commercial fishery, no current permit system exists for party and charter boats fishing in the EEZ. In 1985, a total of 528 party and 1,997 charter boats operated out of Atlantic coast ports from Maine through Florida. However, documentation on the number of party and charter boats fishing for bluefish are lacking and the costs of implementing a permit system for these vessels is unknown.

There would be several benefits of instituting an annual permit system for fishermen. Data on the number of participants actively engaged in the fishery, as well as basic information on how the fishery is conducted (gear types, vessel sizes, etc.) would benefit fishery managers. For example, the ability to perform the Regulatory Impact Reviews for management plans, required of the Councils by E.O. 12291, would be vastly improved since it is impossible to assess the impacts of management measures on a fishery if the fishermen and their gear, both recreational and commercial, are unidentified.

Table 1.1. The estimated percent of successful anglers landing 1 to 25 bluefish (MRFSS A fish) per day, coastwide, 1987. Data are for bluefish less than 12" TL.

Landings/Angler	Cumulative %
1	42.3
2	55.9
3	61.3
4	65.8
5	70.9
6	74.0
7	76.0
8	81.4
9	84.2
10	86.7
15	91.9
20	95.0
25	96.7

Table 1.2. The estimated percent of successful anglers landing 1 to 25 bluefish (MRFSS A fish) per day, coastwide, 1987. Data are for bluefish greater than or equal to 12" TL.

Landings/Angler	Cumulative %
1	36.6
2	54.4
3	65.7
4	74.0
5	78.8
6	82.6
7	84.8
8	89.8
9	90.9
10	94.3
15	97.0
20	98.5
25	99.3

Table 1.3. The estimated percent of successful anglers landing 1 to 25 bluefish (MRFSS A fish) per day, by subregion and coastwide, 1987. Data are for bluefish less than 18" TL. The coastwide values were corrected to account for different levels of effort in each subregion.

Landings/ angler	North Atlantic	Cumulative % Mid-Atlantic	South Atlantic	Total Coast
1	17.9	46.4	46.3	45.0
2	28.2	65.0	65.3	63.3
3	39.1	74.5	71.8	71.5
4	40.4	79.8	76.1	76.1
5	49.4	85.0	81.5	81.5
6	58.3	86.9	83.4	83.8
7	61.5	88.1	84.3	84.9
8	64.7	93.6	87.2	89.0
9	67.3	94.4	88.0	89.9
10	73.7	96.0	91.6	92.7
15	85.3	99.0	95.1	96.1
20	92.3	99.5	97.6	97.6
25	96.8	99.6	97.9	98.6

Table 1.4. The estimated percent of successful anglers landing 1 to 25 bluefish (MRFSS A fish) per day, by subregion and coastwide, 1987. Data are for bluefish greater than or equal to 18" TL. The coastwide values were corrected to account for different levels of effort in each subregion.

Landings/ angler	North Atlantic	Cumulative % Mid-Atlantic	South Atlantic	Total Coast
1	34.7	24.4	38.7	28.0
2	56.8	43.4	56.5	47.0
3	69.5	58.3	69.9	61.4
4	76.4	69.1	78.0	71.5
5	82.2	74.3	82.5	76.5
6	87.0	78.7	87.2	81.0
7	91.2	81.6	88.9	83.8
8	94.6	89.2	91.4	90.1
9	95.2	89.7	91.9	90.6
10	97.3	94.3	93.6	94.4
15	99.1	97.1	98.6	97.6
20	99.5	98.9	99.7	99.1
25	99.6	99.8	99.8	99.8

ENVIRONMENTAL ASSESSMENT ON BLUEFISH FISHERY MANAGEMENT PLAN (FMP)

1. INTRODUCTION

This bluefish management plan was prepared cooperatively by the MAFMC and the ASMFC. The ASMFC portion was funded through the ASMFC Interstate Fisheries Management Program under a contract with the Maryland Department of Natural Resources, a contract with the US Fish and Wildlife Service (USFWS), and a contract with the MAFMC. State and federal representatives on the ASMFC Bluefish Scientific and Statistical Committee, Bluefish Management Board, and the MAFMC Coastal Migratory Fisheries Committee provided guidance and technical expertise in plan development.

2. PURPOSE OF AND NEED FOR ACTION

The primary purpose of the Plan is to address the problems that would occur if the bluefish fishery were to expand significantly or the bluefish resource were to decline. Thus, this Plan is intended to avert potential, as well as correct current, management problems.

Bluefish are extremely important to the recreational fishing industry; bluefish was the predominant species (by weight) harvested by marine anglers each year from 1979 to 1987. Conversely, bluefish comprise a small percentage of all finfish harvested commercially along the Atlantic coast primarily because the commercial bluefish market is unstable, easily saturated, and characterized by low dockside prices. Expansion of the commercial fishery has been limited both by the lack of sizeable markets and the fact that bluefish spoil rapidly and are generally sold fresh. A significant increase in bluefish demand coupled with the use of advanced processing and freezing technology could increase the commercial harvest and impact historical catch proportions.

Presently, although two states, Maryland and Florida, have minimum size regulations that pertain to the recreational harvest of bluefish, no state restricts the number of bluefish creeled by anglers. Liberal or non-existent harvest regulations may allow for overharvest by recreational fishermen and eventual stock decline or even collapse as witnessed in the South African bluefish fishery (van der Elst 1983). Furthermore, overharvest may lead to increasing conflicts between commercial and recreational bluefish fishermen. Localized conflicts between charter boats and gill net fishermen in Massachusetts, for example, resulted in the closure of specific areas to gill netting. In addition, encircling gill nets were prohibited in Virginia waters after use of this gear significantly increased the commercial bluefish harvest in Chesapeake Bay in 1982 (Sports Fishing Institute 1982).

Bluefish commercial landings and recreational catch have increased over the last three decades; commercial landings increased from 2.7 to 14.8 million pounds from 1960 to 1987, and the recreational catch doubled during this same period. However, although catches have recently increased, marked fluctuations in abundance historically characterize populations of bluefish in the western North Atlantic (Hildebrand and Schroeder 1928, Bigelow and Schroeder 1953). Increasing fishing pressure coupled with declining recruitment could lead to serious and sustained stock decline.

Waste of bluefish has been identified by marine scientists and concerned citizens in a number of coastal states (ASMFC 1986). In general, the perception by the public that the resource is abundant, coupled with low ex-vessel prices for commercially caught bluefish, has resulted in waste in the bluefish fishery. For example, during May, 1988 a large number of dead bluefish were found floating in Chesapeake Bay from the James River to the Rappahannock River. Although several factors were investigated as potential causes, including pollution and disease, the dead fish were attributed to discards from commercial and recreational fishermen (Burnley 1988).

Comprehensive management strategies for bluefish were non-existent prior to the development of this Plan. Bluefish is a highly migratory species harvested along the Atlantic coast by a variety of anglers, angling techniques, and commercial gear. Although its extensive migrations preclude a single entity from effectively managing the fishery, fishing activities in the EEZ or in the waters of a few states could seriously impact the coastwide stock. The complexity and affiliated problems associated with bluefish stock dynamics and the bluefish fisheries, necessitates the cooperative, interjurisdictional approach to management presented in this plan.

3. MANAGEMENT OBJECTIVES

The major goal of the management plan is to conserve the bluefish resource along the Atlantic coast. The Council and ASMFC have adopted five major objectives to achieve this goal:

1. Increase understanding of the stock and of the fishery.
2. Provide the highest availability of bluefish to US fishermen while maintaining, within limits, traditional uses of bluefish (defined as the commercial fishery not exceeding 20% of the total catch).
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.

4. MANAGEMENT UNIT

The management unit for this FMP has been defined as the entire bluefish population along the Atlantic coast of the United States.

5. ALTERNATIVES

The adopted management measures are presented in Sections 3 and 9.1 of the FMP. The alternatives not selected are presented in Appendix 1 to the FMP.

6. ENVIRONMENTAL IMPACTS

The impacts of the adopted management measures are presented in Section 9.2 of the FMP. The alternatives not selected are evaluated in Appendix 1 to the FMP.

7. MANAGEMENT COSTS

7.1. Cost/Benefit Analysis

The Bluefish FMP establishes an allocation of 80%/20% to the recreational and commercial fisheries, respectively. This allocation recognizes the long term importance of bluefish as the principal marine sport fish along the Atlantic coast. Although the allocation allows for some growth in the commercial share of total catch relative to historical practices, it will prevent expansion of the industry to such a point where it adversely affects recreational fishing opportunities.

A commercial allocation above the historic level is warranted because of two current practices in the fisheries: sale of bluefish by recreational anglers and discarding of bluefish at sea by commercial fishermen. Individuals involved in these two practices probably account for greater than 10% of current fishing mortality, but since neither practice results in bluefish entering commercial landings statistics, commercial landings have averaged 10% of total catch. It is anticipated that the requirement for a permit to sell will cause some recreationally caught fish to be reclassified as commercial. It is also anticipated that expansion in domestic seafood consumption could increase the likelihood that commercial fishermen will land bluefish bycatch rather than discard it at sea. Allowing the commercial share to increase to 20% will thus correctly account for bluefish entering commerce and reduce waste without significantly increasing fishing mortality.

In the previous (rejected) Bluefish FMP (MAFMC 1984), the Council maintained that the 80/20 allocation was a policy decision which recognized the greater economic importance of the recreational fishery relative to commercial fishing. Among the justifications put forth for this policy decision were: 1) bluefish are the principle marine sport fish for the east coast, a species which is growing in importance over time as substitute species become fully exploited or experience declines in abundance, and; 2) the recreational industry has significant economic impacts annually, while the commercial catch is small both in volume and value to east coast states and is primarily bycatch in the New England and Mid-Atlantic regions. The relative allocation to recreational and commercial fisheries was not a reason for rejecting the original plan. In fact, the 80/20 split was seen as a "valid exercise of the Council's judgement" (R. Schaefer pers. comm.). In addition, allowance for a greater commercial share will enable an increase in the supply of low cost bluefish to those individuals who wish to enjoy the nutritional benefits of seafood but who cannot afford to fish for themselves.

In the analysis which follows, the benefits and costs of alternative relative shares to the recreational and commercial sectors are not considered. Data which would enable the estimation of the marginal value of bluefish to each sector are not available at this time. Therefore, based on the traditional 90/10 split in catch share, the estimated greater relative economic impact of the recreational sector, and the allowance for commercial expansion, the proposed 80/20 split is considered a valid exercise of Council judgement. Only the impacts of the measures designed to implement this allocation are analyzed as to costs and benefits. Although it is not pos-

sible to estimate the total economic surpluses attributable to recreational and commercial fishing for bluefish given the aforementioned data limitations, the changes in these surpluses due to the proposed measures can be predicted given currently available information. Also, impacts on employment and expenditures can be estimated for each sector.

7.2. Commercial Fishery

The commercial fishery harvested an average of 10% of the combined total bluefish catch over the 1979-87 period (Table 12). Although the average has increased to about 12% since 1985, it is not likely the 20% limit on commercial allocation would become a constraint in the near future. Based on 1979 through 1987 data, the projected 1989 commercial share would be 12% (Figure 5). The projection equation for 1989 (using data from 1979 to 1987; Table 37) is $y=0.218x - 421.5$, where y is the percentage and x is the year (for example 1989). No action would have been taken since the share was less than 17%. In addition, no action would have been taken based on index B because the increase in commercial share from 1986 to 1987 was 23% (Table 38).

In order to implement controls on commercial fishing, either the recreational fishery must decline significantly or the bluefish market must expand to almost twice its current level. Given current information, both are unlikely events when considered independently. The likelihood of implementing controls on commercial effort increases, however, if both trends should occur concurrently.

Three scenarios were developed to estimate the magnitude of changes which need occur in the bluefish fishery in order to trigger controls on the commercial sector. Although an infinite number of permutations are possible given the use of a three year moving average, the discussion here is limited to changes which could have occurred in 1987 to trigger the two tiered process.

1. Recreational catch remains constant and commercial catch increases. The actual commercial catch in 1987 was about 15 million pounds. If the commercial catch had been 18 million pounds, the change in commercial share from 1986 to 1987 would have been over 50%. This would have triggered an examination of the catch data, though the projected catch for 1989 would only have risen slightly to 12.6%. Depending on the cause of the increase, and the likelihood of its continuance, controls may or may not have been necessary. To trigger automatic controls, a fivefold increase in commercial catch to 77 million pounds would have had to occur in 1987 before the projected commercial share for 1989 exceeded 20%.

2. Recreational catch declines and commercial catch remains constant. The actual recreational catch in 1987 was about 110 million pounds. If catch had been 87.5 million pounds the commercial share would have increased by more than 50% from 1986 to 1987, thus triggering an examination of commercial fisheries data. Depending on the cause of decline in recreational landings, controls may have been implemented for the commercial sector. The 1986 recreational catch would have had to decrease by more than 50% and the 1987 catch to zero before the projected commercial share for 1989 exceeded 20%.

3. Recreational catch declines while commercial catch increases. If the 1987 recreational catch declined to 97.5 million pounds and the commercial catch increased to 16.5 million pounds, the change in commercial share from 1986 to 1987 would have exceeded 50%. However, the projected commercial share for 1989 would be approximately 12.3%. Examination of the fisheries would have been necessary under the two tiered system, but controls may not have been needed. Even if 1987 recreational catch had been reduced to the historic (1979-87) low of 86 million pounds, concurrent with a commercial increase to the historic (1979-87) high of 16.5 million pounds, the 20% limit would not have been binding and automatic controls would not have been necessary.

From the above three scenarios, it can be seen that a substantial change in the fisheries in one year is not likely to trigger automatic imposition of commercial controls. Instead, consistent trends are necessary to bring the projected commercial share to 20%. Given the sensitivity of the 17%/50% indicators and the two tiered approach, it is highly likely that any developing allocation conflicts in the fisheries would be evident well in advance of requiring automatic controls. The two tiered approach should therefore facilitate the resolution of allocation conflicts before over investment in the commercial sector could occur.

Whether recreational catch declines or not depends on the demand for fishing trips, fishing success and bluefish stock abundance. Preliminary NMFS data for 1988 indicate that recreational catch has declined considerably from the 1987 level. If such a decline in recreational catch is sustained, the increase in commercial share may be sufficient to require controls on fishing mortality.

The possibility of controls being imposed because of commercial fishery expansion is less likely, however. It seems that current market potential is weak. This is evidenced by low ex-vessel prices and little directed effort. Although it was once thought that an export market for frozen bluefish would develop, recent trends in exports do not indicate steady growth (Table 35). In fact, no bluefish at all were exported through the first six months of 1987 (R. Ross pers. comm.).

In the event that the commercial share of bluefish catch increases to the point where it is projected to meet or exceed the 20% allocation limit, a state by state allocation scheme would control commercial landings. Each state would be assigned a share of coastwide commercial quota based on past participation in the fishery. The individual states would be responsible for controlling catch at the allotted level and could tailor regulations to specifically address the particular concerns of individual states.

If the allocation had been in effect in 1989, based on 1985, 1986, and 1987 catch data, slightly over 25 million pounds of bluefish would have been allocated to the commercial fishery coastwide. This hypothetical allocation, though limiting the commercial sector to a 20% share of the total catch, would allow considerable expansion of the commercial fishery in each state when compared to 1978-1987 historical levels (Table 39).

By adhering to state quotas, the individual states are expected to design specific management measures best suited to their particular circumstances. If necessary to control fishing effort, restrictions on certain gears for the taking of bluefish in EEZ waters could be implemented in conjunction with the state catch allocations. These restrictions could include trip limits, area closures, gear prohibition, or other measures that may be appropriate, to assist state management efforts. It is anticipated that state quotas and state regulations to effect quota management will adequately control the commercial catch, thereby reducing the likelihood of that gear restrictions, trip limts or area closures would be required in EEZ waters. Adverse impacts attributable to federal regulations are therefore expected to be minimal.

Based on their highly efficient characteristics, purse seines, runaround gill nets, and pair trawls are the gears most likely to cause a rapid increase in commercial landings of bluefish. Historically, purse seines and pair trawls harvested slightly more than 1% of the total commercial bluefish catch for the years 1976 to 1987 combined. However, for this same period, runaround gill nets accounted for approximately 15% of the landings. In addition, runaround gill nets were important in Massachusetts, New Jersey, South Carolina, and Florida, accounting for 8%, 44%, 10%, and 70% of the 1976-87 individual state landings, respectively.

Delaware is the only state which currently prohibits all three gears. Several states prohibit one or two of these gears and several others have season and area closures that affect the use of these gears.

Imposition of gear restrictions in the EEZ and the issuance of consistent regulations in state waters, would result in similar controls throughout the management unit, thus complying with National Standard 4. Since some states currently allow gear which could become regulated in complying with ASMFC bluefish recommendations or the federal FMP, some fishermen may be adversely impacted. However, these fishermen would have prior knowledge of potential regulations (including trip limits, area closures and prohibition) since gear restrictions would occur only after the allocation limit was reached. Careful monitoring of commercial catch and coordination of state and federal gear regulations should enable industry to avoid expensive gear modifications specifically targeted at bluefish, thus minimizing the impacts of gear restrictions.

If, under the state allocation system, no state of landing existed due to fulfillment of all individual quotas, the coastwide commercial fishery would be closed. Relative to current value, the magnitude of adverse impact to the commercial sector would be least if a closure resulted from expansion of the commercial fishery and greatest if the closure was due to a decline in recreational catch. In either case, negative impacts of a commercial closure would be outweighed by preservation of benefits to the recreational fishery. It is anticipated that individual state actions would serve to reduce the likelihood of a commercial closure and to mitigate adverse impacts to commercial fishermen.

In summary, should recent trends in the recreational and commercial fisheries continue, controls on commercial harvest of bluefish from EEZ waters could be required. If controls are necessitated by expansion of the commercial fishery, there will be no negative economic impacts relative to the current fishery situation. Ex-vessel value and retail supplies of bluefish could be increased by significant amounts before being restricted by management measures. This would result in higher economic surpluses and greater economic impact. On the other hand, if controls are implemented due to declining recreational catch, the imposition of state quotas and possible regulation or prohibition of highly efficient gears may result in adverse impacts for the commercial sector. Given the importance of bluefish to the recreational fishery, however, negative impacts in the commercial sector would be outweighed by benefits to recreational anglers.

7.3. Recreational Fishery

Data from the 1987 MRFSS indicate that coastwide, approximately 93% of anglers catching bluefish landed 10 or less bluefish per day (Table 40). Thus, about 7% of successful recreational angler trips coastwide would be affected by the proposed 10 fish possession limit. Assuming more successful anglers have higher fishing avidity (that is, take more individual trips), the number of affected anglers would be even less than 7%. Therefore, the change in aggregate economic surplus associated with the proposed 10 fish limit will most likely be extremely small. Though this cannot be demonstrated quantitatively due to the lack of data, generally accepted theories on the demand for recreational fishing support this statement.

Anglers enjoy fishing for many reasons apart from catching fish: experiencing nature, socializing, etc. A study by Dawson and Wilkins (1981) examined the preferences of boating anglers in New York and Virginia in 1980. They found that catching fish was important, but consistently ranked below most of the less quantifiable aspects of a fishing trip. A large percentage of anglers in New York (93%) and Virginia (88%) did not feel they had to catch a lot of fish to be satisfied with a trip as long as they caught something.

Also, for some anglers, the species of fish caught is not the most significant determinant of satisfaction. The 1981 Marine Recreational Socio-economic Survey concluded that "about half (of the anglers) reported a preferred species while fishing, and most of these said they would continue to fish if they knew their preferred species was not available." (KCA 1983).

Although the species, number and size of fish are important determinants of sportfishing demand and satisfaction, the marginal value per fish caught declines with each successive fish. Following the methodology of Agnello (1989) an 11th bluefish would be worth $.17 - $.52 (1987 dollars) to the average angler, depending on the choice of regression model, much lower values than Agnello's estimates of $1.82 to $5.71 for the first bluefish. Given that most anglers would not value the retention of an 11th bluefish very highly, and assuming the magnitude of non-catch-related benefits is unaffected, the possession limit is not likely to negatively impact fishing satisfaction, even of the few anglers who consistently keep more than ten bluefish. The possession limit does not prohibit fishing after 10 bluefish are boated, only the retention of additional fish. Release of live fish will encourage a conservation ethic and reduce waste which has been identified in the fishery.

A study by the Sport Fishing Institute (SFI 1988c) projected that the number of saltwater days fished by Atlantic coast residents would increase by 8% from 1985 to 1990, and increase another 6% by 1995. These projections assume that age specific participation rates remain constant and increases in angler days are related to population growth and changing demographics. The projections also implicitly assume that the quality of the fishing experience remains constant. If serious stock depletion occurs, participation rates and fishing avidity may decrease. Capping fishing mortality at current levels may prevent serious stock depletion, enabling the vast majority of anglers who ordinarily retain less than ten bluefish to benefit from continued fishing success.

In summary, from what is generally known about participation in recreational fisheries, and from the catch rates of anglers targeting on bluefish, it can be inferred that very few trips, if any, will be cancelled due to the 10 bluefish possession limit. There should be little change in expenditures made to fish for bluefish, thus the impacts on employment and incomes in recreational fishing related businesses will be negligible. Further, given 1) the small percentage of anglers affected by the limit, 2) the probable low marginal value of an 11th fish on a particular trip, 3) the fact that the opportunities to continue to catch and release bluefish and to continue to retain other species are unaffected, and 4) the significance of non-catch related attributes of recreational fishing trips, the change in non-monetary benefits associated with bluefish fishing will in all likelihood be extremely small.

Based on a recommendation by the Council and ASMFC Policy Board, the Regional Director and the states in their respective jurisdictions, could modify the possession limit to between zero and 15 bluefish per angler. The possession limit would be revised according to specific criteria and only to account for changes in stock abundance. Short term impacts due to restrictive possession limits would be outweighed by the long term benefit of conserving the stock for future generations of recreational anglers.

The possession limit could be raised to a maximum of 15 bluefish. However, an increase in the possession limit would only occur under circumstances of increased bluefish abundance. Since the prevailing rate of fishing success would reflect increased stock abundance, the number of anglers catching their limit would be high for overly restrictive possession limits. Raising the possession limit to 15 bluefish would therefore decrease the number of affected anglers and have less adverse impact than the limit in force at the time.

In situations of low stock abundance, catch rates for recreational anglers would decline regardless of a specific possession limit. Adverse impacts would therefore be measured against the prevailing rate of fishing success and would not be as great as when bluefish are abundant. Although it is not possible to estimate exact impacts for hypothetical levels of bluefish abundance, it is clear that restrictive possession limits would have substantially less impact than a closure precipitated by stock collapse.

A zero bag limit would prohibit retention of bluefish by recreational fishermen and would have significant impacts, depending on the level of fishing success currently operative and the value anglers place on retention of catch. The bluefish recreational fishery would still be open to catch and release fishing, however, while the commercial fishery would have no allocation. Even in the event of a zero possession limit, bluefish anglers could still enjoy all non-catch related benefits as well as catch and release benefits associated with the fishery. In time, conservation management would restore the benefits of retaining bluefish catch for home consumption.

7.4. Annual Permit

The federal costs of implementing an annual permit system for the sale of bluefish shall be charged to permit holders as authorized by section 303(b)(1) of the Magnuson Act. In establishing the annual fee, the NMFS Regional Director will ensure that it does not exceed the administrative costs incurred in issuing the permit, as required by section 304(d) of the Magnuson Act. Proper accounting for administrative costs will include labor costs (salary and benefits of permitting officers plus prorated share of secretarial support and supervision at both the NMFS regional and headquarters levels), computer costs for creating and maintaining permit files (prorated capital costs, time share and expendable supplies), costs of forms and mailers (purchase, preparation, printing and reproduction), and postage costs for application forms and permits.

Respondent costs are simply the permit fee and the value of time required to complete the application/renewal form. The MAFMC estimates that completing the form will take approximately five minutes per individual. An estimate of total burden hours was arrived at as follows:

Only four Atlantic coast states (NH, NJ, VA, NC) do not require a permit to sell bluefish at the current time. It is anticipated that these states will implement a permit requirement in compliance with the interstate Bluefish Plan adopted by the ASMFC. A federal permit will be required only in the event that any of the four states choose not to comply with the majority or during the period before complying state legislation can be implemented.

A number of recreational anglers from the above four states would be reclassified as commercial fishermen under the definition in the FMP. These anglers would need a permit to sell bluefish should they wish to continue the practice. An estimate was made from the best available recreational fishing statistics and projections of demand for recreational fishing.

State	1990 Angler days	Percent Bluefish	Bluefish Days	% Bluefish Catch EEZ	% Sell	Affected Trips
NH	374,499	21	78,645	19	3.9	583
NJ	8,963,201	23	2,061,536	20	0.7	2,886
VA	5,922,976	23	1,362,284	20	0.7	1,907
NC	6,617,468	5	330,873	7	1.7	394
TOTAL						5,770

Notes: 1990 saltwater angler days fished by coastal residents estimated by SFI. Regional percent targeting on bluefish, percent bluefish caught in the EEZ, and percent selling bluefish estimated from MRFSS data.

An estimated 5,770 trips in the four states would involve the sale of bluefish. To the extent that some individuals take more that one trip per year, however, the number of affected fishermen would be less. The frequency of fishing by individuals dependent on income from the sale of bluefish would likely be greater than fishing frequency for the average recreational angler. Therefore, it is assumed that persons who would ordinarily sell bluefish less than five times per year would discontinue the practice and would not apply for a permit. If all trips involving sale of bluefish were made by fishermen taking five trips per year, 1,154 is a maximum estimate of the number of affected individuals. The true number would probably be less, depending on the extent to which hook and line fishermen continue to sell bluefish, and the total number of trips each individual takes. Given the above maximum estimate, however, at five minutes per angler, 96 total burden hours

are calculated. Should any of the above four states implement legislation requiring a permit to sell bluefish, federal burden hours will be reduced accordingly.

There are several benefits to instituting an annual permit system for the sale of bluefish. The most direct benefit would be more complete information available to the Council on the number of commercial fishermen harvesting bluefish and the amount of bluefish entering commercial channels. An accurate accounting of commercial catch is essential for monitoring the fishery to maintain the 20% commercial catch allocation. A second benefit would be improved impact assessments of amendments to the FMP by being able to identify participants in the commercial fishery. Another benefit would be a reduction in enforcement costs due to the availability of the permit for presentation to enforcement agents. Without a permit requirement, commercial hook and line fishermen could be unfairly subjected to the 10 bluefish possession limit or recreational fishermen, posing as commercial fishermen, could evade the possession limit. A permit clearly identifying an individual as a commercial fishermen, would reduce the time required for enforcement contacts and increase the effectiveness of enforcement.

The information collected under the permit system will be used by NMFS, the MAFMC, and the ASMFC to monitor the commercial fishery such that appropriate conservation and management actions may be taken in a timely manner. Incomplete statistics on bluefish commercial landings would severely impede the ability of the Council to make informed decisions, and would put at risk the biological and economic productivity of the commercial and recreational fisheries for bluefish.

No other similar source exists which has the potential of providing the necessary information. Permits issued in the four states potentially covered by the federal permitting system will provide information on a cross-section of fishermen selling bluefish coastwide. Because the information collected by state permitting agencies is not easily accessible to the Council and NMFS, a representative subsample of these fishermen is of value to the Council in assessing regulatory impacts. Should complete information on the number of Atlantic coast commercial bluefish fishermen be needed, the federal permit will fill in the gaps where state permits are not currently required.

7.5. Enforcement

Enforcement costs (NMFS and USCG) for the recreational possession limit would be minimal since the limit would be primarily enforced dock side. No dedicated effort for at-sea enforcement is foreseen, although the possession limit would be enforced at-sea in conjunction with other at-sea activities.

Enforcement costs for the commercial allocation limit would depend on market expansion. If the market for bluefish does not develop such that commercial landings increase to 20% of the total catch, no new enforcement costs are attributable to the proposed management measures. The individual Atlantic coast states would continue to enforce state regulations. Should enforcement of the commercial allocation limit be necessary, however, the extent to which federal enforcement costs increase will depend on the ability to make use of existing state resources to enforce state quotas and possible gear restrictions.

7.6. Summary of Anticipated Costs and Benefits

The intent of the proposed regulations is to preserve the traditional uses of the bluefish stock and prevent potential overfishing problems. Since historical catch proportions are to be maintained, the anticipated costs in terms of reduced economic surpluses in either the commercial or recreational fisheries are negligible. Likewise, employment and incomes in either sector are not likely to be adversely impacted to any significant extent and can in fact be increased somewhat in the commercial sector should the bluefish market expand. Enforcement costs are likely to be small from the federal perspective, since maximum use of existing state resources will occur.

The benefits of the proposed management measures, though not fully quantifiable at this time, are likely to be greatly in excess of any costs. The 10 bluefish possession limit will cap fishing mortality at the current level and foster a conservation ethic, thus preserving and enhancing a valuable recreational fishery for future generations of anglers. In the absence of conservation measures, reported waste in the fishery may continue, harming the resource and impacting all user groups. The allocation limit for the commercial fishery precludes adverse impacts on a traditional and valuable recreational fishery, yet allows for some expansion in a moderately valuable food fish industry. This expansion would result chiefly through increased landing of bycatch which is currently discarded. Taken together, the 10 bluefish possession limit and the 20% commercial allocation should prevent waste, protect the bluefish stock from overfishing, preserve traditional uses of the stock, and enhance the economic value of the fisheries through stability and orderly development.

In addition, the FMP will encourage Atlantic coast states to manage bluefish consistently throughout its range. The individual states, through the ASMFC, will adopt regulations for territorial waters consistent to those proposed for the EEZ. This FMP will ensure that state efforts will succeed. Failure to implement conservation measures at this time may result in serious disruption of the bluefish fisheries, wholesale reallocation to non-traditional uses, collapse of a valuable recreational fishery, need for emergency action, and the difficult prospect of coordinating the regulatory actions of the Atlantic coast states under trying circumstances with little more information than exists at present.

8. TRADEOFFS BETWEEN THE BENEFICIAL AND ADVERSE IMPACTS OF THE PROPOSED FMP

The impacts of the adopted management measures are presented in Section 9.2 of the FMP. The alternatives not selected are evaluated in Appendix 1 to the FMP.

9. EFFECT ON ENDANGERED SPECIES AND ON THE COASTAL ZONE

Neither the adopted management measures or the alternatives not selected would constitute an action that "may affect" endangered or threatened species or their habitat within the meaning of the regulations implementing Section 7 of the Endangered Species Act of 1973. Thus, consultation procedures under Section 7 will not be necessary.

The Council determined that this FMP will be implemented in a manner that is consistent, to the maximum extent practicable, with the approved coastal zone management programs of Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, North Carolina, South Carolina, Georgia, and Florida. For Pennsylvania, the Council determined that this rule will not affect the coastal zone. This determination was submitted for review by the responsible State agencies under section 307 of the Coastal Zone Management Act on 7 July 1989. As of 30 October 1989 all of the States had concurred with the Council's finding except Rhode Island, Maryland, Virginia, North Carolina, and Georgia, which States did not respond.

10. EFFECTS ON FLOOD PLAINS OR WETLANDS

Neither the adopted management measures nor the alternatives not selected will adversely affect flood plains or wetlands, and trails and rivers listed or eligible for listing on the National Trails and Nationwide Inventory of Rivers.

11. LIST OF AGENCIES AND PERSONS CONSULTED IN FORMULATING THE PROPOSED ACTION

In preparing the FMP, the Council and ASMFC consulted with NMFS, the New England Fishery Management Council, the South Atlantic Fishery Management Council, the Fish and Wildlife Service, the Department of State, and all of the coastal States. In addition all of the coastal States were consulted through the Coastal Zone Management Program consistency process.

ASMFC participation involved the ASMFC Bluefish Management Board, comprised of members from the States of Massachusetts, Rhode Island, New Jersey, Virginia, and North Carolina, the ASMFC Bluefish Scientific and Statistical Committee, and the ASMFC Citizens' Advisory Committee. Scientists and managers from the States of Maine through Florida comprised the Scientific and Statistical Committee. Concerned citizens, representing commercial and recreational interests from each state, were the citizen advisors.

12. LIST OF PREPARERS OF ENVIRONMENTAL ASSESSMENT AND PLAN

The FMP was prepared by a team of fishery managers and scientists with special expertise in the bluefish resource including: the Mid-Atlantic Council Coastal Migratory Fisheries Committee (Jack Travelstead, Gordon Colvin, Rick Cole, Warren Hader, Ed Miller, W. Peter Jensen, John Burger, Charles Johnson, Bruce Freeman, Albert Goetze, and representatives of the ASMFC and the US Fish and Wildlife Service), the ASMFC Bluefish Management Board (Philip Coates, John Stolgitis, Bruce Freeman, William Pruitt, and William Hogarth), and MAFMC staff (John C. Bryson, David R. Keifer, Thomas B. Hoff, Christopher M. Moore, Christopher W. Rogers, and Clayton E. Heaton).

