REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN FOR **BLUEFISH** ***(Pomatomus saltatrix)***

1999 FISHERY

Prepared by:

Robert Beal (ASMFC)

Bluefish Plan Review Team

Elliot Atstupenas (USFWS)
Herb Austin (VIMS)
Louis Daniel (NC)
John Mason (NY)
Chris Moore (MAFMC)
Roger Pugliese (SAFMC)

REVIEW OF THE INTERSTATE FISHERY MANAGEMENT PLAN FOR BLUEFISH *(Pomatomus saltatrix)*

I. Status of the FMP

The FMP for the Bluefish Fishery was adopted by ASMFC's member states in October, 1989 and approved by