13. FINDINGS OF NO SIGNIFICANT ENVIRONMENTAL IMPACT

For the reasons discussed above, it is hereby determined that neither approval and implementation of the proposed action nor the alternatives would affect significantly the quality of the human environment, and that the preparation of an environmental impact statement on the Plan is not required by Section 102(2)(c) of the National Environmental Policy Act nor its implementing regulations.

_____ _____

Assistant Administrator for Fisheries, NOAA Date

APPENDIX 3. REGULATORY IMPACT REVIEW

1. INTRODUCTION

1.1. Purpose

The purpose of this document is to present an analysis of the proposed regulations for the Bluefish Fishery Management Plan (FMP). This document has been prepared in compliance with the procedures of the National Marine Fisheries Service (NMFS) to implement Executive Order (E.O.) 12291. The document also contains an analysis of the impacts of the Plan relative to the Regulatory Flexibility Act and the Paperwork Reduction Act of 1980.

1.2. Description of User Groups

The fishery is described in Sections 7 and 8 of the FMP.

1.3. Problems Addressed by the FMP

The problems to be addressed are discussed in Section 4.2 of the FMP.

1.4. Management Objectives

The major goal of the management plan is to conserve the bluefish resource along the Atlantic coast. The Council and ASMFC have adopted five major objectives to achieve this goal:

1. Increase understanding of the stock and of the fishery.
2. Provide the highest availability of bluefish to US fishermen while maintaining, within limits, traditional uses of bluefish (defined as the commercial fishery not exceeding 20% of the total catch).
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.

1.5. Provisions of the FMP

The adopted provisions are presented in Sections 2 and 9.1 of the FMP. The alternatives not selected are presented in Appendix 1 to the FMP.

2. REGULATORY IMPACT ANALYSIS

The impacts of FMP are presented in Section 9.2 of the FMP. The alternatives not selected are evaluated in Appendix 1 to the FMP.

3. DISCUSSION OF THE BENEFITS AND COSTS OF THE AMENDMENT

E.O. 12291 requires that a benefit-cost analysis of all proposed regulations be performed.

3.1. Costs

Management costs are discussed in section 9.2.

3.2. Benefits

The benefits of the FMP are discussed in section 9.2.

3.3. Benefit - Cost Conclusion

The benefits and costs of the FMP are discussed in section 9.2.

4. Other E.O. 12291 Requirements

E.O. 12291 requires that the following three issues be considered:

1. Will the Plan have an annual effect on the economy of $100 million or more.

2. Will the Plan lead to an increase in the costs or prices for consumers, individual industries, Federal, State, or local government agencies or geographic regions.

3. Will the Plan have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of US based enterprises to compete with foreign based enterprises in domestic or export markets.

The FMP should not have an annual effect of $100 million or more. The total commercial fishery was valued at $3.3 million in 1987, and is free to expand up to the 20% allocation limit. The total bluefish recreational fishery expenditures were estimated at $391 - 574 million in 1985. Since the 10 fish possession limit likely effects fewer than 10% of anglers, expenditure impacts will undoubtedly be less than $60 million, even if these anglers curtailed fishing. In actuality, affected anglers are likely to continue catch and release fishing after the 10 fish limit is reached, resulting in minimal adverse impacts.

The FMP is not expected to lead to an increase in costs or prices to consumers. Recreational anglers are expected to be impacted to a small extent due to the possession limit, but this will result in only a small redirection of expenditures and an insignificant loss in non-monetary benefits. Commercial fisheries will not be affected by loss of bluefish and bycatch landings relative to current harvest levels. Gear restrictions and/or catch quotas are not to be implemented unless expansion in the commercial sector adversely impacts the traditional distribution of catch relative to the recreational sector.

No redirection of costs within the Coast Guard and NMFS is expected. Existing State enforcement resources are to be relied upon to the greatest extent possible. The net costs to these and other agencies are expected to be negligible.

Cost and benefit data are presented and analyzed in section 9.2.2 of the FMP.

The FMP should not have significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of US based enterprises to compete with foreign based enterprises in domestic or export markets.

5. Impacts of the Plan relative to the Regulatory Flexibility Act and the Paperwork Reduction Act of 1980.

The Regulatory Flexibility Act requires the examination of the impacts on small businesses, small organizations, and small jurisdictions. The impacts of the FMP do not favor large businesses over small businesses.

The Paperwork Reduction Act concerns the collection of information. The intent of the Act is to minimize the Federal paperwork burden for individuals, small business, State and local governments, and other persons as well as to maximize the usefulness of information collected by the Federal government. It is anticipated that most commercial permits for bluefish will be issued by the State of landing, not by the Federal government.

The federal costs of implementing an annual permit system for the sale of bluefish shall be charged to permit holders as authorized by section 303(b)(1) of the Magnuson Act. In establishing the annual fee, the NMFS Regional Director will ensure that it does not exceed the administrative costs incurred in issuing the permit, as required by section 304(d) of the Magnuson Act. Proper accounting for administrative costs will include labor costs (salary and benefits of permitting officers plus prorated share of secretarial support and supervision at both the NMFS regional and headquarters levels), computer costs for creating and maintaining permit files (prorated capital costs, time share and expendable supplies), costs of forms and mailers (purchase, preparation, printing and reproduction), and postage costs for application forms and permits.

Respondent costs are simply the permit fee and the value of time required to complete the application/renewal form. The MAFMC estimates that completing the form will take approximately five minutes per individual. An estimate of total burden hours was arrived at as follows:

Only four Atlantic coast states (NH, NJ, VA, NC) do not require a permit to sell bluefish at the current time. It is anticipated that these states will implement a permit requirement in compliance with the interstate Bluefish Plan adopted by the ASMFC. A federal permit will be required only in the event that any of the four states choose not to comply with the majority or during the period before complying state legislation can be implemented.

A number of recreational anglers from the above four states would be reclassified as commercial fishermen under the definition in the FMP. These anglers would need a permit to sell bluefish should they wish to con-

tinue the practice. An estimate was made from the best available recreational fishing statistics and projections of demand for recreational fishing.

State	1990 Angler days	Percent Bluefish	Bluefish Days	% Bluefish Catch EEZ	% Sell	Affected Trips
NH	374,499	21	78,645	19	3.9	583
NJ	8,963,201	23	2,061,536	20	0.7	2,886
VA	5,922,976	23	1,362,284	20	0.7	1,907
NC	6,617,468	5	330,873	7	1.7	394
TOTAL						5,770

Notes: 1990 saltwater angler days fished by coastal residents estimated by SFI. Regional percent targeting on bluefish, percent bluefish caught in the EEZ, and percent selling bluefish estimated from MRFSS data.

An estimated 5,770 trips in the four states would involve the sale of bluefish. To the extent that some individuals take more that one trip per year, however, the number of affected fishermen would be less. The frequency of fishing by individuals dependent on income from the sale of bluefish would likely be greater than fishing frequency for the average recreational angler. Therefore, it is assumed that persons who would ordinarily sell bluefish less than five times per year would discontinue the practice and would not apply for a permit. If all trips involving sale of bluefish were made by fishermen taking five trips per year, 1,154 is a maximum estimate of the number of affected individuals. The true number would probably be less, depending on the extent to which hook and line fishermen continue to sell bluefish, and the total number of trips each individual takes. Given the above maximum estimate, however, at five minutes per angler, 96 total burden hours are calculated. Should any of the above four states implement legislation requiring a permit to sell bluefish, federal burden hours will be reduced accordingly.

There are several benefits to instituting an annual permit system for the sale of bluefish. The most direct benefit would be more complete information available to the Council on the number of commercial fishermen harvesting bluefish and the amount of bluefish entering commercial channels. An accurate accounting of commercial catch is essential for monitoring the fishery to maintain the 20% commercial catch allocation. A second benefit would be improved impact assessments of amendments to the FMP by being able to identify participants in the commercial fishery. Another benefit would be a reduction in enforcement costs due to the availability of the permit for presentation to enforcement agents. Without a permit requirement, commercial hook and line fishermen could be unfairly subjected to the 10 bluefish possession limit or recreational fishermen, posing as commercial fishermen, could evade the possession limit. A permit clearly identifying an individual as a commercial fishermen, would reduce the time required for enforcement contacts and increase the effectiveness of enforcement.

The information collected under the permit system will be used by NMFS, the MAFMC, and the ASMFC to monitor the commercial fishery such that appropriate conservation and management actions may be taken in a timely manner. Incomplete statistics on bluefish commercial landings would severely impede the ability of the Council to make informed decisions, and would put at risk the biological and economic productivity of the commercial and recreational fisheries for bluefish.

No other similar source exists which has the potential of providing the necessary information. Permits issued in the four states potentially covered by the federal permitting system will provide information on a cross-section of fishermen selling bluefish coastwide. Because the information collected by state permitting agencies is not easily accessible to the Council and NMFS, a representative subsample of these fishermen is of value to the Council in assessing regulatory impacts. Should complete information on the number of Atlantic coast commercial bluefish fishermen be needed, the federal permit will fill in the gaps where state permits are not currently required.

APPENDIX 4. BLUEFISH FMP HEARINGS

STUART, FL - AUGUST 7, 1989

The Bluefish Fishery Management Plan public hearing in Stuart, FL was called to order at approximately 7:05 p.m. on August 7, 1989. Roy Williams, South Atlantic Council member, was the hearing officer. Chris Moore and Lynn Redding of the Mid-Atlantic Council staff were also present. Twenty-eight members of the public were present.

Mr. Williams made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC have adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Williams then opened the hearing for any questions or comments.

Max Quackenbos asked if the catch of bluefish by commercial hook and line fisherman would be a part of the total commercial landings.

Bobby Thompson questioned what the procedure was after the bluefish hearings. He asked if it was similar to a draft rule. Mr. Thompson also asked if the people on the mailing list would be advised as to what the plan would contain in its final draft form. He inquired if the public could still comment on the plan at that time.

Bob Pelosi, Stuart Sailfish Club, asked if Florida was a member of the Atlantic States Marine Fisheries Commission.

Wally Hynes commented that the first plan was turned down because of funding.

Bill Laws, Poor Bob's Bait & Tackle, asked if management measure number 2, which restricts anglers to no more than 10 bluefish, would be implemented after the 20% commercial catch was realized. He asked if commercial fishermen landed 20% and then there were no more fish, would the limit be reduced to 10 or 3 bluefish.

Robert Hemberger asked what was meant in objective number 4 by recruitment overfishing.

Jesse Webb asked for the reference of the publication that indicated that 75% of the population would be living within 50 miles of the coastline by 1990.

Max Quackenbos, President, Martin County Anglers Club, commented they would prefer a 10% commercial quota. They also would support a bag limit of 10 fish over 12".

Henry Caimoto, Snook Nook Bait & Tackle Shop, felt that recreational fishermen would not have a problem with a limit. He stated that the lighter tackle that fishermen were using indicated fishermen were becoming more conservative minded. Mr. Caimoto stated that there is a constant battle between sport and commercial anglers. He stated that both groups should be treated equally. Mr. Caimoto agreed that there was a decline in the bluefish fishery. He felt that the commercial catch should stay at 10%. He was also in favor of a bag limit.

Richard Van Munste asked if all of the states would close their commercial fisheries at the same time. He also inquired as to how the plan would address this issue. Mr. Van Munste felt that the plan hurt the little guy whose gear was not as effective. He favored gear restrictions but felt that traditional fisheries should be protected. Mr. Van Munste has not seen a decline in the bluefish resource. He indicated that there was no need for a plan in Florida waters.

Roy Williams asked Dr. Moore if EEZ commercial regulations would differ from the state regulations would the state quota be different than the EEZ quota.

Bob Pelosi, Stuart Sailfish Club, (Attachment 1) stated that their club does not agree with the 20% commercial catch limit. They felt that it should be limited to the historical catch of 10%. The club would accept the bag limit of 10 but not the commercial catch limit of 20%. He also commented that the plan makes no mention of a size limit. The club would like to see a minimum size limit of 12". The club felt that the plan would encourage overexploitation by the commercial sector. They recommended leaving bluefish management to the state agencies. In the case that the Council goes ahead with the plan, they would like to see the more stringent state management rules be applicable to the Federal waters off the state.

John Chambers, R & W Seafood, inquired if the bag limits would go to zero when the quota was reached. He asked how the bag limit would be modified.

Stan Blum felt that the federal agents should abide by what the states decide and not pressure the states to accept federal management decisions. Mr. Blum commented that the Department of Commerce has one philosophy which is to target a species for management until it is almost gone before targeting another species. He indicated that the fishermen hit a fishery hard when it is managed.

Andrew Sulsa, Ft. Pierce Sport Fishing Club, (Attachment 2) stated that their club felt that there were no provisions other than a bag limit to achieve objective number 4, which is to prevent recruitment overfishing. They are also against the 20% commercial catch limit. The Ft. Pierce Sport Fishing Club recommended a quota on total catch that would be based at the low end of MSY. They also recommended limiting commercial landings to their historical average of 10%. The club felt that in the event that state regulations are more restrictive than the federal regulations, state regulations should apply to the adjacent federal zone. They also felt that the plan should push state managers to adopt regulations at least as restrictive as those in the federal zone. The club thought if the states failed to adopt the aforementioned regulations after a certain number of years, then both bag limits and quotas off that state should be reduced to zero until such time as the state does adopt appropriate regulations.

Jack Corcoran, a commercial fisherman, asked if the 20% commercial limit was reached and the state-by-state allocation system was implemented, would there be an opening and closing date for commercial fisheries. He inquired if the federal quota was linked to the state quota. He was concerned that landings from other states would reduce the state allocation in Florida. Mr. Corcoran stated that regulation was necessary for the bluefish fishery.

Bill Laws, Poor Bob's Bait & Tackle, commented that it was a good plan. He supports alternative 2.4, which restricts anglers to a possession limit of no more than 10 bluefish 12" TL or larger. Mr. Laws also supports alternative 3.1, which controls the use of all gear except hook and line, traps, hauls seines, and pound nets to conduct a directed fishery for bluefish. He indicated that gill nets and drift nets should be prohibited. Mr. Laws stated that he was against the 20% commercial catch limit. He commented on the size tolerance for commercial fisnermen. He stated that he has seen the waste in the bluefish fishery.

Hubert Stiller, Sr. stated that we do need a bluefish plan but he does not approve of the current draft plan. He is against the 20% commercial catch limit. Mr. Stiller felt that we need to do more research to find out where the little bluefish are found. He commented that more concern should be placed on the condition of the water.

Bobby Crane, a commercial fisherman, stated that he thought that commercial fishermen should receive at least 20% of the total catch. He commented that commercial fishermen have been hurt by mackerel quotas and that they need bluefish to survive.

Billy Hudgins, Hudgins Fish Co., questioned how the commercial catch would be allocated. He stated that the bluefish fishery needs to be regulated. Mr. Hudgins felt that the 20% commercial catch limit was fair. He stated that the opening and closing date for the commercial fishery would be important. He would want a season from January through March if they were limited to three months. Mr. Hudgins was concerned with action or reaction by the other states. He felt that the commercial fishery should be based on traditional gear and not new gears. He stated that he did not feel the figures cited in the Stuart Sailfish Club letter of $4.32 to $5.28 per pound for recreationally caught bluefish versus $.267 cents a pound for commercial landings were accurate.

Wally Hynes, commented that we should conserve the bluefish resource and maintain the traditional fishery. Mr. Hynes felt that recreational and commercial fishermen should be defined in the plan. He stated that the plan should define the size of a snapper bluefish. He asked if there was a chance that the plan could again be rejected by the Office of Management and Budget. Mr. Hynes supports alternative number 3.1, which controls the use of all gear except hook and line, traps, hauls seines, and pound nets to conduct a directed fishery for bluefish.

John Chambers, R & W Seafood, commented that bluefish is their predominant seller. He stated that his business would suffer if there was a complete cut-off of fish as had happened with mackerel. Mr. Chambers supports the 20% commercial catch limit.

Bobby Thompson, a commercial fisherman, stated that alternative number 5, which allows US fishermen unrestricted catches of bluefish but imposes a 16" TL minimum size limit, would severely impact commercial fish-

ermen in Florida. He stated that their primary target is bluefish in the range of 1 1/2 to 2 1/2 pounds. Mr. Thompson felt that there should be a bycatch provision if the commercial catch limit was reached. He felt that alternative number 3.1 should not exclude types of gear that have mesh sizes such as gill nets. Mr. Thompson asked if commercial fishermen would still be allowed to fish if the commercial quota is reached. He was concerned that recreational fishermen would be able to keep fishing after commercial catch limit was reached. Mr. Thompson stated that fish are moving North and further off shore due to water condition, boat traffic and pollution. He commented that consumers have a right to buy bluefish and that by regulating the commercial fishery, management agencies are regulating the consumer.

The hearing adjourned at approximately 9:10 p.m.

CHARLESTON, SC - JULY 24, 1989

The Bluefish Fishery Management Plan public hearing at the Marine Resources Center in Charleston, SC was called to order at approximately 7:15 p.m. by Dr. Ed Joseph of the South Atlantic Council who was the hearing officer. Also present were Roger Pugliese of the South Atlantic Council staff, David Keifer and Kathy Collins of the Mid-Atlantic Council staff. There were no members of the public in attendance.

Opening statements were read by Dr. Ed Joseph. Since no members of the public were present, Dr. Joseph adjourned the hearing at approximately 7:17 p.m.

MOREHEAD CITY, NC - JULY 25, 1989

The Bluefish Fishery Management Plan public hearing at Carteret Community College in Morehead City, NC was called to order at approximately 7:30 p.m. by Dennis Spitsbergen of the South Atlantic Council who was the hearing officer. Also present were Roger Pugliese of the South Atlantic Council staff, David Keifer and Kathy Collins of the Mid-Atlantic Council staff. Three members of the public attended.

Opening statements were read by Mr. Spitsbergen. Mr. Keifer presented a summary of the Bluefish Plan. After the summary of the plan, Mr. Spitsbergen opened the hearing for comments.

William Smith, of North Carolina, supported the plan. He thought that the 80:20 allocation was fair.

Billy Smith, of North Carolina, supported the plan also. He thought that the 80:20 allocation was fair.

The hearing adjourned at approximately 7:55 p.m.

MANTEO, NC - JULY 26, 1989

The Bluefish Fishery Management Plan public hearing at the North Carolina Aquarium in Manteo, NC was called to order at approximately 7:30 p.m. by Dennis Spitsbergen of the South Atlantic Council who was the hearing officer. Also present were David Keifer and Kathy Collins of the Mid-Atlantic Council staff. Twenty seven members of the public attended.

Opening statements were read by Mr. Spitsbergen. Mr. Keifer presented a summary of the Bluefish Plan. After the summary of the plan, Mr. Spitsbergen opened the hearing for comments.

Charles Midget of Wanchese, NC supports alternative #1, to take no action at this time. He suggested to put a bounty on them to get them down because the bluefish are eating up the trout.

John Bayles, a commercial fisherman, supports alternative #1, to take no action at this time. He said that the water quality conditions are bad in the north and that is why they are not catching many bluefish. He said that he would go with 20 fish no larger than 12 inches total length. He said that the bluefish tear up gear and eat all the trout out of the nets. He said that the market is down on bluefish. He thinks everything is in good shape and that no action needs to be taken.

Gary Meyers, a charter boat fisherman and part time commercial fisherman, supports alternative #1, to take no action. He sees no problem with the bluefish stock. He said that if there must be a limit to have it on the bigger fish perhaps 18 inches or over 5 pounds. He thinks that environmental conditions need to be looked at before spending a lot of time and money. He thinks there are other species that need taking care of more

than bluefish. He also added that the water quality conditions up north are bad and that is the reason they are not catching any bluefish.

James Fletcher said that the life cycle of a bluefish cannot be explained. He said that NMFS is using statistics to come up with managing a species they don't know anything about. He feels that NMFS is not managing the fishery at all. He said that the water problem is probably the worst problem because of chlorine being dumped in the waters. He said that NMFS said that that is not their problem and he strongly feels that it is.

Moon Tillett said that he is in favor of alternative #1, to take no action at this time.

Billy Tillett also said that he is in favor of alternative #1, to take no action.

Tom Wagner, who runs an inshore boat, said that rainfall was a factor of the bluefish not being around.

Mike Daniels, of the Wanchese Fish Co., supports alternative #1, to take no action.

Billy Brown, an inshore charter boat fisherman, said that bluefish is probably the most plentiful fish out there. He said that the fisherman do not need a plan down there.

Charles Midget said that people are becoming more conscious of recreational fishing and that they are releasing the fish after catching them. He also said that the bluefish offshore are destroying trout nets.

James Fletcher asked where do you get the jurisdiction to limit one type of gear? He said that the Magnuson Act sates that it will not discriminate against user groups.

The hearing adjourned at approximately 8:40 p.m.

HAMPTON, VA - JULY 27, 1989

The Bluefish Fishery Management Plan public hearing at the Radisson Hotel in Hampton, VA, was called to order at approximately 7:15 p.m. by Jack Travelstead of the Mid-Atlantic Council who was the hearing officer. Also present were Jim McHugh, Chairman of the Mid-Atlantic Council, and Mid-Atlantic Council staff David Keifer and Kathy Collins. Nineteen members of the public attended.

Opening statements were read by Mr. Travelstead. Mr. Keifer presented a summary of the Bluefish Plan. After the summary of the plan, Mr. Travelstead opened the hearing for comments.

Captain Bill Thomas, a charter boat captain, explained that he had a bad year of fishing this year and that last year was the best year of fishing. He said this year was bad because of too much rain and cold weather. He said he feels that they shouldn't jump and give the fish some time to come back because there are millions of bluefish 5 to 6 inches in the Chesapeake Bay and Potomac. Mr. Thomas said that there is no need to put a limit at this time.

Carl Herring of the Executive Board of the Atlantic Coast Conservation Association (ACCA) of VA read the attached statement of ACCA's position (Attachment 3). ACCA strongly supports the plan. ACCA believes that 10 fish may be too low but the 10 fish quota seems fair for the EEZ. He feels that the 20% for commercial fisherman allows them to take double the current share of the resource.

Mr. Herring feels that locations need to be watched to see what happens because a whole area of bluefish can be wiped out.

Mr. Herring asked Mr. Travelstead if Virginia hook and line fisherman have a permit. Mr. Travelstead told him that they do not and Mr. Herring replied that they should consider a permit.

Greg Cooner a Recreational Fisherman of Virginia said that there are a lot of bluefish out there and that there is a decline but not a major decline in the bay. Mr. Cooner said that he likes to catch baby bluefish, about 6 to 10 inches, to use for king mackerel fishing. Mr. Cooner also said that he would like to have considered the use of baby bluefish as bait. He sees no problem with a 10 fish limit because that is plenty. He thinks the law should be equal to commercial and recreational fisherman.

Mr. Howdershell, a commercial fisherman, explained that it would be hard to get people to want to go out and catch only 10 fish. They need something that would be marketable for people to get business.

Mr. Dee F. Johnson a member of the VA Charter Boat Association, ACCA Association, and the Penninsula Saltwater Association stated that one is talking about extreme juvenile fish if you take 12 inch total length. He said the average bluefish caught in the bay is 10 pounds. He said he has not seen a good year catch of fishing

since 1983 because since then there have been extreme wet and cold conditions. He said these conditions preclude the "giant" bluefish from coming into the bay. He said he saw nothing in the alternatives for extreme size except alternative 2.5 which is 18 inches. He said 10 jumbo bluefish are plenty of fish and to limit 10 bluefish to 12 inches total length is not a good idea.

He asked that if the commercial catch quota is exceeded and cut off, is the recreational quota cut off? Mr. Travelstead said no.

Mr. Johnson said that if the commercial fishery is exceeded and cut off then the recreational fishery shouldn't be cut off at the same time. He also said that bluefish do not keep because the fish go bad before they can be processed. He thinks that 10 fish over 10 pounds is good but 10 fish 12 inches total length is not good.

Richard Woodward, a charter boat operator, likes alternative 2.3, which allows 20 bluefish less than 12 inches.

Doug Wayner, a member of the ACCA board had mixed feelings. He said that when the bluefish were strong, many were fishing for other species.

Bruce Graham, a recreational fisherman said that commercial fisherman are catching more bluefish than they should and he cannot see that. He said the plan is needed because we need bluefish around in years to come.

Carl Herring said that a plan is important. He said that based on other species, the wisest thing is not to have to back off to 2 to 3 fish.

Fletcher Pots, a charter boat operator, said that freshwater fishing is better because it is managed. He said if the fishery is not managed, there is not going to be fish to manage. He said that the fisherman have never recovered from the "high roller". He said that the bluefish are very much on a decline. He also stated that the sport fisherman take more fish than anyone realizes. He thinks that the 10 fish per day is a good limit. He feels that management is needed. He also explained that he sees where bluefish has been advertised as bait at several places.

Pete Freeman, a commercial crabber, said that he uses bluefish for bait. He said that when something is regulated, he would like to see commercial and recreational fisherman to be treated equal. He stated that commercial fishing is a dying breed. He said that a 10 pound fish could be regulated and that the smaller cannot. He feels the resource needs to be protected for the commercial and recreational fishery and that he would like to see people get together and do something about it. He feels that a 10 fish limit is fine.

Fletcher Pots stated that trap netters are a dying breed. He said that gill nets are killing the fishery because the fish get caught in them.

Kenneth Williams, President of VA Water Association, said that financially, bluefish has not meant much to commercial fishermen. He said that bluefish destroy more than you can get out of them. He feels that bluefish are not so scarce that they need to be managed. He thinks something should be in the plan like, when little tail bluefish are caught in the net and are dead, to use them for bait.

Richard Woodward feels that it is time to manage the bluefish. He has never seen the bluefish fishery improve for 18 seasons. He sees rather than widespread lumps, concentration in small areas.

Bill English, a resident of Hampton, Va, said that he has seen the fishery abused by commercial and recreational fisherman. He feels that the resource should be protected whatever it takes.

The hearing adjourned at approximately 8:30 p.m.

ANNAPOLIS, MD - JULY 24, 1989

The Bluefish Fishery Management Plan public hearing in Annapolis, MD, was called to order at approximately 7:10 p.m. on July 24, 1989. W. Peter Jensen, Mid-Atlantic Council member, was the hearing officer. Also present were Albert Goetze of the Mid-Atlantic Council and Dave Wharton from the Maryland Tidewater Administration. Chris Moore, Tom Hoff and Lynn Redding of the Mid-Atlantic Council staff were also present. Eighty members of the public were present.

Mr. Jensen made the opening remarks regarding the Bluefish Fishery Management Plan. Mr. Jensen commented on a newspaper article written by Ed Bruske from the Washington Post. He mentioned that there were of errors and misconceptions in the article. Mr. Jensen also stated that the article was based on preliminary data.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC had adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Jensen then opened the hearing for any questions or comments.

Bruce Scheible asked if the 3 to 200 mile federal limit included the Chesapeake Bay.

George Bernard thought the 10 fish limit had been adopted at the Council meeting in Philadelphia. He also wanted to know if there was still an alternative to go higher than the 10 fish possession limit.

Ed O'Brien, Officer, Maryland Charter Boat Association, stated that the charter boat and sport fishing associations had regulated the bluefish fishery just fine. He felt that all of the alternatives complicated the issue. He felt that the alternatives combined with the framework measure to lower the catch limit to three was too much to propose to the public at once.

Gerald Lastfogel, charter boat operator, asked how and where bluefish spawn. He wanted to know if a study had been done on the bluefish population along the Eastern seaboard and if the population was declining.

Charles Lechtum stated that he did not think there should be any permits to exceed the possession limit for anyone.

Rich Nevotny, President, Maryland Saltwater Sportfisherman's Association, stated that the Association was in favor of a 10 fish limit. Their major problem with the plan is the 80/20 allocation. They did not think that the commercial catch should be increased to 20% and the recreational catch reduced. They proposed a 90/10 allocation between recreational and commercial fishermen.

Bill Goldsborough, Chesapeake Bay Foundation, stated that the foundation fully supports the FMP.

George Bernard stated that they should not let Maryland be the first to accept the plan. If this happened, he indicated that people would go to other states for charters. He stated he was in favor of a 10 fish limit, but did not want Maryland to be the first to impose it.

Sherman Davis, Virginia charter boat captain, stated that he thought there should be a possession limit and that all states limit should be the same. He thought it should be set for a certain period of time and change as more data on the population become available. He had a problem with the methodology used to determine how many bluefish were caught. Mr. Davis thought there should be a uniform system for reporting how many fish were caught.

Lefty Kreh, Baltimore Sun sport writer, wanted to know how the catch would be monitored and how accurately.

Bruce Scheible, owner of fishing center, stated that he did not support the plan. He felt that charter boats should be treated separately from other recreational fishermen. He indicated that a 3 to 10 fish limit on bluefish would decrease his business by 40%. Mr. Scheible felt that the size of the fish and the location should be considered. He stated that he did not think any action should be taken at this time.

Bill Mills commented on the framework measure that would allow the catch limit to decrease. He asked if there would be flexibility in the plan to increase the possession limit.

Bill Goldsborough asked if there are any efforts between the states to adopt the management measures uniformly.

Joe Rupp stated that those people who fish professionally are not going to overharvest bluefish. He felt that fish can take care of themselves and do not need management. Mr. Ruff stated that there was a credibility gap between the fishermen and the people from the management bureaucracy. He indicated that the recreational surveys are done by the wrong people at the wrong time.

Rich Novotny asked if Maryland Department of Natural Resources was cooperating with Virginia, New Jersey and Delaware to implement a 10 fish limit on bluefish in each one of those states. He asked what Maryland's alternative would be if the other states did not accept the 10 fish limit.

Doug Scheible asked if the 10 fish limit was adopted and then it was decided that the number should be reduced, would there be more meetings, or would it be automatically done by the Council. He also inquired about spawning habits.

Eddie Davis, charter boat captain, stated that bluefish were not coming up into the Maryland section of the Bay because they were being caught in Virginia waters by commercial fishermen.

Bill Thomas, charter boat captain, indicated that he had bought 4 bushels of bait for a fishing party from a pound net fisherman and that 35% of the bait were bluefish 5" long.

Vincent Ridgell, charter boat captain, stated that there was nothing mentioned in the plan about error associated with the catch alternatives. He also commented on the importance of sample sizes.

Peter Ireland asked how the plan would be implemented. He did not feel that the fishermen were going to be treated fairly. He thought it would be decided by the Council and others whose lives were not affected by the fishery. Mr. Ireland thought it should be left to the fishermen to regulate the bluefish fishery.

A charter boat captain from Virginia stated that he thought it should be left up to the fishermen to regulate the fishery. He also asked who checks menhaden boats catches.

Mike Sullivan stated that if Virginia did not adopt the 10 fish possession limit then it would it would be unfair to Maryland if Maryland had adopted the limit.

Sherman Davis stated that a 10 fish possession limit on bluefish would be fine.

Joe Rupp stated that the fishermen could manage the fishery themselves.

Ed O'Brien, Maryland Charter Boat Association, commented that the plan stated that the bluefish stocks were declining and yet the fishermen are saying that they are seeing more bluefish. He asked if there had been a change in thinking since the report was drafted. He mentioned that this is where the credibility issue comes in. Mr. O'Brien also wanted to know if there was a situation that demanded all of this alarm. He asked if conservation and regulation always had to be synonymous. He stated that self-conservation would work. Mr. O'Brien felt that the Maryland Charter Boat Association would go along with a 10 fish limit, but no sliding scale, model, or built-in framework on the possession limit.

Bill Burton asked what the charter boat catch is compared to the guy that doesn't have anyone looking over his shoulder. He also wanted to know the difference between a charter boat and a party boat.

Rich Novotny restated that he was for the 10 fish possession limit. He proposed that a possession limit be implemented for a year or two and then use the data from those years to determine the effect of its possession limit.

Tammy Rue asked if the captain and the crew would be allowed 10 fish. She also wanted to know if the 10 fish catch limit was per day or per trip.

Sony Forest asked what the Council was going to do about the commercial harvest of bluefish off the Atlantic coast by other countries.

Bob Holden commented on boats with permits taking bluefish to other countries.

Gary Diamond asked what Maryland's alternatives would be if Virginia did not go along with the plan. He also inquired on a deadline for adoption of the FMP.

Steve Spence asked if there had been any research done on what an increase in the bluefish population would do to other fish populations.

Pete Jensen thanked the audience for attending. The hearing adjourned at approximately 9:00 p.m.

LEWES, DE - JULY 26, 1989

A public hearing for the Bluefish Fishery Management Plan was held on 26 July 1989 at Cape Henlopen High School, Lewes, DE. The hearing was called to order at approximately 7:10 p.m. by Mr. Rick Cole of the Mid-Atlantic Council who was the hearing officer. Mid-Atlantic staff was represented by Dr. Chris Moore, Mr. Tom Hoff, and Ms. Carol Stevenson, who served as recording secretary. The National Marine Fisheries Service was represented by Dr. Robert Lippson. There were approximately 14 people present at the hearing.

Mr. Cole made introductory remarks and asked staff to present a summary of the Bluefish FMP, giving the purpose and objectives of the plan.

Dr. Moore reviewed a summary and technical review of the Bluefish FMP, covering the management measures that the Council and Atlantic States Marine Fisheries Commission had adopted for purposes of obtaining public comment. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Cole then opened the hearing for any questions or comments from the public.

Mr. H.D. Parsons, Fisherman's Wharf asked a question regarding the bag limit in reference to head boats. He wanted to know how the count was going to be figured, by the amount of passengers the vessel could carry, or by the number of anglers on board at the time. He stated that he didn't like the idea of a minimum amount. He also suggested pushing the commercial fleet farther than 20 miles offshore, or restricting them to a certain depth of water to preserve the inshore stocks for the recreational fishermen.

Mr. Buzz Adams asked what was meant by recruitment overfishing. He further stated that he was in general agreement with the FMP, but believed that the commercial data was inaccurate, particularly Delaware's commercial data. He said until about 3 years ago, Delaware didn't even have a commercial wholesaler. He said 95% of what was caught commercially was sold in Maryland, therefore it couldn't have been recorded in Delaware. He felt this would make the limit so low in Delaware that the Council would not be able to get an accurate enough figure to make a 20% limit of x number of fish. He said the 20% limit for commercial was based on the recreational catch and that maybe the Council should consider reversing the order and basing a recreational limit on the commercial catch.

Mr. Don Evans, Delaware Surf Stabbers Fishing Club, asked if there would be any exceptions to the 10 fish bag limit during fishing tournaments. He said several of their contests were based on the length of the fish, and if they had to release all fish after 10, he felt all of the contestants in the tournament would come out even. He also added that most of the fish are dead by the time they are judged so there would be no point in releasing them. He said most of the fish that are caught in the southern tournaments (North Carolina) are given to the sponsoring Club who in turn sell them the fish markets. In the Delaware area tournaments, the contestants keep the fish they have caught.

Mr. Harry Gizewsky, Delaware Wildlife, asked if the states were going to have their own regulations and sizes or was it going to be the same all up and down the coast. He commented further that just a few years ago the foreign trawlers were hauling bluefish out by the boat load and surely they were not reporting what was being taken, so how were these landings taken into account?

Ms. Julie Wagner asked on behalf of the commercial fleet, how the 20% limit would be instituted. Would there be a public hearing? Would it be by regulation by the State of Delaware, Division of Natural Resources? She also asked how the commercial share would be divided. She said the proposed commercial quota for Delaware would be 384,000 lbs. according to the FMP. She asked if that would be divided up by each commercial fisherman daily, annually, or would they each be allowed a certain number of pounds?

Mr. Jim Falk, University of Delaware, asked if there were any estimates on the total bluefish harvest for the areas within 3 miles of shore, versus 3 miles and beyond.

Mr. Rich Seagraves, Delaware Fish and Wildlife, asked if there were any considerations given to offering advisories in the EEZ on the consumption of bluefish over a certain size due to PCB contamination.

Mr. Bob Roach, Delaware Surf Stabbers Fishing Club, stated he didn't see where the recreational fishermen were depleting the bluefish stock because it was a rare day when a recreational angler would catch in excess of 15 fish a day.

Mr. Howard Seymour asked if there had been any thought given to registering pounds instead of numbers. He also asked at what size bluefish began to reproduce. In his opinion the fish should not be allowed to be harvested until they are able to reproduce.

Mr. Buzz Adams felt strongly that if the Bluefish Plan was going to be implemented, it had to be implemented coastwide and enforced coastwide. He felt the Coast Guard should enforce it and leave the states out of it completely.

Mr. Don Evans, Delaware Surf Stabbers Fishing Club, asked how the plan was going to be enforced shoreside. He thought that enforcement was really going to be a problem with the recreational fishermen that fished off the beaches.

Mr. H.D. Parsons asked who's neck would be on the line at the dock if there was a violation, the Captain of the party boat or the individual angler?

Mr. Cole concluded the hearing at approximately 8:10 pm and thanked the public members for coming to the hearing. The comments received will become part of the administrative record and will be part of comments received coastwide. He told the fishermen that if they had any additional comments they would like to submit in writing, that they should send them to the Mid-Atlantic Council office in Dover, DE and that the comment period ended on 25 August 1989.

ESSINGTON, PA - 1 AUGUST 1989

A public hearing on the proposed Bluefish Fishery Management Plan was held at the Ramada Inn in Essington, PA, on 1 August 1989. Bruce Freeman, representing the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission opened the hearing at approximately 7:15 pm. Also present was David R. Keifer of the Mid-Atlantic Council staff and seven members of the public.

Mr. Freeman made opening remarks, following which Dave Keifer reviewed the proposed FMP and the alternatives considered by the Council and ASMFC.

Steve Peskin asked how the data were collected.

Walt Childs asked why commercial fishermen may catch all they want and recreational fishermen are limited. Will the FMP affect commercial fishermen? The netters will take everything.

Steve Peskin was concerned over the permit to sell fish.

Al Willin asked who the FMP will affect party boat fishermen. Could commercial fishermen fish from party boats?

Ben Calloway also asked whether commercial fishermen could fish from party boats. Is this the only management plan designed for management before a crisis? Is there a built in safeguard should the fishery expand?

Walt Childs asked if foreign countries are taking bluefish.

George Trotman (Long Beach Island Fishing Club) stated he was disappointed that a representative of the Commonwealth of Pennsylvania was not chairing the hearing and that there were so few recreational fishermen present.

Allan Weis stated that at each hearing Mr. Freeman had stated that abundance was high while the technical data indicates there is a problem. Recruitment varies from year to year and will go up or down without intervention in the fishery.

Steve Peskin asked if the possession limit includes snapper bluefish.

Ben Calloway stated the inconsistency in size limit alternatives reflected a controversy between biologists.

Al Willan observed no bluefish inshore and felt the reason last year was upwelling. The bluefish PCB advisory stopped fishing from party boats last year.

George Trotman asked what the cost of a federal permit to sell would be. If New Jersey had problems getting authority to issue permits would Federal rules pre-empt State rules? What do you envision the next step? Where would you like to go? If the ASMFC approves the FMP, what happens next in New Jersey?

Ben Calloway weakfish are much more important to manage than the wide ranging bluefish. It would seem that weakfish could be managed.

Allan Weis indicated he was puzzled and disturbed by the way the alternatives were structured. Anyone may obtain a permit to sell at no cost and catch as many as they want. Only customers of party and charter boats are restricted. Industry cannot bear this. At this point the resource is sound, so why restrict party and charter boats. Not criticizing lack of restrictions on commercial catch. Party and charter boats have no leeway.

Steve Peskin asked why commercial fishermen cannot fish commercially on a party or charter boat.

Ben Calloway indicated he was not opposed to the 10 fish possession limit but asked why everyone would not get a permit to sell.

Allen Weis asked if the possession limit would not be more effective if there were a price on the permit to sell. Would it not be possible that recreational fishermen getting permits to sell would satisfy the market and shut out traditional commercial fishermen. the interpretation of the commercial and recreational statistics is im-

portant. He is opposed to the possession limit on recreational fishermen and wants to maintain the traditional fishery.

Steve Peskin stated he sells bluefish to pay his fishing expenses on party boats. Limits should be imposed so fish are not wasted. Stop the catch of fry. Do not put restrictions on commercial fishermen on party boats. He will not be able to fish any more. He takes large fish and either eats them or sells them. There are too many wasted fish on party boats because fishermen do not take care of fish and only want to fish to win the prize for the largest fish. The system should be changed so the person catching the first bluefish is the winner, not the person with the largest bluefish. Prefers a size limit and allow persons with a permit to sell to exceed the possession limit on party boats.

Walt Childs wants restrictions on net fishermen.

George Trotman supports the preferred alternative and believes a plan is needed now to preclude a disaster in the future.

Al Willin sells his fish. Does not want a catch limit on party boats.

Walt Childs stated that this has been the worst years for fishing and something needs to be done. Fishing in Delaware Bay is dead.

George Trotman asked what was to be done about wastage and what was to be done about gear restrictions.

The hearing was close at approximately 9:00 pm.

CAPE MAY COURTHOUSE, NJ - JULY 25, 1989

A public hearing for the Bluefish Fishery Management Plan was held on 25 July 1989 at the Cape May County Extension Office, Cape May Courthouse, NJ. The hearing was called to order at approximately 7:10 p.m. by Mr. Bruce Freeman of the Mid-Atlantic Council who was the hearing officer. Mid-Atlantic staff was represented by Dr. Chris Moore, Mr. Tom Hoff, and Ms. Carol Stevenson, who served as recording secretary. The National Marine Fisheries Service was represented by Dr. Robert Lippson. There were approximately 40 people present at the hearing.

Mr. Freeman made the opening remarks and then reviewed a summary of the Bluefish FMP, stating the purpose and objectives of the plan.

Dr. Moore gave a technical review covering the management measures that the Council adopted for purposes of obtaining public comment. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Freeman then opened the hearing for any questions or comments from the public.

Mr.Chris Kobeck asked how many years the bluefish data had been collected, what studies had been done and how consistent had they been. He asked what sources had been used to collect the data and if those sources had changed from place to place.

Mr. Bill Goodman, representing the Association of Surf Angling Clubs, Pensauken Club, commented that they had cooperated for years with the NMFS, Sandy Hook Laboratory on a bluefish survey, but about 4 years ago NMFS said there was no more money allocated for it and they ceased taking the data. He questioned the consistency of the data that had been used in the FMP.

Mr. Joe McTommoney, a member of the Cape May County Party and Charter Boat Association, referencing the table on Pg. 53 of the FMP, said that in 1982 a smaller number of bluefish were caught than the number caught in 1987. He said that also in 1982 the Mid-Atlantic Council voted unanimously for no bag limit. He wanted to know why the decision changed and why the statistics in 1987 indicated that there was a decrease in the bluefish stock, yet there was a large number of bluefish being caught. He said he didn't see a trend. He wanted the trend showing the decrease in the bluefish stock substantiated.

Mr. Alan Weiss, Blue Water Fishing Tackle Co.,had 2 comments. First, if it was the intent of the Plan to cap the fishing mortality where it is now, he questioned why such a stringent measure as a 10 fish bag limit was being proposed on the recreational fishery, when there was no provision to cap the commercial harvest in absolute terms. He asked why reduce people who might be catching 20 or 30 fish now and cut them all the way down to 10? Second, how much is taken into account, if at all, relative to changes in the environment? Demographic changes can impact these figures. For instance, during the strong economy of the 1980's, more people that previously chartered boats or used party boats now owned their own boats. The catch per unit of effort

of those people by and large would not be what they had been when they were fishing on a party boat because they did not have the expertise of those Captains that were operating the party or charter boats. Also he indicated that last year was an extremely hot summer, the water was 80° off shore in NJ which was outside the usual temperature range of bluefish. Bluefish prefer cooler water, and the boats were limited in the area they could cover. Thus, if you were looking at catch per unit of effort, where total catch had declined substantially last year, there could be other influences not associated with abundance.

Mr. Fred Uhlmann from the *Fisherman Magazine*, asked a question regarding who was going to enforce the catch limit on bluefish, how was it going to be enforced, and who was going to pay for it?

Mr. Chris Kobeck asked if the primary purpose of the plan was to do more research and gather more data on bluefish and if so, who was going to fund the research. Were the fishermen going to see a bluefish stamp down the road?

Mr. Jim Heinold, President of the Captains' Association, asked a question regarding the 1988 preliminary figures and whether or not the percentage of commercial catch had increased over the recreational catch last year.

Mr. Paul Thompson, a party boat owner and member of the Cape May County Party and Charter Boat Association, asked how the data was collected on the recreational fishermen. He said he could understand how it was collected from the commercial landings. He said it seemed to him that the recreational angler could be catching 50% of the fish, or they could be catching 99% of the fish. He said he did not believe that anybody could know what the recreational angler really caught.

Mr. Fred Skully, a party boat owner and member of the Cape May County Party and Charter Boat Association, said he thought at best, from what he understood, that the catch statistics were wishy washy.

Mr. Dennis Lynch, a party boat Captain, was concerned about a potential salt water fishing license and what would happen once one was implemented. He said if his mate miscounted how many fish were on the boat and a government official boarded his boat at the dock, and he happened to have 1-2 fish over the limit, he would be shut down and out of business. He said that his whole business would be destroyed over a piece of paper and he didn't feel that would be right. He was totally against a salt water fishing license.

Mr. Dan Guss, a party boat Captain and member of the Cape May County Party and Charter Boat Association, said that there were a lot of techniques used to come up with the recreational catch and questioned how accurate that information was once they were all compiled.

Mr. Phil Fox, Long Beach Island Fishing Club, asked if there were any statistics regarding the number of bluefish eaten to the number of bluefish that were caught.

An unidentified recreational fisherman commented on provision number 3 in the preferred alternative. He said as a hook and line fishermen, would he be able to obtain a permit to enable him to catch more bluefish? He thought he could simply spend money to buy a permit in order to catch more bluefish.

Mr. Walter Palmer, charter boat owner and member of Cape May County Party and Charter Boat Association, questioned Alternative 3.1. He said it was the only alternative that appeared to be unlimited for the recreational fishery. In his opinion he felt that it was the best alternative offered.

Mr. Alan Weiss, Blue Water Fishing Tackle Co., stated that there were some party boat operations up and down the coast that carried commercial fishermen on a regular basis and that although it was not a huge number of people, he thought that having those handful of regulars that they counted on every day or every night was important to them. He asked why provision number 3 of the preferred alternative had been worded to prohibit that practice. He also commented that with bluefish being a cyclical species, that has ups and downs in populations over a long period of years, what was the prospect of controlling those cycles, or maintaining the population of fish through this type of management. He said it hadn't worked on other species, why should they believe it would have an effect on bluefish.

Mr. Joe McTommoney, speaking on behalf of the Cape May County Party and Charter Boat Association which consists of approximately 190 members, stated that they basically supported the plan and the 80/20 split between the recreational and commercial sectors, but objected to the 10 fish bag limit for the following reasons: (1) they did not feel that the Mid-Atlantic Council had substantiated a definite decline or downward trend in the stock. He said they were for the preservation of the species but that they would like to see a definite decline before they would have to start adhering to a bag limit. They recommended to the Council a trigger mechanism be put into place, so that maybe 2-3 years down the line, when they could see a definite

decline, the possibility of a bag limit could enter into a management plan; (2) the bag limit is directly targeted towards the party and charter boat industry. According to the statistics in the Plan, 7.3% of the people in the NJ area caught over 10 fish, which the Association felt were fishing on the charter and party boats. There had been a decrease in the number of fish per trip per angler over the last 7 years which the Association felt was due to more people owning their own boats rather than using party or charter boats as they had in previous years; (3) the customers on their party/charter boats were simply tired of being policed and harassed the minute they set foot on the docks; and (4) the public perception of a 10 fish bag limit will be that there is a shortage of bluefish, which would hurt their business. The Association felt there was not a shortage of bluefish and did not want their business jeopardized.

Mr. Chris Kobeck stated there was no real solid research to support any of the proposed actions except Alternative number 1, take no action at this time. He added that he would be willing to support making an outright donation to support research. He felt the idea of researching the recreational catches was a good one. He said he would not support any action to impose something on the fishermen and then expect them to pay for it. He would like to see how the Plan would be funded, and would not support a stamp such as for ducks and some of the freshwater fish.

Mr. Dennis Lynch reiterated that he was against a fishing license. He thought the Council should be concerned with some of the foreign boats coming into US waters. He said there were a lot of statistics that the Council was missing and would not support taking any action at this time.

An unidentified fisherman asked if Alternatives 5 and 6 were directed at the small boat back bay fishermen.

Mr. Walter Chew asked a question regarding Alternative number 3 and the means in which the commercial catch would be regulated and capped at 20%. He indicated that the commercial fisherman would decide which of the 4 alternatives he would prefer. The Preferred Alternative said that there would be a cap of 20% on the commercial harvest, but when that 20% was reached, what would happen? He said the alternative seemed to be targeting on the highly efficient gear fishermen, rather than concentrating on the total health of the resource. In other words, if somebody had to throw a fish back, why should it be a trawler who has already crushed the fish in his bag and has it on deck, and yet the commercial hook and liner can keep it, even though it's perfectly healthy and would survive if released. He was concerned about the health of the fish in regulating the commercial fishery since hook and line fishing, traps, hauls seines, and pound nets tend to catch their fish alive, whereas gill nets, trawlers and anything that crushed the fish because of the weight of the load tend to have dead fish when they get it. He said that this didn't seem to have been taken into consideration.

One unidentified fisherman proposed adding a new Alternative 2.7, which would state anglers would not be restricted to a possession limit. He indicated that he supported the Plan, but that there was no option to say that the angler would not be restricted at this time.

Mr. Freeman concluded the hearing at approximately 8:40 pm and thanked the public members for coming to the hearing. The comments received will become part of the administrative record and will be part of comments received coastwide. He told the fishermen that if they had any additional comments they would like to submit in writing, that they should send them to the Mid-Atlantic Council office in Dover, DE and that the comment period ended on 25 August 1989.

WALL, NJ - JULY 27, 1989

The Bluefish Fishery Management Plan public hearing in Wall, NJ was called to order at approximately 7:30 p.m. on July 27, 1989. Bruce Freeman, Mid-Atlantic Council member, was the hearing officer. Also present were Roger Locandro, Axel Carlson and Bruce Halgren of the Mid-Atlantic Council. Chris Moore, Tom Hoff and Lynn Redding of the Mid-Atlantic Council staff were also present. One hundred members of the public were present.

Mr. Freeman made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC have adopted for purposes of public hearing. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Freeman then opened the hearing for any questions or comments.

Mr. Dubowski: My name is Jeff Dubowski, from Red Bank, New Jersey. You quoted a figure, I believe Chris Moore, of 140 to 150 million pounds of fish caught a year, 90% of which were recreational. How did you come up with those figures? How did you come up with those figures and are they verifiable?

Mr. Freeman: Can everyone hear the questions in the back?

Audience: No.

Mr. Freeman: Let me try to paraphrase the question if I may. The question was relative to the data that were presented, the catches of the recreational fishery, where did those data come from and how are they verified.

Dr. Moore: Both the commercial landings data and the recreational catch information are collected by the National Marine Fisheries Service in two separate surveys. The National Marine Fisheries Service has conducted a marine recreational fishing statistical survey since 1979. That's basically a coastwide survey. Actually they do it along all three coasts of the United States to collect information on angler effort and angler catch for a variety of species. That survey is based on technical, statistical techniques and design and basically is implemented with field interviews as well as telephone interviews that they conduct along the coast. The National Marine Fisheries Service also conducts a commercial survey of landings in each state. They collect that information each year, compile it and supply it to the Councils.

Mr. Freeman: You want clarification?

Mr. Dubowski: No. You've answered my question and that is what I wanted to hear basically. You are telling me through field interviews and through telephone conversations is how you received most of this data?

Dr. Moore: Again, the marine recreational fishing statistical survey is based on highly developed statistical techniques. Obviously you can't interview every single fisherman that fishes for recreational fish. The National Marine Fishery Service hires a contractor that conducts the survey each year.

Mr. Dubowski: Do you know who they contracted.

Dr. Moore: KCA Services.

Mr. Dubowski: Say that again.

Dr. Moore: It is KCA Services. I don't know their exact address. I think they are outside of Washington. If you have technical questions about that you can contact the National Marine Fishery Service in Washington, DC.

Mr. Dubowski: That's what I want to do.

Dr. Moore: Again, it is based on field interviews where you have field interviewers asking fishermen as they come back from the trip, or as they come back from the beach, how many bluefish they caught, how long they fished, that type of question.

Mr. Dubowski: I know that a lot of us have seen those guys waiting for us when we come back from our catches.

Dr. Moore: Based on that information, they use that information and couple it with telephone surveys, basically the coastal residents to see how many trips are conducted each year and then expand those estimates upward.

Greg: May I make a suggestion?

Mr. Freeman: Greg.

Greg: If you would, put the microphone there so that both sides can be heard. We cannot hear what this gentleman says. I'm sure that we are not going to be able to hear the conversation.

Mr. Freeman: The only thing I can do is paraphrase the question.

Greg: The only problem is when we have the special comment period.

Mr. Freeman: Are there any other questions or comments? The woman in the front here, Mrs. Leonard.

Ms. Leonard: Mrs. Leonard, I have two of the party boats. Related to this gentleman's question, is let me tell you about your survey system. I got a call this week. It was an individual who said that he was affiliated with some service. He had been contracted. He wanted to go out and count fish. I said fine. With that, I spoke to him two days later. He said I'm ready to come down. What time does your boat get back? I told him three o'clock in the morning. He said it was too late for him to go. I said now, if you are going to come down, are

you planning on coming out everyday of the season and taking a real survey? Or are you going to come down once and just go out on one boat in Belmar. He said well, that's it, I really don't know that much about it. They just hired me to do this. Now, he never showed up.

Now, how do we know that he ever did survey? Has he gotten a signature from anyone? How do we know that he even ever did go out? Also the fact that you have weeks where the bluefish are not consistent. How can you go out one week where every captain knows we are having a bad week on blues? The very next week you are having an excellent week. How can you get a true realistic survey based on one guy coming out one time during the season? It's absurd.

Mr. Freeman: I don't know if everyone heard it in the back, but the question was that someone contacted the vessel that is represented by this Mrs. Leonard and found it inconvenient because of the time that they arrived back at the dock and never showed up. The question is, if in fact this is the case, how was this survey conducted and how is the data compiled. I can only answer by indicating that I am not certain who this person represented, whether it was a national survey or not.

Mrs. Leonard: He said that he was contracted just as you people have explained and he was representing the National Marine Fisheries and that they called and his company was who came out to do this.

Mr. Freeman: Alright. The individual was supposedly involved in the rec fish survey, the national survey.

Dr. Moore: Basically, they usually don't operate that way because the way that the survey is conducted along the coast is based on random, on site interviews. The number of those interviews coastwide ranges over 40,000. Basically what they do, based on their statistical surveys, is randomly design it so that they go out certain days, at certain times, certain places. I don't quite understand what this guy was doing.

Mrs. Leonard: Well, alright let's go on the premise that your people are doing this.

Dr. Moore: They're not my people.

Mrs. Leonard: Well, whose ever people they are. They say they represent the National Marine Fisheries. You're taking the statistics with this old technical devices. How do we know that they are not just writing down whatever the heck they want to write down? They have no proof that they have questioned the people. There is none. The same as this guy represented himself to want to go out , that he was in charge, and then never came. He doesn't have anything signed by an owner of a vessel that has carried these recreational fishermen. There is no basis and facts to this survey.

Dr. Moore: Again, I don't conduct the survey. My understanding is that the way that the contractor runs the survey is that he puts his people through a training program. Each of the people that he interviews on site give names, addresses, telephone numbers. His supervisor randomly goes through a list of the people over time and calls people back to ask the question "did you really go out this day, did you really catch this kind of fish" as a sort of quality control. We're confident that the data that these people collect is accurate.

Mrs. Leonard: We're not. We want further proof.

Mr. Freeman: Gentleman in the back.

Mr. Wardell: I'm very glad that your very confident about this. I doubt it myself and I think everybody in this room does too. I would also like to thank you very much for reading this whole form for us. Not only do you think that we can't understand your data, you presume we can't even read. I think you are being very insulting.

Audience: Clapping.

Mr. Freeman: The comment I can make relative to summarizing the information is that some people have read this document extensively, some people have not. We simply do this as an order procedure to establish this on the administrative record. Each of the Councils follows the same procedure. It certainly is not intended to demean anyone. The document that we handed out is about a ninety page document and we are just simply trying to summarize this. Are there any specific questions that you have relative to the document that we could answer, or is that your statement? Thank you.

Mr. Bramhall: Bruce, I think the technical questions are just going to overlap in the comment period, so I really think you should move on to the comment period.

Mr. Freeman: Let me just ask, are there specific aspects of what has been gone over that need to be clarified? This gentleman in the front. Your name please.

Mr. Conte: My name is Gerard Conte and I am President of the Manasquan Fishing Club. To my knowledge, nobody in my club, which represents 70 members, or any of the executive board members was ever contacted regarding the survey that was taken for the proposed bluefish management plan.

Also, when you talk about figures and you estimate figures, is this going to reflect all of the bluefish that are caught and released and never become documented? They aren't tagged and they're not brought home and nobody has ever questioned them how many fish did you catch today. So, I do kind of find fault with the survey in which a pretty good segment of fishermen are not contacted.

I don't know where the survey was taken. I don't feel like calling up and checking it out at this point. I would think that if you are going to take a survey to manage bluefish or any other species, you should perhaps local fishing clubs which may be a good indicator as well as commercial landings or as well as charter boat or party boat landings because we do represent hard core fishermen. We may not fit into other categories. That is just my statement at this time. I find fault with the survey right off the bat.

Mr. Freeman: I'm not sure if everyone in the back heard this in the back, but the gentleman indicated that he was not familiar with the survey, had not been contacted , or his club members, suggested that in the future organized clubs be contacted relative to what they catch. Thank you very much. Anything other questions? Fran Puskas.

Mrs. Puskas: Yes. Surveying the limit in number 2 here of no more than 10 bluefish, are you indicating what size they should be, under 12, over 12, at random. If somebody catches little tiny ones is that it, 10 tiny ones, 10 long ones?

Dr. Moore: It is 10 bluefish regardless of size.

Mrs. Puskas: Regardless.

Mr. Freeman: Ron Zickler.

Mr. Zickler: I think a very important part of your statistical data should be made a little clearer in so much as where are the primary spawning grounds for these fish? What's the mortality rate? How long has that data been collected and by whom?

Mr. Freeman: The question was there should be information concerning the spawning areas and mortality. I think, Ron, I'm not sure if you had a plan prior to now, but there are I think figure 2 in the document I know it's a lengthy document indicates the known spawning area. The principal grounds are located down in the South Atlantic area down off the coast of Georgia, South Carolina, and North Carolina. The spawning occurs primarily around April. Those fish move northward with the stream and then from the offshore area move inshore to our bays and estuaries.

There is also a secondary spawning off the Mid-Atlantic area, actually from almost Cape Hatteras to at least Southern New England that occurs during the summer period. Those fish move into our coastal areas. They apparently tend to stay mostly near the ocean beaches. Most of the small fish that are in the bays now are probably from the very early spawning in April.

Mr. Zickler: But they spawn well offshore, right?

Mr. Freeman: Most of the fish particularly in the southern area, the southern spawning, which right now seems to be the most important, appear to be near the edge of the shelf or mid-shelf.

The ones that occur in the Middle Atlantic area occur from mid-shelf to probably as close as six or seven miles from shore. They tend to come closer. We do know that spawning at one time or another occurs probably from late spring all the way to late summer. We have found some juvenile fish as late as October or early November.

Mr. Zickler: Where I am leading with this, Bruce, is due to the fact that these fish are spawning so far offshore, a lot of us here are familiar with how hard it was, how difficult it was to check the spawning rates and the mortality rates on striped bass on inshore waters. How can the National Marine Fishery Council give us a reasonable idea on what that rate is offshore on the continental shelf?

Dr. Moore: As Bruce indicated, bluefish spawn principally offshore. The National Marine Fisheries Service through the Northeast Fishery Center conducts an inshore fall trawl survey. That was the survey I was talking about earlier in my speech about how they come up with an index of recruitment. Is that what you are referring to?

Mr. Zickler: What I am saying is given the vastness of the area that these fish roam from the tip of Florida, these spot checks based on again as the woman with the two party boats said, on a given day there could be no fish there, or there could be tens of millions of spawning fish there. When you take a recruitment sample in the Chesapeake or in the Delaware, you go to the same exact spots, the same exact times.

Dr. Moore: The Northeast Fishery Center does the same thing off the coast. Again, they conduct an inshore fall trawl survey that extends down to Cape Hatteras. They collect at the same sites every year, the same times. That was the index that I was talking about. The index that we developed or used as an index of bluefish recruitment. They have been conducting that survey since 1974. Their sites are randomly selected but they're the same sites every year so there comparable from year to year.

Mr. Zickler: The sites are comparable, but are the water conditions comparable? Suppose you have, and we've seen this here where your water temperature may not warm up for way past the time they normally do, or they may be too warm, or there may be no bait in that area, or there may be an abundance of bait in that area. There's a lot of intangibles that this survey does not deal with.

Mr. Freeman: Ron, let me just try to quickly explain the intent of what is going on. When you talk about spawning, certainly these fish do spawn offshore. Quite frankly we haven't pinpointed the exact location of spawning. It does vary from year to year. We go out in the ocean collecting eggs and larvae and then backtrack this as to where we think it occurs. Whether those individuals, whether those small fish that may be one fraction of an inch make it to shore is very critical. It is very conceivable that large numbers are spawned and that only a small amount actually makes it to shore.

One of the hypothesis is that it is controlled by coastal winds. For example last year we had strong southernly and westerly winds. Looking at various data that exists when wind conditions are similar to that we find we have very poor young of year recruitment of the snappers inshore. When we get lots of easterly winds and northeast winds, which tends to drive the surface water towards shore, we tend to have good year classes. That may control our dominant year classes.

The survey that is conducted is for snappers. It's in the fall when those fish are migrating coastwide along the beaches. It's done from Cape Cod to Cape Hatteras. Yes, in one particular year if the water temperature is a little warm, fish we would normally see an abundance off New Jersey may actually be taken either further north or south but they survey such a large geographical area that they do essentially sample particularly the young of year fish. Those then are projected into the future. If we have large numbers of those, we can expect the following year or two or three to be good ones.

Bluefish live a maximum of 14 years. Most of the population is comprised of 9 separate year classes, not as much as the striped bass which is a much long lived fish. Bluefish is very fecund in that it produces large numbers of eggs, more so than the striped bass. They mature earlier. Most of the bluefish are mature at about 1½ to 2 years of age as opposed to striped bass which may take 7,8, maybe even 9 years.

So there are differences but the surveys that are conducted, the indices that are conducted, seem to be fairly good. The states now are doing their own. For instance Massachusetts has a survey which is much more intensive than the federal survey. Connecticut now has one. We now have started one in New Jersey this past fall. I think that other states, perhaps North Carolina will be initiating it, so this information will be added, but we feel fairly confident that the information that we have on the abundance of the young fish coming into the fishery is probably fairly good. We don't get very fish. It is agreed. Bill Feinberg.

Mr. Feinberg: Bill Feinberg, with the Asbury Park Fishing Club. I would like to suggest that your interpretation of the statistics as indicating a decline in the stocks could be read in another way to show that in fact the stocks are increasing. You select a particular year to indicate that the stocks were perhaps weak in that year, but if you look at the statistics it would seem to me that although you have a slip here and there in the year, the overall picture has been an increase and not a decrease.

I refer you to the Status of Fishery Resources Off the Northeastern United States. This happened to be the 1987 edition. The 1988 and 1989 just carried it further. You will notice if you look at those statistics that in 1981 for instance, in the year when the Mid-Atlantic Council first started in and got itself the original draft plan of the Bluefish Fishery Management Plan and they felt in that year that there was no necessity for any kind of limitation on recreational catch. The catch in that year was 58.2 thousand mt. Now 58.2 thousand mt in 1981 was less than was caught in 1986. In 1983 it went up above 1986. In 1984 it dropped to 39 thousand mt. In 1985 it went up to 45 mt. Actually except for a drop back here and there, the trend seems to indicate greater harvests, not declines in harvest.

Dr. Moore: You've got to be very careful about using fisheries dependent data as an indicator of abundance.

Audience: Uproar.

Mr. Freeman: Continue.

Dr. Moore: As we indicated there's also fisheries independent data that is available to us that we have used from the Northeast Fisheries Center, from the National Marine Fishery Service. That indicates that recruitment has been poor in recent years and if recruitment continues to be poor, then it can't support the population with the levels that we have experienced in the 1980's.

On top of that, 1988 catch statistics indicate numbers of bluefish caught by recreational anglers dropped by approximately 50%. In 1987, anglers caught 32.7 million bluefish. In 1988 they caught 15.7 million bluefish along the coast.

Mr. Freeman: Assemblyman Playa.

Mr. Playa: My name is Joe Playa. I'm an Assemblyman from the 11th Legislative District, representing the area in which you are here. I want to thank you for coming and listening to what all of us have to say tonight. I know when you are in politics like I am and you have a crowd like this, and they are trying to give you their input, I would hope you would listen. I am sure you will.

You have people here whose very lives are in the balance here what you are talking about. I'm not a marine biologist, I'm not a marine scientist. I don't have the expertise of any of you gentlemen up there, far from it, but I do know this. Your giving statistics to these people whose businesses depended upon it and you're telling me that if the wind is from the east we'd get a better crop, but if it is from the southeast it might not be so good.

You're talking about people who take the survey. We don't know whether they are good or bad, but yet we have to accept the statistics that they give us. I have to worry about that. I'm sure you're going to look into all of it.

Let me just quote though a couple of things from the fishery management plan of 1989. It says, it goes over, it's under the 5.5 probable future conditions. It says "in addition, the data suggests that without production of a strong population size may decrease in 1988. In addition, the data suggests that the class of . . .Excuse me one second. Here's the point I want. However, given the uncertainties associated with mortality rates and the juvenile index projection of adult population size may prove unreliable. Now that is from your own words here may prove unreliable. How can you possibly tell us what is going to happen out there in the future? It seems to me that it's almost like balancing the budget in the state of New Jersey in order to do that.

Let me just close by saying this to you. You may not be thinking economics, but I wish you would start thinking about it because in just recreational fishermen alone in 1985 there was a 2.6 billion dollar involved with recreational fishermen forgetting the commercial fishermen for now. You're talking heavy economy with what we're doing here. I would only suggest that you look very, very carefully at what you are doing because what you're doing could be doing something to our economy that would be very, very damaging and might not even be necessary after you decide that we are going to limit the supply.

I've been through this striped bass problem with all of you. In fact, I had the first bill, that in 30 years they never had a striped bass bill, I finally got through the legislature along with some other fine people, Senator Palone at the time introduced it into the Senate. We have been working with the fishery. We really try.

I really and truly believe that in this particular case you're dealing with statistics that are unreliable. I cannot for the life of me, and I have been sitting here and listening to what everybody has to say. I don't know how you can make a legitimate decision on what we are doing with bluefish with what you are hearing from your reporters out in the field or whatever you call them. I have to question what they are doing.

I worry about the commercial fishermen in particular whose very business, whose very lives are at stake with this. I would certainly hope that when you go back, you would study this further to make sure that your statistics are correct and that when you come back before us you would say we have an update and it is this, this and this because to me I've got to listen to what's out here. These are the people, the men and women in the fields who do it every single day. Every single day that's what I want to hear. I don't want to hear one day. One day, I don't want to hear that. I want to hear a whole season. I want to have some data that will tell me over a long period of time that we know have a plan that we can see what's happening with the bluefish. Personally gentlemen, I don't think you're going to find it. I really don't.

Audience: Clapping.

Mr. Freeman: It's difficult, Assemblyman, to respond, but let me just indicate the fact that this plan recognizes the importance of the bluefish on a coastwide basis is the reason for the plan being formulated. Bill Feinberg was involved with the Mid-Atlantic Council in its early, in fact, in its beginning stages and fought very hard to get a plan implemented because so much depended upon bluefish. Recreationally it is the premiere fish on a coastwide basis.

If in fact that fish should decrease, it would present severe economic problems for many coastal areas. Many people depend on that for if not their entire livelihoods, than a majority of it. The basic plan is essentially trying to preserve the historic use of the resource recognizing that radical changes, or drastic changes, one way or the other, could dramatically effect peoples livelihoods. There's the possibility that this existed back in the late '70's, early '80's. Very rapid development of a fishery to use bluefish worldwide. The techniques and technology are available where we can go out and catch 100 thousand pounds of bluefish in a relatively short period with existing technologies.

The only thing holding that back right now is the fact that on the commercial side, bluefish is a fresh fish product, the demand is fixed by how much can be eaten within a few days of capture. If in fact there's ways of preserving this fish that is economically feasible so that you can catch and send bluefish to Cairo or Istanbul for $.23 a pound, then this becomes a very viable fishery. That threat occurred in the late '70's. It's still possible. Obviously it's anyone's call whether in fact this will develop. There's no way economically that you can catch the fish here, freeze it and send it to that area for $.23 a pound but that's conceivable in the future if that price could go up.

The other concern that we have is that we are probably seeing more bluefish in the relative sense or at least my opinion in the last five or eight years than has ever been recorded. That's certainly good because we are depending more and more on bluefish. Ten or twenty years ago we probably had seven or eight species we depended on. Now it is primarily bluefish, summer flounder or fluke and then in the winter perhaps whiting or mackerel but it's been coming down to only a few species. If those should decrease in abundance there's going to be some major impact.

Whether in fact we were wise in suggesting catching limitations, essentially this is the reason the plan is going to public hearing to get the comment from the public. We're not hear to debate the issue. We're certainly going to get the impact from the fishermen and get their comments. If they think it's a good idea, we'd like to hear it. If they think it's a bad idea and why we certainly want to hear that.

Mr. Playa: Bruce, just one thing in closing. I just wanted to say you know the best way to have a quota system is these people themselves are the best method you could have right here. If the stock is going down they will be the first one to tell you. They will be the one. The quota system is right here. They can tell you whether the stocks are going down or rising right here. I think that if you just let them do their own thing it will come out right in the end. Again I thank you for coming.

Mr. Freeman: Are there any other questions? Gentleman in the back. Your name please.

Mr. Brackett: John Brackett, Point Pleasant. You keep saying that you're afraid of all of the commercial fishermen coming and taking all of the fish. Many rationalize limiting the rod and reel fisherman to 10 fish protecting us from them taking all of the fish. You say that's why the plan is there to protect against commercial fishermen so how is the limit going to help?

Mr. Freeman: I think everyone heard the gentleman's comment. Essentially the plan really is an allocation plan between the recreational and commercial fishermen. We are not here to demean the commercial fisherman. Certainly they historically have a right and have had a right to fish for bluefish and we hope will be able to do so. It is an allocation.

We're not indicating either that the sky is falling, that the resource is disappearing because we are finding that it is quite abundant and we are harvesting at a high rate but concern is if we can continue doing so. Relative to the reason for the catch limitation essentially was to cap the recreational catch at about the existing level which seems to be the maximum catch that we can continue to have over a long period of time. It could occur in other ways but essentially that was the rational for doing it. We are getting an increase in recreational fishermen each year. It's not a tremendous amount but it's in the order of 2% or 3% a year. Not all of them fish for bluefish but certainly sooner or later they tend to catch numbers. The numbers of trips, the number what we call effort relative to bluefish is increasing. It has increased over time. The trend is upward.

Just more an more people fishing for it. More and more people depend upon it. That's basically the rational. Any other questions? We would like to get into the comments. Mr. Chiola.

Mr. Chiola: Bruce, I'm John Chiola from New Jersey Striped Bass Fishermen's Association and Shark River Surf Anglers. You have earlier described that the maximum sustainable yield is 140 to 150 million pounds approximately. By the figures in these booklets and various studies, we are either at that level or quickly approaching that level. I'm assuming that that is a percentage of what you have determined the biomass to be. The question then is what basis did you use for determining the biomass and us being able to arrive at what you feel is a maximum sustainable yield?

Dr. Moore: In the back of the document again there's definitions. The definition for maximum sustainable yield is the largest average annual catch or yield in terms of weight of fish caught by both commercial and recreational fishermen that can be taken from a stock under existing ecological and environmental conditions. WIthin the document in section 5 we detail how we arrived at our estimates for maximum sustainable yield. If you look on page 12 of the green covered document, it details the assessment that was conducted by the Atlantic States Marine Fishery commission to come up with those values. It was based on a fisheries modeling approach and basically a couple of other techniques. They all indicated that the range for maximum sustainable yield was about 142 to 150 or 140 to 150 million pounds.

Mr. Chiola: Again, how did they determine what the biomass is? They want to limit the catch. Do they have any idea of what the extent of the number of fish are that are out there?

Dr. Moore: Basically they used an approach that predicts long term average yields based on yield per recruit and biomass per recruit analysis with some stock recruitment data. It's a highly technical way of coming up with estimates of maximum sustainable yield.

Audience: Highly technical. Whistling. Laughing.

Mr. Chiola: In other words, they kind of, working backwards they're looking at the results of how many fish were caught or showed up in a test seining for instance and they work back from there figuring how many fish were missed and that's how they figure what the biomass is, by working backwards?

Dr. Moore: They use a number of different data and a number of different values including natural mortality rates, fecundity rates, growth, maturity schedules. All kinds of information. It's the same kind of information I'm sure you've looked at in the striped bass plan.

Audience: Grumbling. Don't bring that up. Laughing.

Mr. Freeman: Gentlemen. Yes, sir.

Senator John Paluto: My name is Senator John Paluto. I also represent this area. I have a question about your objectives. I'd like to read back to you your document that you so kindly read to us before. You said that since 1979 commercial landings have averaged about 14 million pounds or 10% of the total catch, commercial and recreational combined. But in objective 2 you say your objective is to provide the highest availability of bluefish to US fishermen while maintaining within limits traditional uses of bluefish defined as the commercial fishery not exceeding 20% of the total catch.

What I don't understand is how we got from 10% to 20% and where we got to the point where a traditional use of bluefish is for someone in Cairo to dine on something that belongs to our fishermen defined as US fishermen right here.

Audience: Clapping.

Senator John Paluto: What I want to know is why can't you just be entirely consistent? We'll make the commercial catch to the traditional 10% so that we can all go home.

Audience: Clapping.

Mr. Freeman: Well, first of all I apologize for not recognizing the Senator. I didn't see you sitting back there. I'm sorry.

Senator John Paluto: Don't worry about it.

Audience: Don't get technical.

Mr. Freeman: In answer to that essentially the plan would limit the commercial catch to no more than a maximum of 20%. Historically there has been fluctuations. Percentage wise I think it fluctuates somewhere be-

tween 8 and 12% over the last seven or eight years. There would be some flexibility in movement but it would not exceed the 20%.

At the present time we believe that the fishery will continue at its present level and there will not be major changes relative to the harvest rate. Again, the 20% is a maximum. That was the intent to cap it at that level and have it no more. Did I call on you already, Dave.

Mr. Bramhall: No.

Mr. Freeman: Alright, I'll give you one try. Dave Bramhall.

Mr. Bramhall: Would you agree that we are in comments now?

Mr. Freeman: Wait a minute. There's one other gentleman, then we'll go to comments.

Mr. Bramhall: Because at this point we've been in comments for fifteen minutes.

Mr. Freeman: Yes, sir. If there's a comment, let's just hold it for a second. If it's a question. . .

Mr. Cericola: My name is R.J. Cericola. I'm a commercial fisherman.

Mr. Freeman: If it's a comment let me just end this session.

Mr. Cericola: It's a question for you.

Mr. Freeman: Alright.

Mr. Cericola: Now if commercial fishermen only take 10% of the bluefish then why is the commercial fisherman being limited? Why don't you just give the sports and make them give their 10 fish limit and leave us alone until the Japs come and take all our fish or something? You know. Why is the guy here in the United States trying to make a living, all of a sudden he's got to be put a law down that he can't catch as many fish as he can catch anymore when he's not the root of the problem.

Mr. Freeman: The only way I can answer that is essentially is that the recreational catch, I'm sorry, the commercial catch has been as I indicated varied somewhere between 8 and 12% of the total harvest. There have been fluctuations from year to year. Some states catch more, some states less. At the present time in fact you are not restricted to catching bluefish. Our opinion is if in fact provisions of this plan are put into place it really won't change the situation. Apparently you're fishing at your maximum level now and catching what you can catch and if you continue doing that we essentially see no change in the plan.

The aspect we worry about is use of certain types of gear which can catch extremely large numbers in relatively short periods of time. If vessels were deployed from other parts of the country, other parts of the world to fish since bluefish is a pelagic schooling fish can easily be seen at the surface, these gears can be used and within a short period of time a dramatic change in the catch could take place. That change certainly could upset the balance and in fact could decrease the abundance.

Mr. Cericola: Foreign fishing boats aren't you know, they don't let them fish here do they?

Mr. Freeman: The foreign catch is prohibited.

Mr. Cericola: If the market was established to ship fish to a foreign country why don't you take it up at that time with the commercial fisherman. These people all around me that are catching 90% of the fish why not just stem the problem from where it is done? If they're killing the fish off, it's not us, it's them. Why limit us for some speculation that someday there's going to be someone here. Why not leave me any room for expansion? These people are already expanded. They have their boats full of people when they go out in the ocean. They have their money before they go out in the ocean. They don't need the fish. They don't have to catch fish.

Audience: Uproar.

Mr. Freeman: Let me just. Please, let the gentleman ask a question. We are trying to give fairness to everyone. Whether you disagree or not please have the courtesy of letting the question be asked.

Mr. Cericola: It's down to the majority against the minority. I'm standing here all by myself. These guys if they got limited to five fish per person or ten fish per person on their boats, it would cut down the number of bluefish harvested annually every year and there would be no problem. They would still get people to come back on their boats for ten fish a day.

Ms. Leonard: Really?

Audience: Mumbling.

Mr. Freeman: Let me just indicate relative to the commercial fishery. The bluefish are a prohibited species on foreign vessels. There's no directed foreign fishing for bluefish. There's a table in the plan that indicates there are catches made in directed fisheries for other species of bluefish. That is monitored by an observer on each vessel. It's relatively small. Those bluefish cannot be retained by that vessel. There is a prohibition.

Again, relative to the present situation, the fishery is continuing along its present course. We essentially don't see a change. It's not that we anticipate a foreign vessel coming and catching these fish. There's sufficient domestic vessels with the gear that could catch large numbers of these. We certainly don't need to invite foreign vessels in.

Let me start the comment period. I think we tried to answer the questions. It seems some of these questions are leading into comments. I'd like to start by asking comments of any congressional people here represented. Yes, sir. Would you please state your name and your affiliation.

Mr. Gillespie: My name is Pat Gillespie. I'm the District Representative for Congressman Frank Palone. Basically we have two concerns when it comes to this proposed ten fish limit. Basically our first concern is that no supporting evidence has been provided to justify the need for imposing such a strict limit on bluefish.

Secondly, that we believe that this proposal will have the effect of penalizing many citizens particularly those who are less affluent who rely on bluefish as an important food source. Towards this end, we have written to James McHugh who is the Chairman of the Mid-Atlantic Fishery Management Council urging that proposed bluefish limits be withdrawn and greater study done to determine the condition of the bluefish stock.

At a recent hearing of the House Fishery and Wildlife Committee of which Congressman Palone is a member, we had the opportunity to question Mr. McHugh on the bluefish limit. He made references to reports of what he called a wanton waste of bluefish. However, he did not site any evidence to support this claim of misuse of the resource. He also failed to produce any data showing that the bluefish stock is depleted or threatened.

Something else that was very interesting that came out of that hearing is that Mr. McHugh actually admitted that with a lack of resources to do the job of fishery management properly, the Management Council tends to error on the side of limiting the catch of the species. So in other words what they are admitting to is that they can't really manage it or count it, so they are going to tend to error on the side of limiting the species.

We believe that this overly cautious approach might sound good on paper but the reality is that a lot of people will be forced to suffer by losing access to the bluefish resource. We don't believe there's any compelling evidence even suggesting that the numbers or vitality of the bluefish are down. Bluefish provide an important source of protein for many many people and the information that we've been presented with does not indicate a pattern of waste. To the contrary it is our understanding that bluefish ends up being eaten by the fishermen themselves, their families, their friends and what is not immediately consumed is frozen and stored for meals on a year round basis.

We are urging Mr. McHugh and the rest of the Fishery Management Council members to reconsider the proposed bluefish limit on the basis of the continued vitality of the stock and the unfair hardship that it would place upon many Americans of modest means. Thank you.

Mr. Freeman: Thank you, Mr. Gillespie. Are there any state legislators that have a comment? Senator.

Mr. D'Amico: Thank you. I'm Senator John D'Amico. No, that's alright. I can make myself heard. I first of all agree with everything that Pat Gillespie representing Congressman Palone had to say. I would go beyond to say that it seems to me to make no sense even to get people out of their homes on a hot summer evening to be here when in fact it's quite clear based on all that has been said so far and even based on looking at the documents that have been provided that no one in this room has the faintest idea exactly how many bluefish there are out there and how much capacity there is. All we know is from our own experience and from our own eyes and ears you can walk on them. It seems to me unless you have done an in depth study which has involved much more that you have done to date and by that I mean consultation with the fishing clubs, with the party boat captains, with the people who live and work and enjoy the recreational fishing industry in the state of New Jersey that you have no business presenting to us such a ludicrous plan. That's point number one.

Point number two, it seems to me as I pointed out in my question before that you have an internal inconsistency, in fact several inconsistencies in terms of your objectives. You talk continually about maintaining the traditional bluefish relationships and industry and traditional fisheries that you want to keep things basically the way they are. What I read here is that they way things basically are is that commercial takes about 10% and recreational about 90%.

Now let's think about that for a minute. We're not just talking about fish here. We're talking about people. We're talking not only in fact about the people who take the fish from our bountiful waters but you're talking about the fundamentals of the coastal economy of the State of New Jersey. You're talking about something that lives and families and careers depend upon. You're talking about a situation here in New Jersey where under the stress of pollution we have already suffered a loss in tourism, a loss in our recreational economy and in fact even a loss in our budget that caused us to be scrambling around in Trenton trying to find dollars that weren't there because we weren't getting the sales taxes and the other taxes that New Jersey was used to getting from the recreational fishery. Now you're trying to take the one resource that has held up through all of that environmental stress, that has sustained us, that has sustained our livelihood and take that away from us as well and I think that's outrageous and it should be stopped here and now.

Audience: Clapping.

Mr. Freeman: Thank you, Senator. Are there any other legislative representatives? I would like to . . .

Mr. Scheskowsky: Bruce I have a letter here from Robert Singer, Assemblyman of the 10th District. I'm Nick Scheskowsky from Jersey Coast Anglers Association. Robert Singer asked to have this letter read today. As I said, he's assemblyman, 10th District. The letter is addressed to John Bryson, Executive Director, Mid-Atlantic Fishery Council. Dear Mr. Bryson: I would like to go on record regarding the proposed plan for bluefish regulation. One, I see a need for a management plan that would limit the commercial catch on a coastwide basis to 20% of the total catch. Two, because of the lack of data showing the decline to the bluefish population, no bag limit should be necessary at this time. If I can be of any further assistance, please do not hesitate to contact my office. Sincerely yours, Robert S. Singer, Assemblyman 10th District.

Mr. Freeman: Could you leave that with us for the record?

Mr. Scheskowsky: According to this, a copy had been sent to your office. These statements also coincide with the feelings of the Jersey Coast Anglers Association. Also we would like to point out that we feel that a program of education, educating people to release whatever fish they were not going to use would go a lot further than a daily bag limit.

Mr. Freeman: Thank you very much. Other comments. Captain Dave Bramhall.

Mr. Bramhall: David Bramhall, I'm the Executive Director of the United Boatmen of New Jersey, we represent party and charter boats in the state, as you are well aware Bruce. First thing I would like to know Bruce, is as you have stated in the past, I would like you to state it publicly, the people who will be most affected by the ten fish limit will be those on the party and charter boats. Is that correct?

Mr. Freeman: It's not the comment period, Dave.

Audience: Uproar.

Mr. Freeman: The question presented was from David Bramhall to me asking my feelings relative to the impact of this catch restriction. The data indicate that indeed there are different catch rates among the different types of fishing such as shore fishing, bank fishing, private boat fishing, charter and party fishing and the data indicate that indeed the private boat fishing that indeed the largest amounts, the highest catch rates are made on the party and charter boats which really are professional boatmen.

Unknown in audience: Could you have Dave get up there? We can't hear him in the back.

Mr. Freeman: Dave, why don't you use this?

Unknown in audience: Yeah, then you can get it on the record.

Mr. Bramhall: O.K. The question I have now refers to the cost benefit analysis which you did in the plan 9.2.2. the information in there of your cost benefit analysis which is required by the statute. What information in there do you have of the socioeconomic background of the bluefish anglers? I find only references in general to anglers, to boating anglers and so forth. There's no reference in there to blue fishermen other than the table you came up with, table 4. Are there any, do you have any socioeconomic data on the group which you

are going to regulate? In other words, those fishermen who catch and keep more than ten bluefish per trip. What is your data on that? You don't have to look because it's not there.

Audience: Laughing.

Dr. Moore: I disagree with that.

Mr. Bramhall: O.K. Go ahead.

Dr. Moore: For instance in table 31 we have the estimated number of party and charter boats that operate along the Atlantic coast and associated revenues by state.

Mr. Bramhall: No, I'm talking..

Dr. Moore: The other thing is..

Mr. Bramhall: Now answer my question.

Dr. Moore: Sure. Sure. Absolutely.

Mr. Bramhall: Specifically the people you are going to regulate. The people..

Dr. Moore: We have data. You can produce a table similar to the one in Table 40. If you want, we can give those tables to you that break down the catch by the different modes, for instance, party charter boats, shore to shore.

Mr. Bramhall: That's not the question. The question is what is the socio-economic data, i.e. average income, the ethnic background, the breakdown for senior citizens and so forth you have of the group of people you intend to regulate. The people who catch and keep more than ten bluefish per trip. What data do you have?

Dr. Moore: The data that we have is collected, again by the National Marine Fisheries Service and their Marine Recreational Fishing Statistical Survey and is collected each year since 1979. The data is available to us but it is not contained within the plan.

Mr. Bramhall: O.K. I read that and it is not in there.

Dr. Moore: In the plan?

Mr. Bramhall: No, and it's not in the survey which everyone's concerned with the statistics and who surveyed them. I got the 1985 data and if you break it down and average it out, you've surveyed 190 people who fish in the state of New Jersey totally on an average. That's for all species. They've surveyed 190 people. Now because you're required to have studied the socio-economic data of these people, we conducted a survey for you. We surveyed and we're specifically limited to the people who you are going to regulate, those who have caught and kept more than ten bluefish per trip. We studied 190 people. We did this over a three week period in July. I'll give you a copy of the survey (attachment 4).. We found of the 190 there was a zero waste factor which as you know coincides with the Mid-Atlantic Fishery's data of a .2 waste factor. Statistically that's about the same. Isn't it?

Mr. Freeman: Probably so. Close enough.

Mr. Bramhall: Close enough.

Annonymous: Statistically it would be the same.

Mr. Bramhall: We found out most of these people have multiple uses of the fish. 71% eat the fish, keep them, freeze them and so forth. 63% of them share the fish. 26% sell the fish. Again, remember this is the people who you are going to regulate. These are not all bluefish anglers. These are just the people you are going to restrict. Now, the question I would have on this, which I don't know whether you want to even touch is since most of these fish entered the food supply of the country, of the society, why are you going to restrict that food supply? Anybody want to touch that?

Audience: Laughter.

Mr. Bramhall: There's a zero waste factor o.k.? Your data is .2. We found that most of them enter the food supply, Bruce. Most of them what people don't eat they share with their neighbors. Some of them sell them. Now I'll be able to give you more data on what happens with what they sell and so forth. O.K. Let me go on rather than... You can handle that in a little bit. The yearly income of the people who you are going to regulate, 35% of these people make less than $15,000 a year. 35% of them make between $15,000 and $25,000

a year. 21% make between $25,000 and $35,000 a year. Now, based on this, would you classify these people as low income?

Mr. Freeman: David, I'm not . . . I'd have to look. I really don't know. I'm not . . .

Mr. Bramhall: O.K. I can help you. According to HUD, the US Bureau of Housing and Urban Development, you vary the definition of what is low income and very low income based on every county in the country. Most accessible to us was Monmouth County because you have to go to each individual county to get it. In Monmouth County for a family of four, which we selected as a representative number, the very low income is defined as $19,200 per year. Low income is defined as $30,700 a year. Consequently, by definition according to HUD, most of these people who you are going to regulate are low income people. Anyone want to disagree with that?

Mr. Freeman: We'll certainly look at your report.

Mr. Bramhall: O.K. Ethnic background. 45% of these people are white. 27% are black. 20% are Hispanic and 7% are Asians. Now in any way I can think about it, knowing the history of this country, this seems to me that if you are going to regulate these people, you're going regulate, you're going to enact something which is racially discriminatory.

Audience: Come on. Moaning.

Mr. Bramhall: No, it's true. If you survey the people who catch and keep more than 10 bluefish. It's not the people who catch and throw back.

Audience: It's not the yuppies.

Mr. Bramhall: No. This is the survey we did. We did 190 people. Can you think of any other way of looking at this?

Mr. Freeman: Dave, I'm not in the position to comment on that issue. We'd be very happy to look at your report.

Mr. Bramhall: Bruce, you've had over ten years to do this job that we've just done in three weeks.

Audience: Clapping.

Mr. Bramhall: Now if we go on, we ask these people the following questions. Would a possession limit of ten fish per person per day adversely affect your fishing experience? 85% said yes it would. Of the 14% who said no it wouldn't, not one was in the $15,000 or less income group. 6% were in the $15,000 to $25,000 and then it goes on from there and then it escalates. I should note that our survey based on our knowledge which then was confirmed by you, that most of the people who were going to be impacted by this would be found on party and charter boats was obviously conducted on party and charter boats because this is where we expected to find the most impacted people as you've agreed that's where we'd find them.

Now we found out that the people who sell the bluefish, 52% of them earn less than $15,000 a year. 40% of them earn between $15,000 and $25,000 a year. 40% are black. I'm sorry, 40% are white; 20% are black; 28% are Hispanic and 4% are Asian. If we restrict these people are discriminating against people racially? Bruce?

Mr. Freeman: Again, David, I really can't comment on that aspect.

Ms. Leonard: Why not?

Annonymous: Technically.

Mr. Bramhall: Why? Now, now wait a minute. Let me make it easier for you. We got comments at the bottom of our surveys from some of the people. One of the fellows that we surveyed that came back in the questionnaire was a black man, a senior citizen who earned less than $15,000 a year. His comment was if I can paraphrase it, it's quoted in here, there's about 200 of us in my church. I'm the third youngest one. What I catch I take back and share with all the members of my church and it makes them all happy.

Now, the fellow who ran the boat noted that this fellow comes every two weeks during the summer. In the fall he comes twice a week. During the fall when the fishing is very good, he catches between 30 and 40 fish a day, which this fellow takes back and gives, spreads all around to his church group. Now if it is not a very far stretch to assume that the people he is sharing those fish with are in the same socio-economic group as the angler, what would be a rational for restricting this gentleman from conducting this activity?

Annonymous: Nothing.

Mr. Freeman: David, I don't have an answer to that quite frankly.

Mr. Bramhall: Because there is none. Bruce these. . . Since we have undergone the fundamental changes in this country since the early '50s, we have adopted policies which will not racially discriminate against people and instead will try to promote people to redress past inequities. What you're doing by this plan is you are taking an institutional step to reverse the course of federal policy for the last. . .(end of tape)

A significant percentage of these people sell their catch that they were sold dockside. O.K.? We surveyed these people. 75% of these people bought 6 or less fish. The average price, this was of 154 people surveyed, was less paid by the consumer, was less than $.26 per pound. It's all in the thing. Now we did find some large volume buyers. We didn't find out what most of them were going to do. We found out, I got comments from three of them. There was a black man who earns between $15,000 and $25,000 a year. He says he sells the fish to help pay his bills. There was a group of black Americans who were buying the fish for a church picnic. There was a group of veterans who were buying the fish for a VFW fish fry. Now if we have a 10 bluefish limit we're going to dry-up any of this dockside sales. Now we went beyond that.

We studied the socio and economic background of the people who were buying the fish; 43% of these people are senior citizens; 45% of them earn less than $15,000 a year; 34% of them earn between $15,000 and $25,000 a year which means that at least by the HUD data, 79% of these people are low income people. Of these people, 23% were white; 41% were black; 19% were Hispanic.

Now we also surveyed retail bluefish outlets, places where people could buy bluefish. The cheapest price we found was $.99 a pound for a whole fish which I thought was cheap. We found prices up to $2.99 a pound for a whole fish. We found filleted prices of $2.69 a pound up to $5.39 a pound. In executive order 12291 you're required, the Mid-Atlantic Council is required to consider whether consumers would be forced to pay a higher price as a result of your action. Would you please explain to me how these consumers would not be forced to pay a higher price?

Mr. Freeman: Again, David, I don't want to get into a discussion. It's a complicated issue relative to price. I'm assuming what's in the stores it's coming from the commercial catch. Whether in fact that would fluctuate if in fact all sales from the dockside, or recreational dockside were stopped, I can't say.

Mr. Bramhall: Well wouldn't you agree than that they would be forced to pay a higher price consequently according to the executive order that then the Mid-Atlantic Council's plan would be forced to be subjected to review by OMB?

Mr. Freeman: I don't really know. I would have to look. . .

Mr. Bramhall: No, I mean we've got people paying less than $.26 a pound. You can't find it any cheaper than $.99 a pound. The executive order says. . .

Mr. Freeman: I understand what you are saying. Let me just indicate. . .

Mr. Bramhall: So please explain to me how that. . .

Mr. Freeman: Let me indicate. . .

Mr. Bramhall: How that doesn't apply?

Mr. Freeman: Relative to implementation of any plan these are reviewed by OMB. So. . .

Mr. Bramhall: No! If you have more, if you have an impact on consumers, it's subject to a major review by OMB. You put in the back of your plan that the economic impact would be less than $100,000,000. You've come up with a $60,000,000 figure which I don't know where that came from or how that came from. . .

Ms. Leonard: Technical data.

Mr. Bramhall: You've also are responsible to saying whether it's going to adversely affect prices that consumers would pay. O.K. Now here's the survey which you don't have. You've never done a survey of this that I've found. It doesn't exist. These consumers will pay a higher price. What is your rational for forcing the consumers to pay a higher price?

Mr. Freeman: I don't . . .without looking at the report David, I can't make the conclusion they are or not quite frankly. I'm not in the position at this meeting to comment without even seeing the report. Just bear in mind again we're looking for comments relative whether support or not support, variations of this and also, David,

this plan covers an entire coast. Now whether what you're saying is true in Maine or whether it's true in New York or whether it's true in South Carolina or Florida, I simply can't make that determination at this time.

Mr. Bramhall: Bruce, you are required in the plan to have considered the socio-economic impact of the proposed regulation on the people who you are regulating. In that, in 9.2.2.2 there is no socio-economic data. It's a bunch of "mays", "possiblys", we sure as hell hope these people aren't going to be adversely affected.

Now we did a survey that's directed towards that point. That's not directed towards that point. That goes right at that point which you're required by law to have done. You didn't do the work. Now either you do another survey and come up with completely different data than we have or you accept our survey or you tell me why you don't want to accept it. Regardless of what you have done, you haven't fulfilled your statutory requirements.

Audience: Clapping.

Mr. Bramhall: If you go ahead and you ignore our survey, the effect of what you are doing will be to deny the effect of the limit which will be to discriminate against the people who earn the least amount of money in this country who can afford it least. These people it turns out to be are blacks, Hispanics and so forth who we have according to the Magnuson Plan we are not to do anything which is contrary to, what is it, federal policy, I guess it is. I've got it right there. I can quote it for you.

This plan is obviously contrary to that. It does not fulfill the requirements of national policy, national standards. I'm sorry. That's the exact words, national standards. National standards are that we do not discriminate against poor. We do not discriminate against minorities and we do not place an excessive burden on senior citizens. The data's here. There's no questioning it. It's there. You don't have any data. If you go ahead with your plan, you don't give a damn about these people.

Now we care about these people because they're our customers. They're the people who go out on our boats. As you've seen, If you know from being on these boats, we're not talking about a lot of wealthy people who can afford not to catch or keep 10 bluefish a person. A person who is making over $35,000 or $45,000 a year 10 bluefish doesn't matter to him whether he takes them home or not but it's a real food source.

Now I don't know why based on all this, that this plan shouldn't be withdrawn or at least the limit part shouldn't be withdrawn. You haven't done your work. I'd like somebody to explain to me where the data is either that refutes what I've said or why the data isn't there to begin with. It's your plan. You guys have worked on it for at least 10 years. Now tell me where's the data about what I'm talking about? Because if you don't have it, you've got to accept mine and you ought to withdraw the plan.

Mr. Freeman: David, we'd certainly welcome any information you have and we'd certainly welcome the survey that you conducted.

Anonymous: Yeah, but he was asking a question.

Mr. Freeman: Wait a minute. Wait a minute. One at a time, please. Mr. Bramhall has the floor.

Mr. Bramhall: As Nelson says, answer the question. I don't care whether you welcome it or not. You have to accept it.

Anonymous: Go ahead! Get technical!

Mr. Bramhall: What I want to know is where, since you don't have the data, here's the data, you're not allowed to implement a plan if it's contrary to national standards. How can you then go ahead with this plan. It's obviously countered to national standards. It's also probably obviously contrary to a slew of civil rights laws. Ray could. . .Ray's. . .Ray will give you an explanation of the various laws just skimming the surface as to what you are in violation of. Ray, do you want to just tell them?

Mr. Freeman: Wait. Wait.

Mr. Bramhall: No! I mean if you're, you know, you guys have had 10 years to work on this, Bruce. You've got all kinds of research staff. You have legal staff and so forth.

Audience: Mumbling.

Mr. Freeman: David, again, we don't have legal attorneys. Whether there's any implications, whether it violates certain statutes. . .

Mr. Bramhall: You do have legal counsel.

Mr. Freeman: Not with us tonight certainly.

Mr. Bramhall: No! But I need to advise you on the . . .

Mr. Freeman: The point is this, David, relative to your comments, certainly they've been dually recognized. They've been recorded. The issues you bring up certainly will be looked at. We're very interested in all of the points that you made.

Ms. Leonard: Question. Did you do the study?

Mr. Freeman: We will certainly look at this information. We'll make the determinations that you indicated, any legal implications, and that will be certainly discussed by the Council. I'm not in the position now to tell whether it has legal foundation or whether it is legally viable. I simply don't know. I'm not an attorney.

Anonymous: He wanted to know if you did the study.

Anonymous: Did you do the study?

Mr. Bramhall: First of all, have you done the work? Does the work exist?

Ms. Leonard: Question.

Mr. Freeman: As far as a study similar to yours on a coastwide basis, I don't think. . .

Mr. Bramhall: Of the people you are going to regulate. Strictly of the people you're going to regulate.

Mr. Freeman: David, we're going to regulate certainly more than the party and charter boat people.

Mr. Bramhall: No! No! No! Of the ones that are going to be regulated. The ones that catch 10 fish, catch and keep more than 10 fish. Have you done the work?

Mr. Freeman: The point is this. Relative to the plan there's a number of alternatives.

Mr. Bramhall: No! No! No! You're not answering my question, Bruce.

Mr. Freeman: David, you're bringing up a specific issue here. . .

Mr. Bramhall: Right.

Mr. Freeman: Of 10 fish. There's a proposal in the plan for 20 fish, there's one for 15, there's one for 5 and there's take no action at all.

Mr. Bramhall: Well have you done it for 5, 10 and 25? Have you done it for any of them?

Audience: Laughing.

Mr. Bramhall: It's a technical question.

Anonymous: Answer yes or no.

Anonymous: Throw the plan away.

Anonymous: You look like that guy that caught fluke.

Mr. Freeman: All that I can indicate at this time, David, the survey that you're referring to that you completed on your customers has not been done on a coastwide basis.

Mr. Bramhall: In other words you haven't done the study. The work does not exist.

Mr. Freeman: All I can say, the study that you indicated as I understand it, of customers you did at party and charter boats and I'm assuming throughout the state or just in Brielle, or ..

Mr. Bramhall: No. We covered, we did Brielle, Point Pleasant, Belmar and Sheepshead Bay. We did that for the following reasons; 22.8% of the bluefish catch is centered in New Jersey; 23. 4 is centered in New York so that's darn near 50% of the bluefish catch is centered in this area. Also because of the locality of these sports, we're centrally located to have exposure to the socio-economic groups which would fish in this area who would live in urban New York, Philadelphia and New Jersey in this associated suburban areas; in the rural areas of Southern New Jersey, Western New Jersey, Eastern Pennsylvania, Southern New York. We also have obvious access because of the infrastructure available to these customers of the people of the small cities in Northeastern Pennsylvania.

Now there's no data on this and I, you know, Bruce, I think all these people want to know since you haven't done the work this is the only work on these people that you were supposed to have done and the work clearly indicates, I'm going to give you a copy, don't worry, that this plan will discriminate against poor people, against minorities and also against senior citizens. Why should this plan not be withdrawn?

Mr. Freeman: Look David, is that your comment? You want the plan withdrawn?

Mr. Bramhall: No! That's the 10 fish limit.

Anonymous: Bench him!

Anonymous: Yeah. Yeah. Floor him.

Mr. Bramhall: Or any recreational limit for that matter because you haven't done the research. If you want us to do one on 15 we can probably work that up for you and we could probably, you know if you give us 3 weeks or so we could probably do one on 5 if you want.

Mr. Freeman: Alright. I think we get your point very clearly, David.

Mr. Bramhall: I just want an answer. I want an answer. I think every, most everybody else wants an answer.

Anonymous: We want to go home!

Audience: Clapping.

Mr. Bramhall: Answer. Bruce, should you withdraw it or not?

Mr. Freeman: David all I can indicate is that we need to look at the report. You brought up a large multitude of issues, legal, that I can't answer and I'm sure they'll have to be looked at very closely by the Council. I cannot give you an answer. I'm not qualified to give you a legal determination at this time.

Mr. Bramhall: Bruce, you've worked with management plans for 10 years or whatever. You know you're required by statute to have done this work which you haven't done. Here's the work. Here's the results. Obviously this is what happens. This is the implication. Do you think as the representative, as the head of the New Jersey Marine Fisheries Council, that this plan, that this provision of the plan should be withdrawn based on this survey and you can take it to the bank. Everything I've said is right in there. It's all statistically valid. It's all impartially done and so forth. Do you think it should be withdrawn? You answer that question and I'll sit down and you can go right on.

Anonymous: Just say yeah and you'll be looking funny.

Anonymous: Just say yes.

Mr. Freeman: David, it's not my position to give you a determination at this time. You just asked me for something I really can't give.

Mr. Bramhall: If these facts are correct that I have given you.

Mr. Freeman: I think the information you bring forward is extremely important. There's absolutely no doubt about it. The impact on the entire fishery, the ramification certainty in the ports you sampled I'm assuming this was done on a random manner, there was not bias involved and the people . . .

Mr. Bramhall: No. We selected the boats out of a hat. We put the names in a hat and did it that way.

Mr. Freeman: O.K. I'm sure.

Mr. Bramhall: We instructed our questionnaires how to do things randomly.

Mr. Freeman: Alright.

Mr. Bramhall: If you remember Rhonda's comment and if you know the experience I've had trying to instruct your surveyors as to what a fish was. Yes, your surveyors as to what kind of fish these things were, you know that these things were done I an impartial manner.

Mr. Freeman: Alright, David, again you're asking me to comment on your study and I haven't even looked at it.

Mr. Bramhall: No. All I want is an answer to my questions. That's all I want and I'll sit down and shut up which I'm sure you'd love.

Mr. Freeman: The point you make is valid. We will look at that information certainly it's imperative to the plan that that information be collected.

Mr. Bramhall: No. I just want an answer from you Bruce. That's all I want.

Mr. Freeman: David, I'm not going to give you that right now.

Mr. Bramhall: Why not?

Mr. Freeman: It's not possible.

Anonymous: Excuse me. Excuse me. I'm sorry. My name is Peter . . . from . . . charters. What I'm . . . I don't mean to interrupt.

Mr. Freeman: Wait a minute. Wait a minute. Mr. Please. Mr. Bramhall.

Mr. Bramhall: Go. Go. Go ahead. Let him.

Anonymous: I just want to say one thing. I'm a young charter captain here.

Mr. Freeman: Wait a minute. I'm not going to recognize you until Mr. Bramhall is completed. I'll get to you.

Mr. Bramhall: He can say something.

Mr. Freeman: David, let's take one at a time. Let's let these other people comment and we will come back to you because I'm sure there's many people here that have comments. I'd like to get a many as possible.

Mr. Bramhall: I think a lot, I'm speaking for a lot of them. I don't know how many I'm speaking for but. . .

Mrs. Leonard: The whole damn room.

Anonymous: I'd like to answer to his comment.

Mr. Freeman: Wait a minute. Wait a minute. Let's get one at a time and we'll come back.

Mr. Bramhall: How many people have I . . .

Audience: Uproar.

Mr. Freeman: David. David. Let's. . .

Mr. Bramhall: Bruce, I represent a large. . .

Mr. Freeman: David, I can't give you an answer to that at this time.

Anonymous: Well table it.

Mr. Bramhall: Why not?

Anonymous: What's more to talk about?

Anonymous: Get rid of the. . .

Mr. Freeman: We're here to get the comments. Just make a statement. This is like a cross-examination essentially.

Mr. Bramhall: Bruce.

Mr. Freeman: We want to get the public's comment to the plan.

Mr. Bramhall: Bruce, look we have gone through this plan. I have commented with you on the advisory commission committee. We've gone through this for 10 years. We've spent all this time going through this. It turns out you guys didn't do the work. You snuck something in on us because you spent a couple of years just telling us about the habitat. Now we've got some data and I like to have an answer and I don't think that's an unreasonable thing.

Anonymous: Do you just want his personal opinion or do you want the Council's determination?

Mr. Bramhall: I want his opinion personally.

Mr. Freeman: David, I can't give that to you essentially.

Mr. Bramhall: Personally.

Mr. Freeman: Let's have some order here.

Mr. Bramhall: Personally.

Mr. Freeman: Let me look at your survey. Let me see how it was conducted and essentially I'd give you that determination, my personal opinion but it's not appropriate for me to do that at this time not even seeing the information.

Mr. Bramhall: When could I expect that?

Mr. Freeman: I'd have to look at it. I haven't even seen it.

Mr. Bramhall: No! I mean, you know, give me a week, two weeks, by the 10th of August?

Anonymous: Ten years.

Anonymous: How about the next meeting in Burlington County?

Ms. Leonard: Yeah. That's good.

Mr. Freeman: There is no next meeting in Burlington County.

Mr. Bramhall: Or how about the next meeting in New York. I'll go up there.

Audience: Mumbling.

Mr. Freeman: David, I'll give it to you as soon as I get a chance to look at this information.

Mr. Bramhall: Bruce, with all due respect, you haven't answered a damn thing I've said and all you've done is shuffled off. I mean...

Mr. Freeman: David, let me just say that the intent of the public hearing is to get the public comments, not to be a debate, not to be a cross examination. If we want to talk about this later we can take all the time that is necessary to do so. Personally, I'd be happy to. What I'd like to do is get additional comments. We can come back to your issue at the end if that is necessary but I would like to get additional comments.

Mr. Bramhall: Bruce, the Magnuson Act says that you conduct public hearings. It doesn't say that the public hearings are for you to sit there and just record what we say and then throw them in the garbage can which is what traditionally happens. It doesn't define the rule in a public hearing. We are the public and we are allowed to question you at these hearings. That's what we are doing.

Audience: Clapping.

Mr. Freeman: David, I appreciate...

Mr. Bramhall: Bruce, we have gone to these hearings forever. We have made our comments and the comments have ended up in the garbage can. Now we are asking our representatives, our employees to respond to our questions. So what's wrong with that? This is America.

Mr. Freeman: David, let me just indicate relative to the procedure. There's 19 voting members on the Mid-Atlantic Council.

Mr. Bramhall: I'm just asking for you.

Mr. Freeman: Alright. Those members will have to look at all of the factual data that has been collected from all of the public hearings, what's available in the plan, make a determination, along with members from Councils of New England, Mid-Atlantic and all of the coastal states. That's going to be the determination of what in fact does happen if anything. Your asking me a question, essentially put me in a position, I'm not even looking at this study and asking me to respond to you. Quite frankly I cannot do that.

Mr. Bramhall: I'm asking you to respond to the figures that I have given you.

Mr. Freeman: Essentially David, you're asking me and I can't do it because I haven't seen them. I don't...

Mr. Bramhall: Let me just ask you one question o.k.? If the majority of the people who are adversely affected by this limit are minorities would that be racially discriminatory?

Mr. Freeman: I cannot say. If in fact, let me give you an example. I'm not trying to evade the question but in fact if we hit a fishery, an active fishery that's occurring and we saw in fact that the stock was decreasing and some action had to be taken. If all of those fishermen were from one ethnic group and we put a plan through, you could ask the same question. Quite frankly this may have occurred already in some of the com-

mercial fisheries and plans were put through. If in fact these constitute the majority of the fishery I would think and I'm not an attorney, that in fact there is no discrimination. If they're the major components of the fishery and there is some catch restrictions that are necessary and they're encumbered by these restrictions I would have to answer in my opinion, don't see discrimination.

Mr. Bramhall: O.K. in other words, this is not racially discriminatory is the answer to the question.

Anonymous: It's not the issue.

Mr. Freeman: I can't answer that David. You're asking me to answer something...

Mr. Bramhall: Well you just said it doesn't matter in some of the fisheries.

Mr. Freeman: I'm trying to give you a parallel example.

Mr. Bramhall: I know. I followed what you said.

Mr. Freeman: I'm saying if in fact if the majority of the people in this fishery are as you described and if in fact there were catch limitations, in my opinion, I would not think there was discrimination if those were the major components of the fishery and the constituents.

Mr. Bramhall: O.K. That's good. That was good enough.

Mr. Freeman: I may be wrong. I may be totally wrong.

Mr. Bramhall: No. No. No. That's good enough. I'll accept this not discriminatory. That's fine.

Mr. Freeman: O.K.

Mr. Bramhall: Let me give you a copy of this.

Mr. Freeman: Alright. Thank you.

Mr. Bramhall: Let me have you sign for a copy of this.

Audience: Laughing.

Anonymous: I've got a comment.

Mr. Freeman: Alright. David...

Mr. Bramhall: Because the last time we did this you guys lost one of these so if you would sign for one of those. That's a cover letter to John Bryson.

Mr. Hoff: Could the Mid-Atlantic staff have one of those?

Mr. Bramhall: Absolutely. Absolutely. I've got a whole bunch here for you.

Anonymous: Do you want another one, Dave?

Mr. Bramhall: Yeah. They want two.

Anonymous: Think you guys are having a party.

Mr. Bramhall: Not at all.

Mr. Freeman: David. There you go. You have my seal on that.

Mr. Bramhall: Don't worry.

Mr. Freeman: I appreciate your comments.

Mr. Freeman: Alright. This gentleman over here. We'll try the other side and we'll switch back and forth.

Mr. Peterson: Yes, sir. John A. Peterson, Jr. I'm the Mayor of the Borough of Seaside Park. I too would join with Assemblyman Palaya and Congressman Palone.

Anonymous: Can't hear you.

Mr. Peterson: John A Peterson, Jr. I'm the Mayor in the Borough of Seaside Park and I would join with the other elected officials who have already spoken and I would urge the utmost caution, if fact I would urge you to rescind that portion of the plan involving the 10 fish limit. I too find that there has been inadequate scientific research conducted and certainly inadequate scientific research presented to the general populus and I don't think you can tread too lightly on what is a major portion of our economy here in the Jersey shore area.

I think that this particular proposal could have a potentially devastating effect on the commercial fishing industry as well as the recreational fishing industry and there has been absolutely no necessity illustrated and documented for the people to feel that that plan is even necessary.

I think that the other portion of the plan as printed indicates or gives an inference rather that there is some waste associated with bluefish fishing in general and I would question that there is any waste whatsoever. I would join with the comments already made on the record in that regard. I think it's a tradition along the Jersey shore. You always have some flexibility at meal times during the summer and fall season and you always hope that your neighbors are coming home from the boats and they are going to bring you some bluefish or some other fish. Whatever you've got planned for dinner that night, whether it's your church group, social organization or your town, you put it aside and you are happy to enjoy the fish that your neighbors share with you. I don't think there is something of economic waste demonstrated and I don't think there is any data to support that in your research as well.

I would also join in those comments on the record that by potentially limiting bluefish to the 10 fish limit you are therefore depriving a certain segment of our society of a valuable and readily accessible food source and particularly some of the economic segments of our society who rely upon bluefish. I don't think again, any necessity has been demonstrated to show that there has been a necessity for this 10 fish limit.

Additionally, I would suggest as you have demonstrated that every state itself can adopt a far more strict or a more comprehensive research plan or survey and you have correctly noted that Massachusetts has done so and New Jersey has perhaps taken the opening steps. I would think that it is incumbent upon all of us in this room to see that the State of New Jersey itself does adequately conduct a scientific research in this area, conduct a survey and use everyone in this room and all of their backing, their commercial people to make sure that that survey is done accurately as possible. I think that the funding should be presented for such a survey be the State of New Jersey.

My final point would be this. Somewhat off the point and I hope it remains off the point, I think by opening the door, the bureaucratic door, for something that smacks of a licensing, a regulation, a unnecessary bureaucratic tool with regard to fishing in general might in fact open the bureaucratic door at the federal level to reimpose what could be a very devastating impact upon the Jersey shore and that is the federal licensing proposal which ought to be put to rest once and for all.

Audience: Clapping. Whistling.

Mr. Peterson: I think we would all join in finding that that proposal which has shown its way in the federal budget for the last few years is arbitrary, capricious and entirely unnecessary and I don't want this to set a precedent for that to come back again. We don't care what President proposes it or what Congress. It's unnecessary, it's arbitrary and it's wrong.

Audience: Clapping.

Mr. Freeman: Alright. Ray Bogan.

Mr. Bogan: I'm just going to follow up Dave just as far as a couple of things are concerned. I can answer the questions that you can't answer. Specifically in so far as the effect of the regulation is going to be discriminatory against minorities, the Supreme Court of the United States says on many, many occasions that minorities are a suspect class. They look at it with strict scrutiny. Therefore, the regulation is out the window. That's number one.

Insofar as within the plan there's a provision which goes from 10 to 3 possibly, that consideration. That would be constitutionally flawed as well as administratively flawed in so far as it gives an administrator too much discretion. As you guys know, you can't do that. You are wrong.

Next you have a situation where an agency when listening or taking comments in a public meeting such as what Dave said, you have according to the Administrative Procedures Act under which you are bound, an affirmative duty to consider documents, comments, submission of data, views or arguments. That's your affirmative duty and I know you folks will adhere to that and recognize it when writing your comments on hopefully what will be to the getting rid of this regulation.

Insofar as the regulation affects the fisherman, it's a violation of due process laws. Specifically as John Peterson says, regulation can't be arbitrary, capricious or unreasonable. Right now based on the data that you have, which you've stated already as flawed, especially and so far as any kind of dock data you stated that you

can't rely on that. We appreciate you saying that because that just proves *a priori* that your data is flawed. Therefore, we could state that the regulation is unreasonable, arbitrary and capricious.

My suggestion is that you pick alternative number 1, which states no action. Not only in so far as a 10 fish limit is concerned. I have another concern which is as great for me and that is that there's a permit system imposed in there. It's already in the fluke management plan and that permit is no different quantitatively then a license. Frankly, we have beaten your butts pretty good in so far as you thought you could blanket a federal license in. We have beaten you every time you've attempted to do that. Unfortunately, there's another way you're trying to do that and that is through a permit system. There's no difference and we hope to defeat you again on that. What we would hope instead though is that you would listen to the people instead of your own views on the thing. Listen to the people and just drop the permit system. Don't go for licenses anymore.

Finally, in so far as the 80/20 is concerned, the 80/20 breakup, I would suggest to you as various people have stated already, that statistically, you somehow have to recognize your own statistics which states that there is a 90/10 breakup. Moreover, your own Executive Director has stated on the record that you have inadequate information for New Jersey and New York fishermen, specifically the party and charter boat guys. I that's the case, then your basing the 90/10 on information that doesn't even include us as party and charter boat guys. Therefore the break may be 95/5. No matter what, you can't go from those statistics of an additional 10% on a commercial sector. That is totally unreasonable. That's totally arbitrary. As you know, you can't take your statistics and disregard them according to the Administrative Procedures Act and it is totally capricious. Therefore, get rid of the whole damn thing.

Audience: Clapping.

Mr. Freeman: Thank you, Ray. This gentleman. I'm sorry. I forgot your name.

Mr. Conte: Gerard Conte. I represent the Manasquan Fishing Club. Now at one of the Jersey coast anglers meetings, we were asked while attending that meeting, to take back the idea of your fishing club, discuss it with them and let us know, which we did. We took it back to one of our meetings. Basically we feel it it ain't broke, don't fix it in common words. I mean everything has been said tonight. I am just going to give you the comment essentially which of our members was that first of all since the ocean isn't stocked by man, there should be no bag limit.

Secondly, we feel that if you were going to limit the amount of bluefish that were taken size or number wise, this meant that you would need a permit or a license, which has also been stated tonight, which we say no because nobody here wants to pay for enforcement. Essentially we are the taxpayers. We are funding the surveys. I think that some of that funding that is being put in towards let's say paying salaries and for people who may or may not show up to take a survey correctly should go into education. So essentially we felt at our club meeting that we thought and as a matter of fact we donated money towards this pamphlet to reproduce it and pass it out, which is your pamphlet, we thought it was much better to educate people than to regulate them. We are all over regulated in this.

The last thing I want to do when I go fishing with my son is to take my attorney or my textbooks with me. I don't need it. I go fishing to get away from pressure and I'm not looking to create pressure, you know in my hobby. I do my hobby which is fishing to relax not to get agitated. Finally our point was that in regard to your bluefish management plan that perhaps you may want to check out your surveys but at this point in time, I would recommend for my club that you take no action at this time.

Audience: Clapping.

Mr. Freeman: The gentleman in the red sweatshirt.

Mr. Kierzek: My name is Joe Kierzek. I'm with Monmouth Beach Cartoppers and New Jersey Striped Bass Fishermen's Association. Our club is definitely against any restrictions at this time. My own opinion I feel that your data as far as your numbers are suspect and I find, personal opinion, what's happening is your turning the commercial fishermen against the charter boat fishermen, against the party boat fishermen, against the recreational fishermen. You're creating an in-fighting situation so everybody's fighting against each other, you're going to get your plan through. I think what should happen and representatives are here from all factions, is to get together and fight the whole thing. I'm not saying you're getting 10%. If you want to get that fine. I think this whole thing is creating an in-house situation where everybody's going to fight against each other. That's the way I feel.

Mr. Freeman: Thank you. Mr. Feinberg.

Mr. Feinberg: I'm Bill Feinberg with the Asbury Park Fishing Club. Our club has considered this plan and our position is that we are not opposed to a framework plan that would preserve the traditional positions of the traditional commercial fishery and the recreational fishery. However, as far as this particular plan is concerned, we are definitely opposed to the purpose of the plan and we are proposed to the preferred alternative. We feel that the purpose of the plan and particularly the preferred alternative is number one, in conflict with the Mid-Atlantic Fishery Management Council's prior position on bluefish management. It's in conflict with the fishery statistics. It's in conflict with common sense and it's in conflict with the facts. I would like to review a few things with you.

In 1981 after a number of years of study and work and statistics, the Mid-Atlantic Fishery Management Council prepared a draft Bluefish Fishery Management Plan. That plan was adopted in 1982 and it again was the result of public hearings and it was again the result of statistics. There are a number of very interesting things that appeared in that plan which certainly appear to be in conflict with the provisions that appear in the current plan. You have to bear in mind as I will indicate that very little has happened in fishery statistics to justify the complete about face that the Mid-Atlantic Fishery Management Council now appears to be taking.

As far as the purpose of the original plan is concerned, that plan said this. The primary purpose of the plan is to address the problems that could occur it the commercial fishery in the FCZ were to expand significantly. Such expansion could negatively impact the recreational fishery as well as the traditional commercial fishery. It went on to say that the bluefish population appears to be in relatively healthy condition under present fishing pressures. Current trends indicate that there is a possibility of future expansion of both the recreational and commercial fisheries. This would be especially true if a foreign market were to develop for the species.

You then went into the facts indicating why there was a real fear that a foreign market could develop and as a result of that, in order to meet this problem which you said was an increase in the commercial fishery, the plan went on to impose gear restrictions. The restrictions that were imposed were as follows. It would prohibit the use of purse seines and pair trawls in the directed commercial fishery for bluefish. It said that the discussions during the development of the plan have indicated that because of cost considerations, the most likely gear to be used if a significant increase were to occur in the commercial fishery, that is a development of an export fishery, are purse seines and pair trawls. The plan then prohibited without a special permit, the use of a pair trawl or a purse seine.

There's something else of interest in that first plan. It went on to say this about the status of the bluefish stocks back in 1982. Based on evidence presented in Wilk and Anderson, east coast bluefish abundance appears to be at, or a little above relatively high levels of the 1970s. This conclusion is based primarily on NMFS trawl survey data and recreational catch estimates since the 1960s. Because these data are incomplete and imprecise, it is difficult to make more than qualitative assessments of abundance. There are no data suggesting that East coast bluefish abundance is declining, at least north of Cape Hatteras. It says that it discussed in Anderson there is currently no reason to anticipate a decline in bluefish abundance in the near future. Recent bluefish catches appear to be at all time high levels. Fishing effort may be near the MSY producing level, so greatly increased abundance is improbable. It went on to say this after reviewing all of these things, quotas would not be necessary. Although a fixed OY might allow an increase in the stock, this action seems unnecessary and excessive based on the data which indicates a high abundance and adequate recruitment. It then went on to say that although the relative growth of recreational bluefish catches have been somewhat smaller than the relative growth of commercial landings, about 280% against 340% over the last 20 years, the sport fishery has accounted for about 90% of the total commercial, recreational and foreign bluefish catch. Now what do we have as opposed to that in the present plan?

The old plan as I said indicated that the problem to be addressed was a fear of an increased commercial fishery which might develop out of a foreign export market. This plan says the primary purpose of the plan is to address the problems that would occur if bluefish fishery were to expand significantly or the bluefish resources were to decline. Thus the plan is intended to potential as well as correct current management problems. Now there is no reference in this plan purpose now at all to an increase in the commercial fishery that might result from an export fishery. Why was that concern dropped?

The plan also has forgotten that if there were a foreign fishery it would destroy the traditional balance between the recreational and commercial fishermen. Now what does this plan do? Instead of imposing a restriction on pair trawls and purse seines, which it does not do, it now seeks to impose a restriction on the preferred alternative on the recreational fishermen. So we have come about face from a position where we would worried six or seven years ago about the impact on this fishery that an expanded commercial fishery

would have to a position where we not feel that it is the recreational fisherman who has to be limited to a possession limit.

After we have that the present plan goes on to say that restrictions on the recreational angler and I'm reading from the plan, is based on an allegation of waste and they say this. Waste of bluefish has been identified by marine scientists and concerned citizens in a number of coastal states. Now it is interesting to note that in certain instances you cite your authority, Wilks and other people. Here you have marine scientists unnamed, concerned citizens unnamed, the number of coastal states, which ones? In general the perception by the public, by the public now, how do we find out what the public perception is? It's a question that is unanswered. In general, a perception by the public that the resource is abundant coupled with low access prices for commercially caught bluefish has resulted in waste in the bluefish fishery. For example, and this is the only statistic that's given for this conclusion, for example during May 1988 a large number of dead bluefish were found floating in the Chesapeake Bay from the James River to the Rappahannock River. Although several factors were investigated, factors being unknown, unnamed, as potential causes including pollution and disease, the dead fish were attributed to discard from commercial and recreational fishermen.

Now it's very difficult to imagine someone in a court of law attempting to justify the conclusion that there's waste in the bluefish fishery based upon this kind of nonsense! What you're doing here is running out a lot of conclusions, a lot of hypothesis and a lot of assumptions. The statement is totally unsupported by the facts. It's based on speculation. It certainly is not what you would call scientific information. The Council is admonished to base a management plan upon the best scientific information available. This isn't even scientific no less the best. Now how you can justify taking a traditional fishery which since ancient times has been without limits and imposing a limit on it based upon this kind of information is beyond me. If you are asking my opinion, you can't legally do it.

Audience: Clapping.

Mr. Feinberg: Also this allegation of waste makes absolutely no reference to the enhanced engagement of the recreational fishermen in conservation measures. We have a very extensive tag and release program. There is not one mention made of that program in this plan. We also have many other fishermen who limit their catch. Additionally, the allegation of waste and I think I would be supported by everybody in this audience, is contrary to the everyday facts of life that anyone who's involved in the bluefish fishery can observe almost any day of the week. The tale of waste if there is a waste is so far out of proportion that it bears absolutely no resemblance to the truth.

As far as the machinery for implementing this plan goes, namely the limit, again the Council has taken a position which is absolutely contrary with its earlier position in the first fishery management plan for bluefish. They say here that the preferred alternative is 10 fish a day or less. You know what they are and that is to prevent waste or overfishing. Now, there are no statistics given which would indicate that the recreational sector is engaging to overfishing relative to either the optimum yield or the maximum sustainable yield. The stock's strength at the present time, except for minor annual variations where as I indicated before we have had years where its gone down, we've had years where it has gone up. Certainly we've had years where the stock abundance appears to have been substantially greater than it was in 1982 when the Mid-Atlantic Council felt that the stocks were healthy and that there was no need for a recreational limit.

If you look at your own table 18 in this current FMP and compare the data for the year 1982 with the year 1987, you will find that they were basically the same. In 1982 when the Mid-Atlantic Council felt that you didn't have to have a limit on the recreational catch, there were 32,665 fish taken by number and in 1987 there were 32,796 fish taken by number. So actually the stock, if you measure it by harvest, has increased from the time when the Council said we didn't need a recreational fishery limit.

If you go on, you look at what your present FMP says and I quoting from page 8. These indices indicate that bluefish class recruitment north of Cape Hatteras was highly variable with no evidence of a systematic decline in year class strength from 1974 to 1986 and that 3 strong year classes had been produced at irregular intervals, one in 1977, '81 and 1984. Now you also say this. The bluefish population appears to be in a relatively healthy condition under present fishing pressure. There is currently no reason to anticipate a decline in bluefish abundance in the near future. Recent bluefish catches appear to be at all time high levels. This appeared in your '82 plan. As I said since the statistics now are virtually the same as they were then, what you said in '82 about a possible decline certainly must apply with equal force now.

I would like to read one or two other things from the other plan and I think you will find that it is pertinent. You said to restrict catches to lower levels under present conditions would be unnecessary as long as the

abundance of bluefish which in recent years appears to have been above historical levels remains up. You then went on to the strength of the stocks and you said that there was no immediate urgency for management at that time. The current plan says that when the National Marine Fishery Service or at least the Secretary of Commerce, it was the Office of Management and Budget, shot the old plan down, the shooting down was in large part by the fact that they felt that the bluefish stocks were so strong that a plan, even a plan without limits, was unnecessary and did not justify the economic costs incident to implement it. So if it was unnecessary then without any limits when the stocks were virtually what they are now, it certainly follows logically that a plan with limits at this time is grossly excessive and unnecessary.

I would like to move on to one or two other things and then I will conclude. The original plan when it discussed imposing limits on the fishermen said this. The limits on the catch "would involve high management costs and be complicated if not impossible to enforce. They might prohibit expansion, would be excessively restrictive on some parts of the fishery. To restrict catches to lower levels under present conditions would be extremely costly to enforce because of the large number of anglers throughout the US east coast and the large fraction of the sport catch that is taken in the territorial sea. Now what do you say at the present time? The present plan does a 180° turnabout and it says this. Enforcement costs for the recreational possession limit would be minimal since the limit would be minimal, since the limit would be enforced primarily at dockside. So 8 years ago the cost would be prohibitive and the implementation would be impossible. Now all of a sudden for no given reason you come to the position that the cost would be minimal. There is no justification for the conflict that you've taken in both of those plans.

Lastly and I call your attention to this. It is in the current plan. It says this. Because of the importance of bluefish to recreational anglers a 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. So what do you do? You make a pronouncement that management measures would have a negative impact on the recreational fishing industry and you turn around and offer as a preferred alternative and alternative which does exactly the thing that you said would have a negative impact.

As far as the Asbury Park Fishing Club is concerned the imposition of a possession limit and the change about in the point of view as far as the purpose of the plan is concerned are objectionable and we strongly oppose it. We feel that as far as a possession limit is concerned, it's contrary to the best scientific information. It's excessive in view of the status of the bluefish stocks which appear to be near or at an all time high. It will be extremely costly and difficult if not impossible to enforce. It will damage the recreational fishing industry and it may very well upset the traditional relationship between the traditional commercial fishery and the recreational fishery. Lastly we cannot under any circumstances see how a possession limit will in any way produce any significant conservation benefits.

Audience: Clapping.

Mr. Freeman: Thank you, Bill. Gentleman on the end.

Mr. Wenzel: Brick Wenzel from Borough of Lavallette. I happen to be Councilman there. I am also a registered commercial fisherman since 1983. I do mostly commercial bait fishing so it does relate to the recreational fishing also. I will try to keep my comments constructive. For the record I will be referring to certain chapters within the Fisheries Management Plan for the Bluefish Fishery.

Dealing with 4.3 management objectives, number 5, reduce the waste in both the commercial and recreational fisheries, I feel that any limitation placed on the commercial industry where bluefish would not be permitted to be harvested would create an incident where bluefish would have to be released within the commercial netting. In the time that I have spent out on gillnetting at times we try to avoid the bluefish and we go mostly for the weakfish because that's where you make the money. Unfortunately the bluefish take up most of the time because that's what you get large numbers of and you're picking them out of the net and you want to get back out there after the weakfish. Now if you say that we cannot market these bluefish because we have reached a maximum quota we will unfortunately have a considerable amount of waste where these bluefish will not be permitted to be brought in and will have to be discarded. I think that the management objective 4.3 does not take that into consideration.

Next I would like to address 5.5, probable future condition. The Assemblyman from the 11th District brought that up. I think that it is very important that it is listed in the minutes. I shall quote it in the last sentence. Given the uncertainties associated with the mortality rates and the juvenile incident projections of adult population size may prove unreliable. Very rarely do you see in reports that there's information that's going to be unreliable. I think that's very important that the Council should note that.

6.3, causes of pollution and habitat degradation, waste disposal, ocean dumping, coastal organization, utilization and development and destruction of wetlands; it's nice that it was all addressed but there was something that was missing. Statistics are lacking within the report that gives the mortality rate caused by these problems. I thought that that would be important. It is addressed in 6.5 habitat conservation and restoration recommendations yet if these recommendations are ever accomplished what will be the positive impact in the quantity of fish and will the restrictions and harvesting actually be necessary?

9.2.2.1 commercial fishery; average 10%, now it's 12%. I feel that a 20% limit would reduce the amount of bluefish that may be placed on the market in the long term future. I'm not looking at within the next 5 years not even maybe the next 10 but if we ever have an incident where the recreational fishermen cannot harvest enough fish to supply at their tables they will rely on the commercial fisheries. By placing the 20% restriction now may effect what happens in the future as far as allowing people to have the opportunity to eat fish. I feel that supply and demand should control the commercial fishing industry not maximum tonnage limits.

9.2.2.2 the recreational fishery; to refer back to 5.1 species description and distribution; the definition of snapper is used for bluefish. Well my interpretation of a snapper is a fish about 6" long. Now if you are going to limit people to 10 little fish you're going have a problem. Within bait and tackle stores a large majority of their business during July and August is selling bait so that people visiting the area who are not used to fishing off the beaches can go down along our bays and catch these small fish. Basically they are younger kids. That's how I started fishing. Before I was a commercial fisherman I was a recreational fisherman. The first fish I caught was a little snapper. To me by setting a 10 fish limit you're not addressing the size of these fish.

So due to the inconsistencies in 4.3, 5.5, 6.3, 6.5, 9.2.2.1 and 9.2.2.2, I would ask that you choose alternative number 1, take no action and stop harassing the true conservationists, the American fisherman. Thank you.

Audience: Clapping.

Mr. Freeman: Thank you. Gentleman in the striped shirt.

Mr. Goldman: Barry Goldman.

Mr. Freeman: Barry, could you come up here, please?

Mr. Goldman: I'll start out with this little thing here. You promised me that you were going to take me to look in dumpsters to see all of these bluefish that were thrown around. I figured that you weren't going show up so I asked the Monmouth County Board of Health to survey all the dumpsters around all of the fishing areas. This is the letter I got from the Monmouth County Board of Health. (Mr. Goldman read the letter which is Attachment #5).

I don't know if you were looking at dumpsters lately. I keep looking in them. I don't find any. He didn't find any and his inspectors didn't find any. That's one item. I don't know if anybody gave you a copy of this letter. Maybe I ought to have you sign for it like Dave did.

Audience: Laughing.

Mr. Freeman: Do you trust me, Barry, or do you want me to sign for it?

Mr. Goldman: I don't know. While I get a chance to comment down here, I've made this comment to you before. I'd like to say it before this group here. Under the preamble to the Constitution of the United States of America there are certain liberties that we have. We have the right of life, liberty and the pursuit of happiness as it says in there. You're trying to take a lot of this away from us. This permit thing that Ray Bogan came up with that's the key to this thing. I think you got us, everybody arguing about whether there should be a 10 fish limit and everything. The idea is that you want to get us on this permit deal so that you can create some sort of a KGB.

I've got an example that happened to me the other day. I want to tell these guys about it because I think it is what is going to happen here. I got a tuna permit. I backed into the dock the other day and some very ungentlemanly, nasty creature jumped on my boat, told my mates hold up everything, don't do anything. I have customers that were on the boat that were on there fo a long time. They had a nice trip. They were ready to go home. Stopped everything. Don't open the gate. Ran up my ladder. I faced him as I was coming down. I said get off my boat. He says you listen to me or I'm going to arrest you. I said you've got a hell of a nerve telling me you're going to arrest me. Get off my boat. He waved some badge at me that looks like something he got at a dime store. The guys name by the way is Robert Manna, Special Agent of the US Department of Commerce, National Marine Fisheries Service. I asked him what do you want? He said I don't have to tell you what I want if you stop me I'm going to arrest you. I said you're going to arrest me for what? What cause do

you have to come on my boat and do this. I don't have to tell you that. I'm going to arrest you if you don't let me do what I want to do. The guy jumped all over me. I wasn't sure then what was going on. He had another guy with him from your department that was his deputy that night. I didn't even get the guys name but he works for the state something or another. He was Manna's deputy. He comes up there. He says show me your identification. He knew who the hell I was. I took out my driver's license. He says I need a picture driver's license. I said get off my boat you nit wit. I mean I was ready to kill the guy. He said you can't talk to me like that. I'm going to arrest you. I said do whatever you've got to do but I've got a business and I've got people here. I could go on with what happened there. It was ridiculous.

You're going to set us up to put up with that crap every time we come into dock with a bluefish with this stuff. If we've got a permit that means that the National Marine Fishery Special Agent, Manna or some other jerk that's as ungentlemanly as him can jump on our boats, create this problem. These people that come down from Newark, Hoboken, all over the state, one of the reasons that they go fishing is that they want to get away from that kind of bologna. They don't need any cops around. They've got them on every corner at home where they are. They want to go out and have a nice day of recreation. You're trying to set us up so that we will have a cop at every dock under the guys that they're counting bluefish or counting tunas as they're doing now. These guys understand that but nobody has stood up and screamed about it because they didn't have Manna on their boat lately. I'm telling you that ruined my day. It's going to ruin a lot of peoples days if you guys go ahead with this plan. The plan, forget about the 10 fish thing, all through that plan is weaved this thing about us having some kind of permit where you have the authority to come and break our chops and annoy our customers. We absolutely cannot tolerate that. Thank you.

Audience: Clapping.

Mr. Freeman: Mr. Chiola.

Mr. Chiola: Thank you. I'm not going to take up much of your time. Much of what needs to be said has been said already. I just want to go on record as saying that the Striped Bass Fishermen's Association agrees with most of what has been said. We are against any form of regulation at this time simply because if anything has become apparent tonight it's apparent that if anything is necessary, it is more study. We're not sure who catches what. We're not sure how much is caught. We're not sure what's out there. Rather than do it backwards and regulate it now and study it later, let's study it for awhile while the stocks are in abundance. There doesn't seem to be any question as to the fact that the stocks are now in a period of relative abundance and have been for quite some time. Study it now while it is in abundance and then you can decide whether regulations are necessary. At that time you would know what regulations would be equitable and fair for all the sectors involved.

Lastly, a bit about this being a back door way into a saltwater fishing license. It has come along, now we've heard about the tuna. Now it's the bluefish. Last year it was the striped bass. I'm sure everybody remembers. They are tying in one thing after another and then they tried to get the general license again and it was rocky. Once they set up enough of these levels of bureaucracy to issue these permits and enforce them well then the next logical step is just a license. That way they can consolidate it and do it all at once. The mechanics for it will be set up already. There are other ways to achieve what needs to be achieved in order to insure the future of the fishery. Whether it be the bluefish, or the tuna, or the fluke, or the striped bass, there are other ways to do it. It all starts with the studies and studying it in a realistic fashion. Not telephone surveys in the middle of the night. Not little guys with whistles and clipboards and sunglasses on a Saturday afternoon. There's got to be a more real way of doing it. A way that will reach the fisherman and that will more accurately reflect what's out there and what's being caught so that a management plan can be effectuated that will protect all segments from the fish to all segments of the fishery as well. Thank you.

Audience: Clapping.

Mr. Freeman: Gentleman in the blue shirt.

Mr. Olsen: My name is Tom Olsen. I work for Monmouth County Health Department, Environmental Specialist in Solid Waste Enforcement. I'd like to add something to what Captain Goldman stated earlier when he read the letter from the . . .

Mr. Freeman: Tom, could you come forward so that we could pick you up on the recorder?

Mr. Olsen: Mr. Goldman made the comment when he read the letter that there are inspectors at the local landfill. They are there to enforce recycling and solid waste regulations. There's actually 5 people headquartered there and they monitor waste flow all open hours at this landfill. To this date, there has not been a sin-

gle whole bluefish which has been found by any of these inspectors. Actually that is the essence of that letter.

Anonymous: Can't hear you, Tommy!

Mr. Olsen: That is the essence of that letter, that the allegations that there are fish being wasted, discarded in municipal trash has no foundation.

Audience: Clapping.

Mr. Freeman: Thank you. Gentleman up front here.

Mr. Blakeley: I'm Bill Blakeley, a father and a grandfather and I take exception to your plan as to arrest my children for catching a few snappers down here in the river that are either under length or over quantitied.

Audience: Clapping.

Mr. Freeman: Gentleman in the red shirt.

Mr. Nastasio: I just have a question that I'm not clear on.

Mr. Freeman: Your name please.

Mr. Nastasio: Paul Nastasio from Long Branch Sportfishing. I'd like to know what the size is of these bluefish is that we are regulating to catch, minimum size, maximum size.

Mr. Freeman: Just quickly relative to the plan there are a number of alternatives indicating that some include all size fish, some include fish 16" in length, others 18" in length, some below that, some above it. There's a multitude of considerations relative to size. There's no specific. . . There's a desired alternative that indicates a 10 fish limit and that would apply to all fish.

Mr. Nastasio: Let me ask you something. How many people on this board are fishermen? Any of you? Seriously.

Mr. Freeman: I think everyone is, yes.

Mr. Nastasio: Are any of you fishermen?

Mr. Freeman: Please make your point.

Mr. Nastasio: Well my point is how can you regulate . . . I mean I don't know how much fishing you have done this year or last year, but the fishing has definitely been off because of the weather, because of the water temperature, because of a lot of things. Too much rain, o.k.? Your keeping the fish out at sea. So now you may fish a dozen trips. Go for your gas. Go for everything else. Alright? You can live with no fish. It's not your fault because your on route. You're off shore. Now you get the fish to come in. They come in in a feeding frenzy. You get in the fish. You go oh, I got ten fish. That's it. All my relatives, all my family, forget them. I'm allowed ten fish. It doesn't make sense.

Audience: Clapping.

Mr. Freeman: Thank you. Gentleman in the blue shirt.

Mr. Cericola: I just have one more thing to say.

Mr. Freeman: Your name again for the record.

Mr. Cericola: My name is R.J. Cericola and just take into consideration that if there is a plan that comes up with a 20% commercial catch.

Anonymous: Can't hear you.

Mr. Cericola: Just take into consideration that if there is a plan that comes up with a 20% commercial catch that there will be more commercial licenses issued because the charter boat fleet, the captains, and so on, whoever goes out there and sells their fish. There's going to be more people who go out there to sell their fish because there are so many people who sell fish these days that aren't commercial fishermen that the increase of commercial licenses will go up and we are going to need more than 20%. Thank you.

Mr. Freeman: Thank you, sir. Any other people? Gentleman in the blue shirt.

Mr. Jennings: I'm just a regular . . .

Mr. Freeman: We can't hear you on this. Speak up.

Mr. Jennings: My name is Bob Jennings. I'm just a recreational small boat fisherman but I'm also one of a growing number of people who are getting really fed up with all these hair brain, knuckleheaded schemes by petty, unnecessary bureaucrats interfering in what we are doing by just trying to make a living some of these people and others just trying to have some recreation. Now having said that, I'd like to state a couple of things.

I don't have a copy of your proposal there, or your study but it becomes very apparent that you didn't make use of the recon satellite capabilities that this country has in order to track pelagic fish. Bluefish spend a lot of time at the surface. Rather than go to some "x" drawn in the middle of the ocean someplace, and draw a net where as they say they ain't, it would be better to track them with recon satellites to find out where they are and how large the bluefish were. That's number one.

Number two, I wonder when the Council will tell the public what this thing is going to cost them. How are you going to enforce this? Are you going to enforce this with the existing number of agents that are around or are you going to have to increase dramatically the number of agents? I suspect the latter is true. If you do, who is going to pay for it? How much is it going to cost? Is this going to be something that will just go on forever and escalate in cost like something came of the Parkway Toll Plaza, something that just never goes away and gets worse? I suspect that it will.

Number three; I heard the horror story that was just told by this captain back here. That's totally unnecessary but that's what going to happen if you turn loose a bunch of Gestapo like agents running around the docks. I don't know how everybody else feels here but if I get somebody jumping on my boat without either a gun in my face or his badge out identifying himself, he's out to find himself getting real wet real soon. That's all I wanted to say.

Audience: Clapping.

Mr. Freeman: Tom Fote.

Mr. Fote: My name is Tom Fote, Vice President of Jersey Coast Anglers Association. What I have is two letters which are two of about 25 letters from different clubs along the Jersey Coast. Basically what it says, like this is the Berkeley Striper Club letter; it says Berkeley Striper Club at its June meeting voted to support a bluefish management plan that does not include a bag limit. The club acknowledges that a reasonable plan that insures an ample stock of bluefish would be a value to the sportfishing public but at this time there is no reason for limiting catch to the 10 fish limit.

It's interesting, when the plan was tossed around as Bill said before now the the story is told reversely, it was the sport fisherman who was asking for this plan because we wanted to protect the resource. What I think NMFS has decided the last 10 years to make sure we don't get a plan. They turned around and got where the support was and turned the support against a management plan. I mean I've sat through the last four or five bluefish management meetings and I'm listening to the facts. There has been no facts presented at those meetings to justify a 10 fish bag limit. I mean the way these fish have been very well covered here. There was no waste.

Given your own survey that just came out in 1988 shows that it was less than 2%, .2 of 1%, that was the waste from a whole bunch of people surveyed. That's your own study. Then you go down and you say well somebody else says you can't put a limit on a commercial catch without putting a limit on the recreational catch. That's the other reason I was given. That's ridiculous. Apples and oranges don't mix. I mean no hook and line fishery ever depleted a total stock. I mean you know it doesn't make any sense.

Then you look at it. Why are you putting restrictions on bluefish when you look at the fluke fishery in this state? You put a plan into effect two years ago and we don't have any fluke up and down the coast. I mean Virginia, you're not looking for any bag limits in effect on the fluke or any kind of restrictions, any kind of commercial restrictions, you put a size limit. It doesn't seem to be helping much unless you found fluke that I haven't found. Let's be honest. We don't need a bag limit.

There's no justification anywhere in this plan. I have read through all of the pages and looked back at these documents. I sat through the meetings. I've put forth the time and effort to go the the Mid-Atlantic, to go to bluefish management and nobody there has given me any justification to feel this way. Because somebody says let's do it this way, that's the reason they're doing it. I don't have any vague idea where it's coming from except some bureaucrat.

Audience: Clapping.

Mr. Freeman: Al Marantz.

Mr. Marantz: My name is Al Marantz with the Newark Bait and Flycasting Club. I would just like to make one little statement about the plan with the proposal of the fish limit. My comment is that a fish would definitely cause waste of the resource. Anyone knowing the party boat, recreational boat, any boat at all up and down the coast will throw a fish away every catch, if he catches a bluewinger or if he goes out in the beginning of the day and catches 10 small fish and then starts catching big ones. What is he going to do with these first 10? The plan itself is causing waste of the resource.

Audience: Clapping.

Mr. Freeman: Yes, sir. Gentleman here.

Mr. Olsen: My name is Olsen. I'm an ex-commercial fisherman and I'm nothing but a sport fisherman now. I want to tell you now for the past two years on the surf, there isn't anybody in here because I have been down to that beach for two years in the morning, the mid-morning and the afternoon looking for bluefish. I want to tell you that stock on the bluefish you don't have to worry too much, your Council doesn't have to worry too much about them getting the 10 quota on your blues on the beach because there are very few men who can say right in here that last year they got 10 because I know fishermen from here to Asbury Park and they give me the truth about getting 10 fish or better. None got them last year. Maybe one or two. You are shaking your head. Maybe one or two.

Anonymous: No, I agree with you. I'm out there everyday with you surf fishing.

Mr. Olsen: Nobody gets any fish. That bluefish is taking a run off the beach for some unknown reason. I would like to ask you a question. Do you happen to know when a commercial fisherman brings his fish into the dock, these people in here know, how's the commercial fishermen get involved in fish sold? How does he sell the fish. He brings them in and they box it out for him. Do you know what the cost of that is? Do you know what the cost of being a commercial fishermen is now? It's outrageous. The commercial fisherman in here is really a low income man. Honest to god, the guy is doing any stabnetting or a lot of lobstering are not high income men. Put any limit on fish, that would be a hardship. I'm against it.

Mr. Freeman: Thank you sir.

Mr. Olsen: Could we have a vote on that to see what, to have a vote among us right here to see the pros and cons of it?

Mr. Freeman: I would indicate that this form we have we're hoping those of you that are here will fill that out. This piece right here. Essentially that I think will take care of the vote.

Audience: Mumbling.

Mr. Freeman: Alright. Someone else over here had a comment. Yes, sir.

Mr. Bozan: My name is Tom Bozan. I represent the Steven Surfsters. Just to go on the record, we are opposed to any limits on the bluefish stocks.

Mr. Freeman: Alright. Thank you.

Mr. Bozan: Or catch. I'm sorry.

Mr. Freeman: Any other comments? Barry do you have... Is this an additional comment ?

Mr. Goldman: No, I just wanted to go along with it. I just wanted you to know that his comment was unanimous against your plan.

Mr. Freeman: Alright.

Mr. Goldman: I want to ask you one question though. Does this thing have to be in today or can we send it in?

Mr. Freeman: No, that form essentially is for your convenience. You don't have to fill it out. We would like very much if you would. You can hand it to us or you can fill it out at a later time and mail it. There's a mailing address on it but make sure it's in by August 25th. Alright. Any other comments, this gentleman up front.

Mr. Dubowski: My name is Jeff Dubowski from Red Bank. I happen to agree with that gentleman over there who just spoke before that any person or rod and reel man that's saying that he is getting more than 10 bluefish a day is either exaggerating a little bit or he is lying.

What I would like to really say is to the gentleman who was standing over to this side before. It is a shame because I do see the amount of minority people that are out everyday fishing to put some food on the table. The guys that are making $5.00 an hour, $4.50 an hour, cleaning dishes in Asbury Park at the Burbee Carteret that are working in the laundry mats around Asbury Park, now to tell these guys that when they happen to maybe get into 10 bluefish maybe once a year, maybe once every five years, that they can't do it, that's really taken one step to far. Then you are removing a man of his basic right to life, liberty and the pursuit of happiness as the captain so well put before. Thank you very much. That's all I have to say.

Mr. Freeman: Thank you. Anyone else with a comment? Yes, sir. The man in the blue shirt.

Mr. Bowen: Yes, Charlie Bowen from Across the Bridge Boat Rentals and Bait and Tackle. All my customers, I signed all the petitions, handed them in, mailed them in. We are opposed to a bluefish limit. Also, I think you people are sitting on the wrong side of the table. I think first of all you should get on the other side of the table. Get these people to clean up the water. I think that there is the main goal, to clean up our water at least first. You know the fish are fine. There's nothing wrong with the fish. There's nothing wrong with the stocks. Get the waters clean first. I think if you talk to some of the people that come down, I mean everyday people walk in my shop and they say how's the water. Is the water clean? That's the first words out of their mouth. They don't care what they catch. They don't care if there's anything out there at all. That's what they want to know. How's the water?

Mr. Freeman: Thank you. Anyone else with a comment? Yes, sir. The man in the red shirt.

Mr. Nastasio: My name is Paul Nastasio again for the record. Another thing I would like to bring up that was brought up before was about the fluke. You people passed all kinds of laws. You were going to preserve the fluke. It would be much better for the fluke and everything else but what I think you failed to do, understand was that when somebody that is not a good fisherman catches a fish and doesn't know what they are doing, by the time they take the hook out of a 12" fluke, it's dead. So now you have killed the resource, you've thrown it back into the water for it to rot and feed the crabs and everything else but meanwhile you are killing off the young fish that you are trying to protect. Where does it make any sense? You think about it. I would rather see the people take home a 12" fish if they're going to eat them or else make them use bigger hooks. Do something, but don't make them throw back a fish that can't live. How many fluke have you ever hooked that you've been able to return to the water and let them live? You can't do it. They swallow it way back in the gullet. Every time you set them up and then you reel up, you kill them. Why throw it back? Keep them.

Anonymous: Those fish never make 13".

Mr. Nastasio: They never make 13".

Mr. Freeman: Thank you. Are there any other comments?

Mr. Egerter: I want to say one thing for waste. Bill Egerter from Point Pleasant, boat owner, boat runner. For waste I hate to hurt the commercial industry which is nothing wrong, but I see a lot of waste in that industry. No in bluefish itself. I can't see why a commercial industry like that if they could find a place to get rid of it like a church industry. I run a fishing boat and a lot of the people that come fishing with us take their fish and if they catch a good amount, that's where they take it. They take it to their church or the VFW. There was a VFW cookout in Point Pleasant. Where did they get their bluefish? They got them from the commercial, they get them from the party boats, they get fish where they can get it from. If you're going to tell them that they can't get it or that the price is going to go up, they won't come and buy it anymore.

Mr. Freeman: Are there any other comments? Any other comments?

Mr. Olsen: You know sir, may I say something? I am really . . .

Mr. Freeman: Mr. Olsen, go ahead.

Mr. Olsen: Yes. I forgot to say something. The Council doesn't have to worry about an awful lot of commercial fishermen being stabnetters and so forth. The extended cost and so forth to establish yourself as a decent fisherman are so high it's out of proportion. Even as I told you about heading up that fish, each commercial dock the minimum of $.07 a pound, and it's up to $.09 and $.10. Now if a guy goes out and he doesn't get $.20 a pound for a bluefish when he comes down to the dock, there's no sense in going. That's one of the

things that you don't have to worry about too much. I wouldn't think there would be too many commercial fishermen like that in the future.

Mr. Freeman: Thank you, sir. I want to thank everyone for coming. I know we have lost most of the audience. I would like to thank you for staying to the very end. Let me just indicate that we have recorded this meeting and the comments that you have made. The tapes of this meeting will be filed as an official part of the transcript. As you saw, we were taking notes in addition to that to make certain to consider all the comments that had been made. I would ask that anyone who wants to make additional comments certainly can do so. You can do so by writing. These will be accepted until August 25th so we would ask that anyone wishing to send any written comments in please do by addressing those to John Bryson, Executive Director, Mid-Atlantic Fishery Management Council, Room 2115, Federal Building, 300 South New Street, Dover, Delaware. That address is on the sheets that were provided at the table and also on the summary document. All your views will be certainly considered by the Council along with the other 19 or 20 public meetings that have been held along the coast. I'm certain that the representation here tonight of the Mid-Atlantic Council among myself and other members will all be given very serious consideration before any version of the plan is instituted. At this time I would like to close the meeting. Thank you.

OLD WESTBURY, NEW YORK - JULY 31, 1989

The Bluefish Fishery Management Plan public hearing in Old Westbury, New York was called to order at 7:40 p.m. on July 31, 1989. Charlie Johnson, Mid-Atlantic Council member, was the hearing officer. Gordon Colvin, Mid-Atlantic Council member was present. Chris Moore, and Lynn Redding of the Mid-Atlantic Council staff were also present. Seventy-six members of the public were present.

Mr. Johnson made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC had adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Johnson then opened the hearing for any questions or comments.

Bill Miller, United Mobile Sportfishermen, asked if the Atlantic States Marine Fisheries Commission was going to issue a bluefish management plan for the states to adopt. He also asked if the New York Department of Environmental Control has the regulatory authority to impose a bag limit on bluefish.

Richard Weisberg, Freeport Tuna Club, stated that club members support the plan in its current form because of the importance of bluefish to the recreational fishery. The club believed that the plan was essential.

Bob Patafio, Deepwater Fleet, Inc., asked why the commercial catch would be allowed to increase to 20% of the total catch since it has historically been 10%. He supported the possession limit of 10 fish.

Tony Delernia, Director, Freeport National Fishermen's Alliance, which represents 25 party and charter boats, commented that the alliance agreed with the concept of the plan. However, they indicated that the plan contained some inconsistencies. They suggested that the plan consider a third category of individuals, these that fish on party and charter boats, and allow them a minimum of 15 fish per person. They stated that those who fish on party and charter boats and sell their fish are commercial fishermen. These individuals have not been considered in the FMP. The Freeport National Fishermen's Alliance would like to see the phrase "no passengers on board" omitted from the section on commercial permits.

George Porter, charter boat captain, commented that a bag limit would put party boats out of business.

Thomas Knobel, Director, East Hampton Town Baymen's Association, a commercial fishery organization, read a letter stating their comments (Attachment 6). The association felt that the plan should endorse the use of traditional gear types. They disagreed with the plan because the commercial fishermen would be limited to 17% - 20% of the total landings. In the event that gear restrictions on highly efficient gear were enacted in the EEZ, the Association stated that runaround gillnets should not be linked with pair trawls and purse seines. They would suggest a gear limitation of 1,800' in length and 24' in depth for gillnets. Mr. Knobel personally felt that the catch statistics were in error.

Fred Schwab, President, New York Sportfishing Federation, stated that the bluefish stocks were subject to collapse since the fishery had been operating at or past maximum sustainable yield. The New York Sportfishing Federation felt that the commercial catch should be limited to 10% of the total catch. They did not support

with a limit of 10 bluefish because they felt it would be of little or no benefit. They favored a possession limit of 5 bluefish.

Ralph Perone, Babylon Tuna Club, stated that he supported the position taken by the New York Sportfishing Federation.

Charlie Turbin, Gateway Striper Club, stated that the club felt the plan was pretty good as proposed. Mr. Turbin asked why the commercial fishery would be limited to 20% of the total catch instead of 10%. He stated that the bag limit should be 5 bluefish and not 10.

Alan Roth, charter /party boat captain, commented that the plan was unfair to the poor. He said that poor fishermen catch bluefish to feed their families. Mr. Roth said that he had been told at a meeting in Philadelphia that there would be no commercial fishery established for bluefish.

Bill Miller, United Mobile Sportfishermen, stated that he did not agree with doubling the commercial catch and limiting the recreational catch by a possession limit. He stated that a 10 fish possession limit was acceptable and that even a 5 fish limit would be accepted.

John Fritz, Paumonak Surfcasters, asked why there was a 20% commercial catch limit since commercial fishermen had historically taken 10% of the catch.

Roger Martin, Highhill Striper Club, stated that the club supported the plan. They questioned the 20% cap on the commercial fishery. The Striper Club was against the waste of bluefish. They supported the 10 fish possession limit and indicated that a 5 fish limit would be acceptable.

George Porter commented that recreational fishermen outnumbered the party boat fishermen. He recommended that party boats should not have to adhere to the possession limit because they are a small minority.

Joe Fail, Montauk Surfcasters, stated that they support the 10 fish possession limit.

Dr. Bill Muller, Highhill Stripers Club, stated that he was personally in support of the bluefish plan. He stated that he was glad a plan had finally been developed. Dr. Muller felt that objectives 1,3,4 and 5 were well conceived. He stated that the plan would control overfishing. He is pleased with the intention of the plan to advert crisis. Dr. Muller stated that the 20% commercial limit should be 10%. He said that a 10 fish bag limit was overly generous and excessive and that a 2 or 3 bag limit would be enough. Dr. Muller is opposed to the exceptions on the possession limit that would allow commercial hook and line fishermen to exceed the catch. He stated that the price of a commercial fishing license was too low. He stated that recreational fishermen should catch bluefish and release them.

William Lindroth, D and S Enterprises, stated that bluefish were abundant. He said that the plan favored sportfishermen. He stated that management agencies should be concerned with fluke.

Richard Kessinger, a charter boat captain, stated that a possession limit would destroy the charter boat industry. He said the plan would hurt low income people. Mr. Kessinger favored no limit on recreational catch.

Alvin Coley, Sheepshead Bay Fishermen's Alliance, stated that the alliance was against the plan. They indicated that bluefish were abundant. They stated that the plan would unfairly affect minorities.

Dave Levin, Babylon Tuna Club, personally stated that the fishermen could not continue to catch and keep bluefish without regard to the resource.

James Schneider, a charter boat captain, commented that the catch information was not accurate. He said the Council should be more concerned with fluke or the trash problem instead of bluefish.

Tony Delernia, Director, Freeport National Fishermen's Alliance, commented that the data should be available to indicate what is caught by small and large charter vessels. The Freeport National Fishermen's Alliance was referring to larger charter vessels when they suggested an increase of 15 bluefish per person.

James Stanis, Southshore Anglers, stated that the club supported the plan.

Bob Nagey, a charter boat captain, commented that people who catch fish to eat or sell need more than 10 bluefish. He said the Council should consider that he relies on tourist for 2 or 3 months out of the year. During the other months he relies on people who catch fish to eat or sell. Mr. Nagey stated that he would not be able to make a living because the plan would restrict his income during the other months.

Richard McBride commented that bluefish were only in the area from May to November, or 8 to 10 months out of the year.

George Porter commented on the issue of waste. He felt that people eat what they catch and keep.

Joseph Kaylo asked what percent of fishermen catch more than 10 bluefish per trip.

Alan Rofner stated that sometimes a person may catch more than 10 bluefish and other times may not catch any fish. He said that catch restrictions should not be imposed on anglers.

Peter Devita, a charter boat captain, commented that party boat fishermen sometimes only go out once or twice a year. He stated that the issuance of a commercial license for hook and line fishermen should require that the person makes his living fishing commercially.

Albert Lindroth asked why a plan was needed if only 10% of the fishermen catch more than 10 fish.

Arnold Rydberg, a charter boat captain, stated that the plan would put him out of business since 75% of his business was associated with bluefish fishing.

George Porter asked how the plan would be enforced.

Thomas Knobel, East Hampton Baymen's Association, stated that bluefish were abundant. He said New York should have its own plan and not follow a coastwide plan.

Dominic Jacanyelo said that a 10 fish possession limit was reasonable. He stated that the Council should consider individuals on charter boats who had a commercial license to sell fish. He stated that there should be more drastic restrictions on the commercial fishery in the EEZ.

Tony Delernia asked how the plan process would proceed after the public hearings.

Dick Leitzberg, Freeport Tuna Club, asked if customers of charter and party boats would be required to buy a New York commercial license if they sold all or part of their catch.

David Othotc, Surfside III Tuna Club, stated that he personally agreed with a 10 fish possession limit. He also commented that commercial fishermen should be limited to 10% of the total catch.

Walter Wiegand, a party boat captain, commented that there was no justification for a bag limit. He said that poor fishing days should be considered and an average for the year used instead of the possession limit. Mr. Wiegand stated that bluefish should be considered a recreational fish. He said there was no need for conservation.

Ralph Perone, Babylon Tuna Club, stated that commercial fishermen would wipe out bluefish if commercial fishermen were not limited.

Charlie Johnson thanked the audience and the hearing adjourned at 9:30 p.m.

RIVERHEAD, NEW YORK - AUGUST 1, 1989

The Bluefish Fishery Management Plan public hearing in Riverhead, New York was called to order at 7:40 p.m. on August 1, 1989. Charlie Johnson, Mid-Atlantic Council member, was the hearing officer. Gordon Colvin (Mid-Atlantic Council andASMFC, and NY DEC) was present. Chris Moore, and Lynn Redding of the Mid-Atlantic Council staff were also present. Thirty members of the public were present.

Mr. Johnson made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Johnson then opened the hearing for any questions or comments.

Nicholas Castoro, New York State Sport Fishing Federation, commented that the federation supported the plan in its entirety. He indicated that he had seen the waste in the fishery. Mr. Castoro indicated that the bluefish resource should be protected.

Martin Garrell commended the Council for trying to manage the resource before it was overfished. He indicated that the 10 fish limit was a good one. Mr. Garrell indicated that the rumors of waste on party boats were true. He felt that those criticizing the plan now would probably support it later.

Floyd Carrington, Shinnecock Marlin and Tuna Club, indicated that the response of members was to question whether a bluefish plan was needed. He commented that the first four paragraphs in section 6.2 should be in

section 6.1. The club felt that a plan was needed for mako sharks. The club's major concern was with the large amount of waste. They felt that education was the way to control waste, not a 10 fish limit. Mr. Carrington commented that if the waste continued then the bluefish would disappear. Another concern was that the 20% limit on the commercial fishery would not be reached. Mr. Carrington felt that there was no enforcement. He commented that the people should get together and regulate themselves. Mr. Carrington felt that alternative 2.3 which allows a catch of 20 small fish would not conserve the resource. He felt that small fish should be returned to the water to allow them to reproduce.

Joe McBride, President, Montauk Boatmen & Captains Association, commented that the association voted to support the plan. They felt that there was a need for regulation. He indicated that club members were not seeing the amount of bluefish as in previous years.

Lauren Ridge, New York State Trawlers Association, commented on the size restrictions in the alternatives. She indicated that the 12"-16" bluefish are the commercial fishery's primary target. Ms. Ridge said that many commercial fishermen throw back the larger bluefish because they are of little or no value unless there is nothing else on the market. She felt that sexually mature fish should be protected and allow commercial fishermen to take the smaller ones. Ms. Ridge would like to see the Council pay more attention to the controlled use of gear. She indicated that trawls, purse seines and pair trawls are highly competitive with other commercial gears.

Donna Pratt, Lady Reelers, indicated that club members support the plan.

Rick Lofstad, Jr. commented that he felt the recreational side of the plan is unenforceable. Mr. Lofstad indicated that the emphasis should be on a balanced ecosystem. He advised that the bluefish is the most ferocious predator on the East Coast. Mr. Lofstad indicated that it was a good idea to develop a management plan while the stock was healthy instead of trying to do something after a decline. He was against the 20% commercial catch limit.

Gene Kelly, a charter boat captain and Secretary of the Montauk Boatmen and Captains Association, commented that he was in favor of the 10 fish limit.

Emerson Hasbrouck commented on the distinction between recreational and commercial fishermen. He indicated that if the commercial share reaches 17% of the landings then landings should be categorized by gear to see what percent of the commercial catch was attributed to hook and line fishermen. Mr. Hasbrouck commented that the rod & reel catch should be excluded if the commercial catch approached the 17%-20% limit.

Milton Miller commented that striped bass regulations are not being enforced. He felt that the plan would protect a killer since bluefish were one of the most destructive species on the East Coast. Mr. Miller also indicated that the umbrella rigs used by recreational fishermen would cause significant hooking mortality. He felt that protecting bluefish would prevent other stocks from returning to previous levels of abundance. He indicated that a plan was not necessary at this time.

Mr. Johnson thanked the audience and the hearing adjourned at 8:45 p.m.

BRIDGEPORT, CT - AUGUST 3, 1989

The Bluefish Fishery Management Plan public hearing in Bridgeport, CT was called to order at approximately 7:10 p.m. on August 3, 1989. Bob Jones, New England Council member, was the hearing officer. Pat Carroll, New England Council member attended. Chris Moore and Lynn Redding of the Mid-Atlantic Council staff were also present. Twenty-eight members of the public were present.

Mr. Jones made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC had adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Jones then opened the hearing for any questions or comments.

Don Kovacs, a charter boat captain, commented that there should not be restrictions placed on the recreational catch. He indicated commercial gears should be restricted. Mr. Kovacs was against permits. He stated that 10 bluefish was plenty since bluefish do not freeze well. Mr. Kovacs stated that the data was invalid. He suggested that data be collected from the fishermen. Mr. Kovacs inquired if foreign vessels would be allowed to harvest bluefish. He also asked if the regulations would be consistent along the coast if the plan is imple-

mented. Mr. Kovacs asked how the plan would be enforced. He stated that the plan was unenforceable. He stated that the bluefish fishery should not be regulated.

Arthur Schulz, Westport Striped Bass Club, asked if snapper bluefish would be regulated by the possession limit. Club members indicated that snappers were an important food source for many people and 10 fish would not be enough.The club supported the plan. Club members indicated that the proposed possession limit could be lower, possibly 5, but that the plan was a good start.

Richard Reid, Greater Bridgeport Bassters, stated that he believed the commercial catch data was inaccurate. He asked if we were doubling the commercial catch or cutting the recreational catch by placing a 20% limit on the commercial fishery. Mr. Reid was in favor of reducing the recreational catch to maintain the stock. He questioned why the current commercial catch should be doubled. Mr. Reid stated that the plan would protect a few commercial fishermen and restrict many recreational fishermen. He stated that commercial fishermen should be limited as well. Mr. Reid suggested a regional approach may be more appropriate since the commercial and recreational catch varied greatly from region to region.

Arthur Schultz, Westport Striped Bass Club, read a letter stating their comments (Attachment 7). Mr. Schultz asked if the limit would be the same for every state. He was concerned that New York would have a higher possession limit than Connecticut.

Dick Elley, a journalist, commented that the majority of the people he has talked to favored the plan. He supported the plan. Mr. Elley stated that a lot of charter boat captains were telling their patrons to throw fish back after they caught all they wanted to keep.

Pat Carroll commented that most of the people in the Bridgeport area that he talked to would support the plan. He felt 10 fish is enough, if not excessive. He agrees with a 20% cap on the commercial fishery. Mr. Carroll felt that there would be a problem with the limit of 10 bluefish if it included fish of all sizes. There would be an enforcement problem because of the importance of snapper blues to children and the elderly. Mr. Carroll favored alternative 2.4 which restricts anglers to 10 fish 12" or more.

Frank McKane, Connecticut State League of Sportsman's Club, stated that the club supported alternative 2.3, which would allow 10 bluefish over 12" TL and 20 bluefish less than 12" TL in possession. Club members thought that enforcement would be a problem. The club was concerned that the plan would lead to a saltwater fishing license which they did not want.

Daniel Cox supported a possession limit of 10 larger fish. He stated that the plan would encourage the state to increase the number of conservation officers who would enforce the plan.

Egnatz Hart asked how the management measures would be enforced. He felt that effective enforcement would require more staff. Mr. Hart was also concerned about the lack of sand eels and shiners. He stated that the absence of prey was the reason for the decline in bluefish and that this situation should be corrected first.

Fred Frillici stated that bluefish were cyclic in their abundance. Mr. Frillici commented that a 10 fish possession limit for larger fish was more than sufficient. He also supported a 20 fish limit on snappers.

Bert Bernstein, Fairfield County League of Sportman's Clubs, asked if the plan would prevent joint ventures. Mr. Bernstein doubted that the commercial fishery caught less than the recreational fishery. He also commented that people rely on snapper bluefish for food.

Bill Herold, a charter boat captain, commented that he supports alternative 2.3, with a 10 fish possession limit on larger fish and 20 fish limit on the snappers. He stated that the commercial statistics were invalid. Mr. Herold does not agree with a limit that allows for an increase in the commercial catch. Mr. Herold asked how the revenues collected from the issuance of commercial permits would be spent. He indicated that there should not be an exception that would allow commercial hook and line fishermen to exceed the possession limit. Mr. Herold felt that recreational fishermen would sacrifice for the benefit of commercial fishermen.

Thomas Boyle, President, Milford Striped Bass Club, commented that expenditures in the recreational fisheries exceeded the commercial fishery by 10-1 . He does not agree with the provision in the plan that would allow the commercial catch to increase to 20%. He felt that both recreational and commercial fishermen should be limited.

Bill Herold, a charter boat captain, asked if the issue of having an average catch on party boats had been addressed.

Richard Reid, Greater Bridgeport Bassters, stated that the 10 fish limit should apply to party boats . He said that fishermen could practice catch and release after keeping 10 bluefish.

Egnatz Hart asked how the recreational catch was derived. He did not feel that an accurate estimate was possible.

Frank McKane, Connecticut State League of Sportman's Clubs, commented that if the recreational fishermen were limited than the commercial fishermen should also be limited.

Fred Frillici, Fairfield Boat Owners, stated that he was concerned with the proposed limitations on the recreational catch. He felt that the revenues generated by the recreational fishery outweighed the value of bluefish associated with the commercial fishery. Mr. Frillici felt that the plan favored the commercial fishermen. He was also concerned that the catch statistics were invalid.

Bert Bernstein, Fairfield County League of Sportsman's Clubs, commented that bluefish food items were disappearing due to chlorine. He felt more effort should be spent getting sewage plants enhanced with modern technology.

Arthur Schultz, Westport Striped Bass Club, stated that he believes in limiting head boats catch.

Frank Biggotti stated that he favored a 10 fish limit on larger fish. He was opposed to the commercial catch limit since it would increase commercial catch by 100%. Mr. Biggotti stated that more time should be spent on some boats and where the fish are being sold to come up with better catch numbers. He stated that peer pressure is the best enforcement.

Dennis Cummings agreed that peer pressure is the best form of enforcement. He also questioned the accuracy of the recreational and commercial catch statistics.

Pat Carroll commented that the difference between possession limit and bag limit should be explained.

Arthur Schultz, Westport Striped Bass Club, asked if the plan would work with current levels of enforcement personnel.

Peter Dauk stated that he favored alternative 2.3 but would like a modification to make it 5 fish larger than 12" and 20 fish smaller than 12". Mr. Dauk asked for Dr. Moore's opinion on a moratorium on the catch of juveniles as opposed to a limit of 15 or 20 a day. Mr. Dauk would favor a moratorium if it was necessary.

Bill Herold, a charter boat captain, asked if the analysis conducted for past years was still valid under present conditions.

Doc Gunther, Connecticut State Senator and ASMFC Commissioner, stated that he wanted to clarify how the plan would be implemented. He stated that the State of Connecticut would establish their own regulations.

Frank McKane, Connecticut State League of Sportman's Clubs, commented that the possession limit would affect only 7.3% of angler trips. He asked if the limit would be effective.

Bill Herold, a charter boat captain, asked what the time table was for the plan process.

Dennis Cummings asked if all states would have similar regulations if the plan was approved.

Egnatz Hart asked if fishermen would be penalized if New York had a higher possession limit and fishermen fishing in New York waters then brought the fish back into Connecticut.

Bert Bernstein, Fairfield County League of Sportsman's Clubs, stated that the difference between take and possession could lead to a lot of trouble. If it was possession instead of take this would cause waste. He did not like the wording of the possession limit.

The hearing adjourned at approximately 8:30 p.m.

MYSTIC, CT - AUGUST 2, 1989

The Bluefish Fishery Management Plan public hearing in Mystic, CT was called to order at 7:00 p.m. on August 2, 1989. Bob Jones, New England Council member, was the hearing officer. Chris Moore, and Lynn Redding of the Mid-Atlantic Council staff were also present. Forty-five members of the public were present.

Mr. Jones made the opening remarks regarding the Bluefish Fishery Management Plan.

Dr. Moore read the summary of the plan, stating the objectives of the FMP plan, as well as detailing the management measures that the Council and ASMFC had adopted for purposes of public hearings. Dr. Moore also reviewed the alternatives to the proposed plan.

Mr. Jones then opened the hearing for any questions or comments.

Ken MacKenzie commented that there should be control on the harvest of bunker by commercial fishermen since they are an important food source for bluefish. He had a friend in Gilford take a poll at the dock regarding the proposed FMP. The results showed that out of 31 people, 24 were in favor of the plan and 7 were opposed to a possession limit. He is in favor of some type of restriction on the recreational catch.

Ed Miydalski asked if the plan proposed limits on snapper blues. He also inquired as to how the possession limit would be enforced. He thought enforcement would be impossible.

Norman Richards said that he has been measuring the fork lengths of the fish that he has been catching and ageing them using age-length information. He indicated that his catch supports the data on year class strength in the plan that is that strong year classes were produced in 1981 and 1984. He supports the plan.

Robert Shay commented that he is for bluefish conservation, but that enforcement may be a problem. He indicated that more money should be spent on education. Mr. Shay was concerned that the plan would lead to a saltwater fishing license.

John Peterson, commercial lobsterman, said that the money or manpower to enforce the plan if it is implemented were lacking. He also commented that the waste of bluefish was not as bad as everyone seems to think it is. He felt that commercial fishermen do not waste what they catch unless it is unusable. Mr. Peterson feels that there may be a need for a catch limit, but at this time he thinks the bluefish fishery should be left unregulated.

Brad Glas, party boat captain, commented that he would like to see severe restrictions on gear type. He felt that we should manage the prey items that bluefish feed on instead of bluefish. Mr. Glas commented that we should consider the average bluefish catch. The average catch is usually not 10 on a party boat, but if they have a good day, and can catch more than 10 bluefish, he stated that they should be able to keep them. He is not in favor of a possession limit.

Michael Theiler commented that bluefish should not be regulated at this time. He indicated that more information needs to be collected.

George Glas, Executive Director of National Party Boats Owners Association, commented on bluefish being smaller or larger in different areas along the coast. He did not feel it was practical to limit the number of bluefish. Mr. Glas said that if there was a possession limit people would not go fishing on party boats. He also commented that we don't have the personnel to enforce the plan. He recommended that no action be taken at this time.

Ray Konikowski asked where the 20% commercial catch limit was derived. He stated that the statistics were wrong and that bluefish were abundant. He was concerned that a 10 fish limit on bluefish would lead to a lower limit for other species later. Mr. Konikowski's recommendation was to delay action until more data was collected.

Claire Glas, National Party Boat Owners Association, commented that allowing unrestricted catches of bluefish by highly efficient gears before the 20% limit was reached would not work and would cause damage to the resource. The association favors gear restrictions.

Fred Jansson, commercial fisherman, commented that it would be impossible to regulate bluefish since they spawn in offshore waters unlike striped bass that spawn in estuaries. Mr. Jansson also asked if foreign vessels purse seined bluefish. He did not think the plan would do anything to protect the species. He also stated that regulation was unnecessary at this time.

John Peterson asked if the regulations would be the same along the coast.

Richard Zictorac stated that he was against the plan. He asked how the plan would be enforced and implemented along the coast.

Ben Rathbun commented that we need to look at more than 10 years of catch data since bluefish are cyclic in their abundance. He stated that something should be implemented concerning size due to the fact that they are cyclic. Mr. Benrad also commented that we need to bring the commercial data up to date.

Stan Cardinal, marina owner, stated that the bluefish stocks were overfished. He commented that an angler could not even catch 10 bluefish. He stated that we should determine why the fish were not there.

Brad Glas asked if the Council had decided that a lack of natural food was causing a decrease in the bluefish population. He indicated that the Connecticut Department of Environmental Protection should put the pressure on local zoning boards to curtail coastal development. He believes overdevelopment is a major factor causing a shortage of food.

George Glas, Executive Director, National Party Boat Owners Association, asked if there was any connection between this plan and Congressman Young's bill which would require permits to fish in the EEZ, captains to accept observers on their boat and charges on people that go whale watching.

Richard Zictorac asked how many hearings were being conducted along the coast. He also asked when the results of the hearings would be available. He asked how the plan would be implemented. Mr. Zictorac also inquired about the results of the other hearings. He asked if the public comments would make a difference as to the outcome of the plan. He was concerned that the bluefish plan would lead to regulation of every marine recreational species.

Claire Glas, National Party Boat Owners Association, asked if the plan would lead to the implementation of a saltwater fishing license.

Ray Konikowski stated that all the states would have to agree on a possession limit due to the large number of Connecticut fishermen that fish in New York waters. He also commented that just because the commercial landings are down does not mean the bluefish population is down.

Brad Glas stated that the importance of bluefish to party and charter boat fishermen in that area should be considered when making a decision.

Stan Cardinal stated that you cannot catch 10 bluefish.

Ben Rathbun commented that the plan would be a positive step in the right direction.

Mike Theiler stated that more concern should be placed on the environment and habitat.

Bob Jones thanked the audience and the hearing adjourned at 8:15 p.m.

PORTLAND MAINE - 7 AUGUST 1989

A hearing on the proposed Bluefish FMP was convened at approximately 7:30 pm on 7 August 1989 by William Brennan (Maine Department of Fisheries, New England Fishery Management Council, and the Atlantic States Marine Fisheries Commission). Also present was David R. Keifer of the Mid-Atlantic Council staff and 20 members of the public.

Messrs. Brennan and Keifer explained the procedures for the hearing and the proposed FMP.

Bob Boilard indicated that bluefish had been in Maine since 1971, that they migrate yearly, and are cyclical. An FMP can do nothing about these things. Prefers the alternative of taking no action at this time.

Dale Pike does not understand bluefish population cycles. Recommends putting into place regulations to reduce catch to save recruitment.

Mike Span indicated that commercial fishing on bluefish is not the highest percentage of the catch. No is the time to impose limits on the commercial fishery. Ten bluefish are enough for anyone. Too many bluefish are wasted.

Don Upchurch indicated that bluefish are wasted and recommended there should be limits on bluefish in tournaments.

Susan Flynn asked the schedule for FMP implementation.

Barbara Stevenson asked if there is a mechanism to record hook and line caught fish that are sold as commercial? She is concerned about recreational fishermen selling bluefish. Concerned about bluefish caught but not utilized. Cannot support the FMP without her concerns being addressed.

Bob Boilard said fish are wasted every day. Where does the money come from for research and FMPs. Would not oppose the 10 fish limit.

Charles McLaughlin asked who would be responsible for enforcement.

Mike Spain asked if a 10 fish limit would limit utilization.

Don Upchurch said most people go for bluefish for recreation. If there a way to get more people to release more fish?

Jim Dougherty asked if there would be a way for dead bluefish to be used for lobster bait than to be thrown away.

Bob Boilard asked that, if a bluefish market opened up, would you not need to limit bluefish. May ruin other catches. Money is in lobster, not in bluefish.

The hearing was closed at approximately 8:45 pm.

PORTSMOUTH, NEW HAMPSHIRE - 8 AUGUST 1989

A hearing on the proposed Bluefish FMP was convened at approximately 7:30 pm on 8 August 1989 by Ted Spurr (New Hampshire Department of Fisheries, New England Fishery Management Council, and the Atlantic States Marine Fisheries Commission). Also present were Herbert Drake (New England Fishery Management Council and ASMFC), New Hampshire Senator Roger Heath, Dick Seamens (NMFS Gloucester RO). and David R. Keifer of the Mid-Atlantic Council staff and 23 members of the public.

Messrs. Spurr and Keifer explained the procedures for the hearing and the proposed FMP.

Roland Barnaby (New Hampshire Sea Grant) asked questions about the projections of the commercial catch, closure procedures, how groundfish gill nets would be treated, allocations for New Hampshire, and the impact of the 10 fish limit. Asked the response of other recreational fishermen to the percentage allocations and indicated it was a new concept in new Hampshire. Asked if each Council could make adjustments for their area.

Phillip Souza (recreational fisherman) asked how the data were gathered and whether the FMP is legal since there is no problem currently.

Alan van Gile (commercial fisherman) felt the statistics were low. Opposed the FMP because catches in other States could affect what happens in New Hampshire. Wanted to know what would happen is bluefish were caught accidentally. Wanted to know what would happen if the quota is reached and there are bluefish in the cod nets. He is opposed to the FMP because of concerns with a quota.

Herbert Poula stated that the 12" limit does not mean much in New Hampshire and the 10 fish limit is ridiculous. If there is a size limit it should be on small fish, the large bluefish will die anyway.

Bob Boiland stated that bluefish eat and drive away more important fish. The FMP regulates fishermen, not fish. The FMP should not be implemented.

The hearing adjourned at approximately 8:30 p.m.

PEABODY, MA - 9 AUGUST 1989

A hearing on the proposed Bluefish FMP was convened at approximately 7:15 pm on 9 August 1989 by Phillip Coates (Massachusetts Department of Fisheries, New England Fishery Management Council, and the Atlantic States Marine Fisheries Commission). Also present were William Brennan (Maine Department of Fisheries, New England fishery Management Council, and Atlantic States Marine Fisheries Commission),Richard Allen (New England Fishery Management Council), Randy Fairbanks (Massachusetts Division of Fisheries), Jack Terrill and Harry Mears (NMFS Gloucester RO), and David R. Keifer of the Mid-Atlantic Council staff and 17 members of the public.

Messrs. Coates and Keifer explained the procedures for the hearing and the proposed FMP.

Clifford Jones (Northeast Charterboat Captain's Assn. and Quadrant Technologies, Inc.) submitted written statements from both organizations supporting the preferred alternative (Attachments 8 and 9).

Kemp Maples (Massachusetts Wildlife Federation) supported the 10 fish possession limit. Recognizes the large boats need 10 fish.

Les Smith (American Sportfishing Assn) supports the preferred alternative, but questions allowing the commercial fishery to expand to 20%. He reviewed habitat problems (FMP section 6) and encouraged implementation of the habitat recommendations.

Tony Talantino supports the preferred alternative, but questions allowing the commercial fishery to expand to 20%. He wanted to know if the recreational fishery would be cut first if a problem developed.

Clifford Jones asked if the commercial and recreational fisheries opportunistic fisheries.

Fred Steel (Massachusetts Striped Bass Federation) supports the preferred alternative, but questions allowing the commercial fishery to expand to 20%.

Les Smith indicated the bluefish catch was down.

Mike Hintlian wanted to know what evidence would be used in a stock assessment. Indicated the 10 fish limit was excessive.

Tony Talantino indicated that the 10 fish limit was excessive.

Richard Driscoll wanted to know how the FMP would be changed based on comments.

Joe Iudicone was concerned with wasted fish.

Robert Spiro stated bluefish do not freeze and questioned why anyone would want more than 10 fish.

The hearing was closed at approximately 8:30 pm.

HYANNIS, MA - 10 AUGUST 1989

A hearing on the proposed Bluefish FMP was convened at approximately 7:10 pm on 10 August 1989 by David Pierce (Massachusetts Department of Fisheries, New England Fishery Management Council. Also present were Randy Fairbanks (Massachusetts Division of Marine Fisheries and Atlantic States Marine Fisheries Commission); Rich Ruais (New England Fishery Management Council); Karen Bugley, Virginia Fay, and Bob Lawton (Massachusetts Division of Marine Fisheries); and David R. Keifer of the Mid-Atlantic Council staff and 15 members of the public.

Messrs. Pierce and Keifer explained the procedures for the hearing and the proposed FMP.

Howard Anderson (charter boat operator and commercial fisherman) asked what an individual transferable quota was and, after an explanation, indicated he did not like it.

Robert Bolduc (charter boat operator) asked what changes had been made from the original bluefish FMP.

Dick Andreas how the first objective was to be attained and how enforcement was to be carried out.

Bob Andrews (charter boat operator and member of the ASMFC Citizens Advisory Committee, representing Cape Cod Charter Boat Assn [with 122 members]) commented on the intent to have State and Federal coordinated enforcement.

Disk Andres asked how the commercial 20% would be accounted for. When are party boats commercial? Are commercial landings data collected on a daily basis?

Tom Smith (commercial fisherman) asked how the FMP would regulate gill nets in Massachusetts Bay.

Howard Anderson (Striped Marine) asked if the same rules would apply in State waters and in the EEZ. Asked if the Council would go by what the majority wanted.

Bob Andrews (charter boat operator and member of the ASMFC Citizens Advisory Committee, representing Cape Cod Charter Boat Assn [with 122 members]) asked about the procedure for adjusting the possession limit.

George Ministeri stated the permit to sell bluefish should have a higher price than current permits so that a person would actually have to be a commercial fishermen to exceed the possession limit.

Bob Andres asked how the FMP was received in other States.

Bob Andrews (charter boat operator and member of the ASMFC Citizens Advisory Committee, representing Cape Cod Charter Boat Assn) indicated the Massachusetts Cape Cod Charter Boat Assn. wants the possession limit reduced to 5 fish. They support the limit but fell that 10 fish is too high.

Mario Costa (charter boat operator) indicated that 5 fish is more than enough, but is concerned if the limit were reduced to 3.

Tom Smith (commercial fisherman) indicated if there is a size limit it is more important to limit small fish.

Bob Andrews indicated that he has made the same number of bluefish trips in 1989 as he made in 1988 but his catch is down 57%. He indicated he keeps daily logs.

Bob Singleton (charter boat captain) identified a study of bluefish migrations by U. Mass at Amherst.

Lewes MacKeilvr said he had heard reports of large schools of bluefish offshore.

Bob Andrews (charter boat operator and member of the ASMFC Citizens Advisory Committee, representing Cape Cod Charter Boat Assn [with 122 members]) indicated he supported the FMP.

Tom Smith (commercial fisherman) asked how the stock assessment was done.

Bob Singleton (charter boat operator) asked if there were programs for monitoring bluefish.

The hearing was closed at approximately 8:20 pm.

11 AUGUST 1989 - GALILEE, RI

A public hearing on the proposed Bluefish Fishery Management Plan was held at the Dutch Inn in Galilee, RI, on 11 August 1989. David Borden, representing the New England Fishery Management Council opened the hearing at approximately 7:25 pm. Also present were John A. Stolgitis (RI Division of Fish and Wildlife and the Atlantic States Marine Fisheries Commission); Robert Smith and Richard Allen (New England Fishery Management Council); Frank L. Papa (DEM Enforcement); Arnold Butzinger, Dick Sisson, and Thomas Halauik (RI MFC); and David R. Keifer of the Mid-Atlantic Council staff and 13 members of the public.

Mr. Freeman made opening remarks, following which Dave Keifer reviewed the proposed FMP and the alternatives considered by the Council and ASMFC.

Nick Puska asked if the FMP was based on one stock or several stocks.

Bill Mackentosh asked how the annual catch was to be projected. When will there be enough data or are there enough data now. Are size limits being considered along with the possession limit and if not, why not.

John Stolgitis asked if the 20% commercial quota means there is an 80% recreational quota. How was the possession limit determined? Is the possession limit between 3 and 10 to stringent? What is the federal permit?

Bill Huntley asked why the commercial allocation is being increased to 20%.

Dave Preble (charter boat operator) stated bluefish are important to his business. He supports the FMP, but is concerned that the Regional Director may be able to reduce the possession limit to 3 fish arbitrarily.

Bob Smith asked what determines commercial from recreational. Is there a definition of a hook and line fisherman that sells his catch. How is commercial defined?

Bill Huntley (party boat operator) stated the possession limit created a problem for party boats if it applied to each individual on board. If the limit were 10 fish average for the passengers on board it would be the same as the limit on the charter boats and would be workable.

Dave Preble said that averaging the catch on party boats was a good idea. Asked what effect the 10 fish limit would have on the catch relative to MSY. Stated he supports the FMP completely.

Bill Huntley said several times a year he takes fishermen on his party boat at no cost and fishes for soup kitchens. Would the possession limit apply in this case?

John Reno stated he supported the FMP but was concerned with the possession limit falling to 3 while the commercial fishery could grow to 20%.

Bill Mackintosh (commercial fisherman) supports no growth in the commercial fishery because, if the price goes up, more rod and reel fishermen will sell their catch and the traditional commercial fishermen will not benefit.

John Stolgitis asked if enforcement was to be at the point of landing.

Frank Papa asked if it was legal to fillet at sea.

John Stolgitis indicated that some individuals with permits to sell bluefish go on party boats.

John Reno supported the idea of averaging the catch on party boats.

Arnold Butzinger supported the idea of averaging the catch on party boats. Asked if commercial boats could move up the coast as the quota in a particular State is taken.

Bill Huntley supported the idea of averaging the catch on party boats. Believes the question of filleting must be resolved.

John Stolgitis asked the time table for FMP approval. Does it require unanimous ASMFC approval?

Bill Mackintosh would like to see rod and reel commercial segregated from other commercial. Rod and reel should not be allowed to jump to commercial.

Bill Huntley said he agreed with Bill Mackintosh.

Dick Allen said there is a problem with implementation of commercial controls. The method of allocation is irrational because it is based on 1978-1987 data. The way the FMP is written, highly efficient gears could be banned in one year, the catch would drop, the highly efficient gears could become legal, the catch increase, the highly efficient gears are again banned, and on and on.

Bill Mackintosh said alternative 7 should be implemented right away, at least by Rhode Island.

Arnold Butzinger supported alternative 7 also.

Dick Allen stated he thinks that, while some work needs to be done to the FMP, it is a good idea to implement it.

The hearing adjourned at approximately 8:30 p.m.

APPENDIX 5. RESPONSES TO COMMENTS

INTRODUCTION

A number of comments were received by the Council during the public hearing and review process. The responses to the questionnaires given to the public at the hearings indicate that 75% of the responses favored some sort of bluefish plan with 22% in favor of the preferred alternative, 26% favoring angler catch limitations other than the preferred alternative, 23% favoring control on the commercial fishery other than the preferred alternative, and 29% indicating that no action was necessary (Table 1). Written comments received by the Council indicate that approximately 41% favored the preferred alternative, with over 66% indicating the some sort of catch restrictions were appropriate (Table 2).

Comments can be classified into several general categories as they regard the Plan and the proposed management measures. Public comments/questions are in bold followed by the response from Council staff.

THE PLAN

1. A plan is not necessary at this time since the stocks are not overfished.

The Council and the ASMFC have decided that, because of the extreme value of bluefish to the nation, this resource should be managed in a proactive manner rather than reacting to a crisis situation after the bluefish stock has been seriously depleted or collapsed. Bluefish are the target of the largest recreational fishery along the Atlantic coast and one of the few that have not been decimated by overharvest.

THE POSSESSION LIMIT

1. A possession limit is totally unjustified since bluefish are at high levels of abundance.

The possession limit was developed in response to data that indicated that the fishery was operating at or near maximum sustainable yield and that juvenile recruitment had been low in recent years.

The best estimates of maximum sustainable yield for bluefish range from 140 to 150 million lbs. Since 1979, total catches (which include commercial landings and recreational catch) have exceeded 140 million pounds six times; each year from 1979 to 1983 and also in 1986. The catch exceeded 150 million pounds in 1979, 1980, and 1983. These figures would suggest that the stock is fully exploited. Because the recreational fishery accounts for approximately 90% of the catch, the purpose of the possession limit would be to stabilize or cap the fishing mortality rate at current levels and prevent overfishing.

A recent stock assessment indicated that bluefish year class recruitment was highly variable and that three strong year classes had been produced at irregular intervals since 1974, one each in 1977, 1981 and 1984. Low values were recorded in 1986 and 1987 and the 1988 value was the lowest on record.

These indices of juvenile recruitment can be used with estimates of natural and fishing mortality to predict future relative population sizes of adult bluefish. These extrapolations indicate that high population levels of bluefish in recent years have been supported by the strong year classes in 1981 and 1984. Population sizes peaked in the mid-1980s and have declined steadily since then. In fact, the 1988 east coast recreational bluefish catch was approximately 16 million fish, down from a reported 33 million in 1987. Without the production of a strong year class in 1989, it is probable that the population will likely continue to decline into the 1990s.

If current trends continue, recreational pressure will likely increase in the near future. By 1990, 75% of the US population will live within 50 miles of the coastline including the Great Lakes. One of the major reasons for this increase is the attraction of water related leisure activities, including recreational fishing. An increase in angler pressure may result in an increase in fishing mortality that would adversely affect the stock and angler catches. If recent trends continue, it is probable that angler effort will continue to increase, at least for a few years, as the bluefish population declines. In fact, coastwide, bluefish recreational catch per angler trip peaked in 1981 and has since trended downward.

Unregulated recreational harvest, coupled with the fact that no strong year class has been produced since 1984, could lead to excessive levels of fishing mortality that will result in stock decline and possible collapse. Emergency measures would be required under the Magnuson Act to prevent overfishing. Such measures would have to be implemented under stressful circumstances without the benefit of much more information

than exists at present. In addition, these measures would remain in effect for no more than 180 days, a length of time which would not protect the resource adequately.

2. A more/less restrictive possession limit or size limit is appropriate.

Appendix 1 of the Plan contains a total of six alternatives to the possession limit and two size limit alternatives as well as the analyses indicating why they were rejected as the preferred alternative.

3. The possession limit would do nothing to address objective 4 of the plan (i.e., prevent recruitment overfishing).

The possession limit will cap fishing mortality and protect the spawning stock. A 10 fish possession limit would have affected 7.3% of the angler trips in 1987. In addition, assuming a post-release mortality of 50%, the percent reduction in the number of bluefish killed by anglers would have been 9.8% or over 3 million fish. This measure, while seen by some as too high, can be effective and does meet objective 4 criteria.

4. Anglers fishing on party and charter boats would be the group most impacted by a possession limit.

Analysis of MRFSS data indicate that 88.3% of the anglers fishing from party or charter boats in 1987 caught 10 or less bluefish per trip. Thus, approximately 11.7% of these anglers, coastwide, would have been impacted by a 10 fish limit in 1987. This is slightly more than the 7.3% of all coastwide anglers that would have been effected by the proposed limit. However, party and charter boats accounted for only approximately 14% of the recreational catch (by number) in 1987. Therefore, this claim of greater impact is not true.

5. Why a possession limit instead of a daily limit.

Discussions between MAFMC and NOAA legal counsel resulted in the current wording of the proposed possession limit. A strict possession limit would prevent some enforcement problems (i.e., with a daily limit a person would have to prove they had been fishing more than one day if their cooler contained more than 10 fish).

6. The predominate consumer groups of bluefish based on survey conducted between 1970 and 1985 are blacks and thus these individuals would be most affected by a possession limit.

This comment is in reference to consumer surveys that were conducted in 1973-74, 1977-78 and 1981 (Hu 1985). The surveys concerned only commercial, processed bluefish products. Therefore, they did not account for consumption of recreationally caught fish. In addition, the 1981 survey indicated that the primary consumers were black and white individuals from northeastern urban and suburban areas. Since the survey dealt with *consumers*, not *anglers*, it supports the management system which is intended to stabilize the resource to assure supplies of bluefish to the traditional commercial market.

7. A possession limit would decrease business for charter and party boat owners and discriminates against the poor and minorities.

United Boatmen, an association of NJ/NY area party and charter boat operators, conducted a survey from July 1 to July 21, 1989, to assess the socio-economic implications of the proposed ten bluefish possession limit. Based on interviews with 190 anglers and 157 consumers, the authors concluded that the ten bluefish limit was a vehicle for discrimination against the poor, minorities, and retired persons, and was therefore of questionable legality. Although the study was a significant effort towards collecting much needed socio-economic data for recreational fisheries, the restricted sample population (i.e., single fishing mode, limited geographic area, short survey period, and exclusion of less successful anglers) precludes generalizations about the bluefish recreational fishery coastwide. The information collected by United Boatmen does not, therefore, support their conclusions.

The stated purpose of the angler survey was to "accurately describe the socio-economic impact of the proposed 10 bluefish, per person, per day limit for the recreational fishery." United Boatmen further stated that "our effort has been directed toward making our sample as representative as possible." The assumption of United Boatmen that party boat anglers in the NJ/NY area who caught and kept more than 10 bluefish are representative of all anglers impacted by the possession limit departs from valid statistical sampling methods. The population impacted by the plan includes all Atlantic coast recreational anglers who catch any number of bluefish by any of several modes of fishing. The United Boatmen angler survey is clearly not representative of the total bluefish recreational fishing community.

The stated purpose of the dockside purchaser survey was to "examine the socio-economic nature of the consumers who purchased fish from the anglers." Purchasers were told that the proposed bluefish FMP "would probably severely limit or curtail availability of Bluefish for sale dockside." In fact, United Boatmen collected no quantitative information from suppliers to the dockside market which could verify this presumption. Notwithstanding this deficiency, they concluded that the 10 bluefish possession limit "will negatively impact consumers who are poor, minorities and retired."

The ten bluefish possession limit is based solely on biological criteria. Despite the conclusions of United Boatmen, poor and minority anglers are in no way excluded from the bluefish recreational fishery and can continue to enjoy catch-related benefits and those benefits not directly dependent on fishing success. The objective of the possession limit is to cap fishing mortality at present levels and protect the spawning stock to ensure the highest availability of bluefish for future generations of recreational anglers, regardless of socio-economic status. In most cases, hook and line fishermen dependent on bluefish for supplemental income may obtain a state or federal permit to exempt them from the possession limit. Finally, the management plan allows for increased commercial landings which is the most efficient means of providing bluefish to a market which serves poor and minority consumers.

COMMERCIAL PERMIT

1. The commercial allocation should be increased above 20% because hook and line fishermen could obtain commercial permits and their catch would then be counted as commercial landings.

The number of recreational fishermen that would obtain commercial permits is unknown but would probably be limited to a percentage of those individuals who regularly catch more than 10 bluefish per trip. In 1987, approximately 7.3% of the angler trips had catches of 10 bluefish or more. In 1988, the MRFSS determined the disposition of all bluefish enumerated in the intercept portion of the survey. Bluefish caught by anglers were tabulated in several categories including "fish sold." Analysis of this 1988 data indicated that 2.2% of the total were sold by the anglers intercepted by MRFSS interviewers coastwide. If these fish had been counted as commercial then the commercial share in 1987 would have increased from 12% to 14%.

2. A commercial permit would allow anglers to evade the possession limit and prohibit permit holders from using these permits on party and charter boats.

The purpose of the permit is to allow commercial hook and line fishermen to take more than the possession limit if they have a commercial permit. Approximately 10% of the commercial landings from 1976 to 1987 were attributed to commercial hook and line fishermen. Obviously, an angler wishing to circumvent the possession regulation could obtain a permit and legally exceed the possession limit. However, the Plan would encourage states to implement fees for a commercial permit of a level sufficient to prevent recreational fishermen from purchasing the permit simply to avoid adherence to the possession limit. The FMP contains language that would allow the use of commercial permits on party and charter vessels. Persons with commercial permits would be required to keep their bluefish separated from the pooled catch and in their possession at all times.

The States of New Hampshire, New Jersey, Virginia, and North Carolina do not require a permit to sell. Under the terms of the hearing draft, anglers landing bluefish caught in the EEZ in those States would be required to obtain a permit from NMFS. The NMFS Regional Director could charge a reasonable fee consistent with the Magnuson Act for the issuance of the federal permit. The actual cost of issuing the federal permit, if properly assessed, could approach the cost of a state permit.

COMMERCIAL CATCH LIMITS

1. Why increase the commercial allocation to 20% when over the last 20 years it has been at 10%? Why allow for an increase in commercial landings if the level of fishing is approaching or at MSY?

The commercial fishery, which represents a small segment of the total bluefish fishery, is largely a bycatch fishery that lands bluefish when the price justifies the effort. At other times bluefish are discarded. If a large market develops, with consequent price increases, commercial landings could theoretically increase without a concomitant increase in fishing mortality as the number of bluefish that were previously discarded by fishermen were landed. Additionally, the requirement that anglers who sell their catch must obtain a permit

will likely lead to more of the hook and line caught and sold bluefish getting into the commercial statistics than was and is the case.

Proposed management measures would establish an allocation of 80:20% between the recreational and commercial fisheries, respectively. This allocation formula recognizes the long term importance of bluefish as the principal marine sport fishing species along the Atlantic coast. The allocation will prevent the development of the commercial fishery to such a point where it adversely affects recreational opportunities, yet allows for growth in the commercial sector. The allocation formula thus recognizes that commercial harvest and sale of bluefish is a moderately valuable economic activity with significant impacts on income and employment in the Atlantic region, but comprises only a small portion of total landings and total value of commercial fisheries in this region.

2. The plan contains no direct reduction in the commercial catch to compliment the proposed reduction in the recreational catch due to the framework measure (i.e., a framework measure, similar to that proposed for the possession limit, should apply to the commercial catch as well).

Because the commercial fishery would be allocated 20% of the total catch, reductions in commercial harvest would have to occur if the possession limit was lowered and recreational catch was reduced under the proposed framework measure.

3. The mechanism to maintain the proportion of use between the recreational and commercial fishery place unreasonable burdens on the commercial fishery for changes in the recreational harvest.

Historically, commercial landings have averaged about 14 million pounds per year since 1979, or approximately 10% of the total bluefish catch along the Atlantic coast. In order to implement controls on commercial fishing, either the recreational fishery must decline significantly or the bluefish market must expand to almost twice its current level. Three scenarios that were developed to estimate the magnitude of changes which need to occur in the bluefish fishery in order to trigger commercial controls are presented in section 9.2.2.1 of the plan. In addition, the decision to implement commercial controls on the bluefish fishery would be based on two separate indices and a two tier approach. This system allows for flexibility in determining when to implement commercial controls by accounting for both steady and rapid changes in both fisheries.

4. Gear definitions would exclude traditional commercial fishermen.

The East Hampton Town Baymen's Association suggests that runaround gill nets used in state waters are traditional gears and not the large mechanized gillnetters or roller rigs that operate in the EEZ and should be the focus of the plan. They suggest a definition that would implement a gear limitation of 1800' in length and 24' in depth.

The FMP provides a state allocation system be implemented if the commercial fishery was projected to equal or exceed the 20% commercial catch limit. Individual states could designate specific management measures best suited to thier state to protect traditional commercial fishermen.

5. Commercial catch restrictions are ambiguous regarding state enforcement.

There were some questions regarding state landing requirements and how they would effect fishing in the EEZ. More stringent state regulations would apply to landings from the EEZ, that is, if a state had more stringent regulations than those in the FMP, a vessel or individual (recreational or commercial) would be required to land under those state regulations. State regulations would not affect fishing in the EEZ.

OTHER

1. There is no waste in the bluefish fishery.

During plan development, waste of bluefish was identified as a problem by marine scientists and concerned citizens in a number of states. During the public hearing process a number of people indicated that waste of bluefish had occurred or was a problem in their state. Admittedly, waste is hard to define and quantify since it can occur with one fish or hundreds, at sea, at the dock, or at home. In 1988, the MRFSS determined the disposition of all fish enumerated in the intercept portion of the survey. Anglers interviewed indicated that 0.2% of the bluefish they caught (approximately 316,000 fish) were thrown back dead or trashed. However, it is probable that anglers would not admit to discarding fish and the survey does not consider the disposition of fish after the interview. Waste in the commercial fishery has not been quantified. However, due to the

nature of the commercial fishery (i.e., the wide variety of gears that harvest bluefish) it is probable that market conditions will ultimately control the amount of bluefish discarded by commercial fishermen.

2. How will the plan be enforced and at what increased level of manpower and funding.

The proposed regulations would be enforced in the EEZ by the USCG and NMFS and in state waters by state enforcement personnel. A letter from T.D. McLaughlin, Commander, U.S. Coast Guard, Atlantic Area indicates that "the enforcement provisions of the plan are straightforward and easily enforceable. We foresee no difficulty in carrying out necessary at sea enforcement of the associated regulations so long as Federal and State bluefish limits coincide. As you note in Section 9.2.2.3 of the plan, we do not anticipate dedicated enforcement effort involving bluefish. We do expect a significant amount of enforcement of the bluefish fishing regulations in conjunction with boardings of recreational vessels, especially during the summer months...these costs are likely to be small, but actual enforcement could be considerable over the course of a season."

Enforcement costs (NMFS and USCG) for the recreational possession limit would be minimal from a federal perspective since the limit would be enforced primarily dock side with maximum use of existing state resources. If the market for bluefish does not develop such that commercial landings increase to 20% of the total catch, no new enforcement costs are attributable to the proposed management measures.

3. Recreational fishermen cannot deplete a stock of marine fish.

Approximately 37 million angler trips were directed at bluefish coastwide in 1987. Anglers caught over 32 million fish which weighed approximately 110 million pounds and represented 88% of the total catch. The best available stock assessment information indicates that fishing mortality rates are at or approaching rates that would allow for the highest sustainable yields of bluefish. Since recreational fishermen account for the largest part of this mortality, an increase in angling pressure clearly would result in declines in sustainable yield and recruitment and, at higher effort levels, stock collapse. Changes in price and improvements in efficiency of fishing gear in the last few years make recreational fishing a scientific venture and have definitely increased the potential to significantly impact the resource.

4. How will management measures prevent a cyclic decline of the bluefish population.

Marked fluctuations in abundance historically characterize populations of bluefish in the western North Atlantic and it is possible that the resource will decline in the future even with management measures. However, unregulated fishing pressure coupled with declining recruitment could lead to serious and sustained stock decline. In addition, even with a decline in the resource, user groups still utilize the available resource and management is necessary to allow for equitable allocation among all user groups.

In other words, the FMP cannot assure a cyclic decline will not occur, but it can reduce the slope and severity of such a decline.

5. Commercial and recreational statistics collected by the NMFS are inaccurate.

Commercial and recreational statistics are collected by NMFS using reliable, statistical techniques and collection procedures. The Council is charged with using the best available information in the development of their FMPs. The Council and ASMFC have determined that the data in the FMP are the best data available.

6. The FMP will allow for the development of a marine recreational license.

The plan does not contain such a provision.

7. Habitat should be the primary concern since absence of food and degradation of spawning habitat/nursery areas are responsible for possible declines in the bluefish stock.

The Council and ASMFC recognize the importance of habitat to the health of the bluefish stocks. In fact, Chapter 6 of the plan contains detailed habitat conservation and restoration recommendations. However, there is no evidence to indicate that a decline in the abundance of prey or degradation of spawning/nursery areas are responsible for possible declines in the bluefish stock.

8. There is no socio-economic data in the plan.

Pursuant to the Magnuson Act, Executive Order 12291, the Regulatory Flexibility Act, and the Paperwork Reduction Act, when preparing an FMP, the Council is required to analyze economic and social impacts of proposed regulations on individuals and businesses engaged in the fishery. Section 8 of the FMP contains descriptions of the recreational and commercial fisheries, domestic markets, and international trade. Section

9 contains an analysis of anticipated impacts of the hook and line possession limit and commercial regulations. These sections of the FMP relied heavily on the best available information from various published and unpublished sources including the NMFS, the Sport Fishing Institute, and peer reviewed scientific literature. All sources are identified in Section 10 of the FMP.

9. The angler possession limit is not necessary since it was not part of the original Bluefish FMP and disapproval of the original FMP was based on reasons other than not meeting national standard 1.

One commentor (a former Council member) made the above statement. In fact, one of the reasons that the original Bluefish FMP was disapproved was that it did not meet national standard #1. The disapproval letter of 7 September 1984 from Acting Regional Director Richard H. Schaefer to Council Chair Robert L. Martin stated "National standard 1 requires that conservation and management measures shall prevent overfishing. Although I recognize that considerable expansion of the present level of fishing could lead to overfishing, or affect availability of bluefish, the measures proposed in the FMP cannot prevent this occurrence. The FMP measures provide control only for commercial fishing in the FCZ, which comprises, at present, less than 5 percent of the fishery. It makes no provision to limit the growth of recreational fishing, which could be significant in contributing to overfishing, since it comprises over 90 percent of the fishery. It, therefore, fails to meet national standard 1."

Table 1. Responses to Questionnaire (count is number of responses, not individuals responding)

	FMP	1	2.1	2.2	2.3	2.4	2.5	2.6	3.1	3.2	3.3	3.4	4	5	6	7	All
8/7 Stuart, FL	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
7/24 Charleston, SC.	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/25 Morehead City, NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/26 Manteo, NC	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
7/27 Hampton, VA	-	-	-	1	2	-	-	-	1	-	-	-	-	-	-	-	4
7/24 Annapolis, MD	7	15	-	2	3	5	-	-	-	5	1	-	-	-	-	2	40
7/26 Lewes, DE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8/1 Essington, PA	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7/25 Cape May Ct Hse, NJ	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
7/27 Wall, NJ	-	6	-	-	-	-	-	-	2	-	-	-	-	-	-	-	8
7/31 Old Westbury, NY	10	-	2	1	-	-	-	-	-	2	-	-	-	-	-	1	16
8/1 Riverhead, NY	6	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	9
8/3 Bridgeport, CT	1	-	-	-	2	2	1	-	-	1	-	-	-	-	-	-	7
8/2 Mystic, CT	-	-	1	-	-	-	-	-	-	-	-	1	-	-	-	-	2
8/11 Galilee, RI	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1
8/10 Hyannis, MA	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
8/9 Peabody, MA	1	-	1	-	-	-	-	-	-	1	-	-	-	-	-	-	3
8/8 Portsmouth, NH	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
8/7 Portland, ME	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total from hearings	33	26	5	4	8	7	1	-	3	9	1	1	-	-	-	3	101
Mail in	11	33	15	-	3	6	-	-	6	17	6	2	-	1	-	2	102
TOTAL	44	59	20	4	11	13	1	-	9	26	7	3	-	1	-	5	203
%*	22	29	10	2	6	7	1	-	5	12	4	2	-	1	-	3	100

* = may not sum to 100 because of rounding.
One write-in approved of an FMP but with a 20 fish limit on party and charter boats which would allow an angler with a permit to exceed the limit on party and charter boats.

Table 2. Public Opinion of the Bluefish FMP as Indicated in Comment Letters.

State of Origin	Favor FMP	No Action	Catch Limitations	Identified Waste	Other
ME	1	1	-	-	-
NH	-	-	-	-	-
MA	-	-	2	1	1
RI	1	-	-	-	-
CT	2	5	2	2	-
NY	15	1	7	4	-
NJ	24	18	11	4	-
PA	4	2	4	3	1
DE	2	-	1	-	-
MD	1	2	3	-	-
VA	1	1	-	1	1
NC	3	1	1	-	-
SC	-	-	-	-	-
GA	-	-	-	-	-
FL	1	-	4	1	-
OR	1				
NWF			1		
SFI		1			
NMMA		1			
NFI		1			

Notes: "Catch Limitations" include letters that advocated stricter possession limits, possession limits with size limits, size limits, commercial controls other than the preferred alternative, and catch limits without description. "Other" includes letters that did not take a position on the Bluefish FMP, but were concerned with other species, such as weakfish or summer flounder, or other issues such as pollution.

APPENDIX 6. REGULATIONS (55 *FR* 18729 - 18735

PART §628 -- ATLANTIC BLUEFISH FISHERY

Subpart A - General Provisions

Sec.

Subpart B - Management Measures

Authority: 16 U.S.C. 1801 *et seq*.

Subpart A - General Provisions

§628.1 Purpose and scope.

The regulations in this part implement the Fishery Management Plan for the Bluefish Fishery, which was prepared and adopted by the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission in cooperation with the New England and South Atlantic Fishery Management Councils. These regulations govern the conservation and management of Atlantic bluefish in the EEZ.

§628.2 Definitions.

In addition to the definitions in the Magnuson Act and in §620.2 of this chapter, the terms used in this part have the following meanings:

Bluefish means *Pomatomus saltatrix*. Bluefish, for the purposes of this part, refers to bluefish in the Atlantic EEZ from the eastern coast of Florida to Maine.

Charter or party boat means any vessel that carries passengers for hire to engage in fishing.

Commission means the Atlantic States Marine Fisheries Commission.

Committee means the Bluefish FMP Review and Monitoring Committee of the Council.

Council means the Mid-Atlantic Fishery Management Council.

Fishery Management Plan (FMP) means the Fishery Management Plan for the Bluefish Fishery and any amendments thereto.

Fishing trip means a period of time during which fishing is conducted, beginning when the vessel leaves port and ending when the vessel returns to port.

NEFC means the Northeast Fisheries Center, NMFS, Water Street, Woods Hole, MA 02543.

Pair trawl means a net attached to and towed by two vessels.

Person who receives bluefish for commercial purposes means any person (excluding representatives of governmental agencies) engaged in the sale, barter, or trade of bluefish received from a fisherman, or one who transports bluefish from a fisherman.

Purse seine means a floated and weighted net that is drawn closed by means of a draw string threaded through rings attached to the bottom of the net.

Regional Director means the Director, Northeast Region, NMFS, 1 Blackburn Drive, Gloucester, MA 01930, telephone 508-281-9243, or a designee.

Regulated fishery means any fishery of the United States which is regulated under the Magnuson Act.

Runaround gillnet or encircling gillnet means a rectangular net placed upright in the water column in a circular fashion with an opening equal to or less than $\frac{1}{4}$ the length of the net or with an opening greater than $\frac{1}{4}$ the length of the net if the opening is obstructed in any fashion.

Vessel length means that length specified on State registration or U.S. Coast Guard documentation.

§628.3 Relation to other laws.

(a) The relation of this part to other laws is set forth in §620.3 of this chapter and paragraph (b) of this section.

(b) Additional regulations governing fishing for bluefish by foreign vessels in the EEZ are set forth in 50 CFR Part 611, Subparts A and C.

§628.4 Permits and fees.

(a) *General.*

(1) Any person selling bluefish harvested in the EEZ must have either a valid permit issued under this part or a valid State of landing permit to sell bluefish.

(2) Any person who applies for a permit under this section, or who uses a valid state permit to sell fish harvested from the EEZ, must agree as a condition of using either permit that his/her bluefish catch and gear (without regard to whether fishing occurs in the EEZ or landward of the EEZ, and without regard to where such bluefish or gear are possessed, taken, or landed) will be subject to all the requirements of this part. All such catch and gear will remain subject to any applicable State or local requirements. If a requirement of this part and a conservation measure required by a state or local law differ, any person issued a permit under this section or using a valid State permit to sell bluefish harvested from the EEZ must comply with the more restrictive requirement.

(b) *Application.*

(1) An application for a permit under this part must be signed by the applicant on an appropriate form obtained from the Regional Director and submitted at least 30 days prior to the date on which the applicant desires to have the permit made effective.

(2) An applicant must provide all the following information:

(i) The name, mailing address, including zip code, and telephone number of the applicant;

(ii) The height, weight, hair color, and eye color of an individual applicant;

(iii) If the applicant represents a corporation, the certificate of incorporation;

(iv) Percentage of annual income derived from the sale of bluefish; and

(v) Any other information required by the Regional Director.

(3) Upon receipt of an incomplete or improperly executed application, the Regional Director will notify the applicant of the deficiency in the application. If the applicant fails to correct the deficiency within 21 days following the date of notification, the application will be discarded.

(4) Any change in the information specified in paragraph (b)(2) of this section must be submitted by the applicant in writing to the Regional Director within 15 days of the change.

(c) *Fees.* The Regional Director may charge a fee consistent with the Magnuson Act for the issuance of the federal permit.

(d) *Issuance.* The Regional Director will issue a permit to the applicant no later than 30 days from the receipt of a completed application.

(e) *Duration*. A permit will continue in effect until December 31 of each year unless it is revoked, suspended, or modified under 15 CFR Part 904.

(f) *Alteration*. No person may alter, erase, or mutilate any permit. Any permit which has been altered, erased, or mutilated is invalid.

(g) *Replacement*. Replacement permits may be issued by the Regional Director when requested in writing by the applicant, stating the need for replacement and the fishing permit number assigned. An application for a replacement permit will not be considered a new application. The Regional Director may charge a fee consistent with the Magnuson Act for the issuance of the replacement permit.

(h) *Transfer*. Permits issued under this part are not transferable or assignable. A permit will be valid only for the person for which it is issued.

(i) *Display*. A person issued a permit under this section must be able to present the permit for inspection when requested by an authorized officer.

(j) *Suspension and revocation*. Subpart D of 15 CFR Part 904 (Civil Procedures) governs the imposition of sanctions against a permit issued under this part.

§628.5 Prohibitions.

In addition to the general prohibitions specified in §620.7 of this chapter, it is unlawful for any person to do any of the following:

(a) Possess in or harvest from the EEZ Atlantic bluefish in excess of the daily possession limit specified in §628.21, unless that person has a permit meeting the requirements of §628.4(a);

(b) Possess, have custody or control of, ship, receive, barter, trade, transport, offer for sale, sell, purchase, import, or export any bluefish taken, retained, or landed in violation of the Magnuson Act, or any regulation or permit issued under the Magnuson Act;

(c) Fish under a permit meeting the requirements of §628.4(a) in violation of a notice of restriction published under §628.22;

(d) Fish in the EEZ under a permit meeting the requirements of §628.4(a) during a closure under §628.23;

(e) Fail to report to the Regional Director within 15 days, any change in the information in the application for a permit under §628.4;

(f) Fail to present any permit meeting the requirements of §628.4(a) upon request of an authorized officer;

(g) Sell any Atlantic bluefish harvested from the EEZ unless that person has a permit that meets the requirements of §628.4(a);

(h) Make any false statement, written or oral, to an authorized officer concerning the taking, catching, harvesting, landing, purchase, sale, possession, or transfer of any Atlantic bluefish; or

(i) Violate any other provision of this part, the Magnuson Act, or any regulation or permit issued under the Magnuson Act.

§628.6 Facilitation of enforcement.

See §620.8 of this chapter.

§628.7 Penalties.

See §620.9 of this chapter.

Subpart B - Management Measures

§628.20 Fishing year.

The fishing year is from January 1 through December 31.

§628.21 Possession limit.

(a) *Possession limit.*

(1) No person shall possess more than ten bluefish unless he/she has a permit meeting the requirements of §628.4(a).

(2) Bluefish caught while in possession of a permit meeting the requirements of §628.4(a) must be kept separate from the pooled catch and in the possession of the permit holder at all times.

(3) If Atlantic bluefish are filleted into two or more sections, such fillets shall be deemed to be whole Atlantic bluefish using a ratio of 2:1 (two fillets to one whole fish). If Atlantic bluefish are filleted into a single (butterfly) fillet, such fillets shall be deemed to be whole Atlantic bluefish.

(4) Atlantic bluefish harvested from party and charter boats or other vessels carrying more than one person may be commingled. Compliance with the daily possession limit will be determined by dividing the number of Atlantic bluefish on board by the number of persons on board, provided, however, that if a person or persons on board are fishing under a permit meeting the requirements of §628.4(a), his/her catch shall not be counted for determining compliance with the possession limit if it is maintained in the possession of such person(s). If there is a violation of the possession limit on board a vessel carrying more than one person, the violation shall be deemed to have been committed by the owner and/or operator.

(b) *Adjustment of the possession limit.* The Secretary may adjust the possession limit within a range of 0 to 15 Atlantic bluefish based on a recommendation of the Council and Commission. The Secretary will publish a notice of any proposed adjustment, together with the basis for such adjustment in the *Federal Register.* The public may comment on the adjustment for 15 days after the date of the publication. After consideration of public comments, the Secretary may publish a notice of any adjustment in the possession limit in the *Federal Register.*

§628.22 Catch monitoring, commercial controls, and gear restrictions.

(a) The Committee will review bluefish catch statistics, a projection of the commercial share for the next fishing year, and the most recent stock assessment prior to August 15th of each year. The Committee will report to the Council and the Commission.

(b) The Council and the Commission will review the report of the Committee. If the report indicates that the commercial catch for the next fishing year will equal or exceed 20 percent of the total catch (recreational catch plus commercial landings) of Atlantic bluefish, the Council and Commission will propose the commercial controls to be implemented at the start of the upcoming year. If the report indicates that the commercial catch will be greater than 17 percent but less than 20 percent of the total catch of Atlantic bluefish, or that the commercial share for the last full year is 50 percent greater than the previous year's commercial share, the Council and Commission will determine whether commercial controls are necessary. In making such a determination the Council and Commission will consider:

(1) The most recent catch data;

(2) Trends in the fishery; and

(3) Any other relevant factors.

(c) If the catch in the commercial fishery is projected to equal or exceed the 20 percent limit during the upcoming year, then a State allocation system will be implemented. This will entail the use of landings data from the most recent 10-year period for each State, to determine the average percentage of each State's coastwide commercial landings. These percentages will be used to determine the amount of the coastwide quota allocated to each State. Quotas will apply to landings in each State, regardless of where the bluefish were caught.

(d) If whole Atlantic bluefish are processed into fillets at sea, then fillet weight will be converted to whole weight at the State of landing by multiplying fillet weight by 2.5. If whole Atlantic bluefish are headed and gutted at sea, then the conversion is accomplished by multiplying headed/gutted weight by 1.5.

(e) If the Council concludes that the increase in the commercial catch is attributable to the use of purse seines, pair trawls, or encircling (runaround) gillnets, then it will propose restrictions applicable to that gear type. In determining what restrictions are necessary to control the catch of Atlantic bluefish by commercial fishermen using these gear, the Council may consider:

(1) Trip limits;

(2) Area closures;

(3) Banning the use of these gear types; or

(4) Any other measures it deems appropriate.

(f) The Regional Director will review any gear restriction(s) proposed by the Council. If the Regional Director concurs that the proposed gear restrictions are consistent with the goals and objectives of the FMP, the national standards, and other applicable law, the Regional Director will recommend that the Secretary publish a notice of the proposed restriction in the *Federal Register* with a 30-day public comment period. After consideration of public comments, the Secretary may publish a notice in the *Federal Register* specifying the final restriction(s).

(g) The Secretary may rescind a notice of restriction in the *Federal Register* if he finds, based on the advice of the Council through the process set forth in paragraphs (a) and (b) of this section, that the restriction is no longer necessary.

§628.23 Closure of fishery.

The Regional Director shall close the commercial fishery for Atlantic bluefish in the EEZ if the commercial fisheries for Atlantic bluefish have been closed in all Atlantic coastal States.

APPENDIX 7. ABBREVIATIONS AND DEFINITIONS OF TERMS

Act (MFCMA) - the Magnuson Fishery Conservation and Management Act of 1976, as amended, 16 USC 1801 et seq.

ASMFC - the Atlantic States Marine Fisheries Commission.

CFR - Code of Federal Regulations.

Council (MAFMC) - the Mid-Atlantic Fishery Management Council.

CPUE - catch per unit of effort.

Domestic Annual Harvest (DAH) - the capacity of US fishermen, both commercial and recreational, to harvest and their intent to use that capacity.

Domestic Annual Processing (DAP) - the capacity of US processors to process, including freezing, and their intent to use that capacity.

Exclusive Economic Zone (EEZ) - the zone contiguous to the territorial sea of the US, the inner boundary of which is a line coterminous with the seaward boundary of each of the coastal States and the outer boundary of which is a line drawn in such a manner that each point on it is 200 nautical miles from the baseline from which the territorial sea is measured.

F - instantaneous rate of fishing mortality; the proportion of the population caught in a small period of time.

$F_{0.1}$ - the rate of fishing mortality for a given method of fishing at which the increase in yield per recruit for a small increase in fishing mortality results in only 10% increase in yield per recruit for the same increase in fishing mortality from a virgin fishery.

fishing year - the 12 month period beginning 1 January.

FMP - fishery management plan.

FL - fork length

FR - Federal Register.

GIFA - Governing International Fishery Agreement.

ICNAF - International Commission for the Northwest Atlantic Fisheries (replaced by NAFO).

internal waters - marine waters landward of the territorial sea.

joint venture processing (JVP) - the quantity of fish to be transferred at sea from US fishing boats to foreign processing vessels (DAP + JVP = DAH).

M - instantaneous rate of natural mortality; the proportion of the population dying in a small period of time from all causes except fishing.

maximum sustainable yield (MSY) - The largest average annual catch or yield in terms of weight of fish caught by both commercial and recreational fishermen that can be taken from a stock under existing ecological and environmental conditions.

MRFSS - Marine Recreational Fishery Statistics Surveys, 1979 - 1987.

NAFO - Northwest Atlantic Fisheries Organization.

NEFC - the Northeast Fisheries Center. A group of scientific research laboratories of the National Marine Fisheries Service.

NMFS - the National Marine Fisheries Service of the National Oceanic and Atmospheric Administration (NOAA).

NOAA - the National Oceanic and Atmospheric Administration of the US Dept. of Commerce.

OY - Optimum Yield.

Pair Trawls - Two vessels fishing together with one trawl between (attached to) both vessels.

PMP - preliminary fishery management plan. A PMP regulates foreign, but not domestic, fisheries.

Purse seine - an encircling type of gear designed to catch schooling species. The net is actually a long wall of webbing without a prominent bunt or bag. The top edge is floated by a series of corks (the cork line) and the bottom edge is weighted with a number of leads (the lead line). After a school of fish is encircled, the net is pursed by closing the draw string which is threaded through a series of rings along the bottom of the net below the lead line.

Runaround gill net or encircling gill net - a gill net enclosing an area of water with an opening of less than $\frac{1}{4}$ the length of the net and a gill net enclosing an area of water with an opening equal to or greater than $\frac{1}{4}$ the length of the net if the opening is obstructed to keep fish in the net. If the opening is greater than $\frac{1}{4}$ the length of the net or the opening is not obstructed to keep fish in the net, the net is not a runaround gill net or an encircling gill net for purposes of these regulations.

recruitment - the addition of fish to the fishable population due to migration or to growth.

Regional Director (RD) - the Regional Director, Northeast Region, NMFS.

Secretary - the Secretary of Commerce, or his designee.

state waters - internal waters and the Territorial Sea.

Total Allowable Level of Foreign Fishing (TALFF) - that portion of the Optimum Yield made available for foreign fishing.

Territorial Sea - marine waters from the shoreline to 3 miles seaward.

TL - total length.

traditional uses - defined as the commercial bluefish fishery not exceeding 20% of the total bluefish catch.

USDC - US Department of Commerce.

year class - the fish spawned or hatched in a given year.

yield per recruit - the expected yield in weight from a single recruit.

z - instantaneous rate of total mortality; the ratio of numbers of deaths per unit of time to population abundance during that time.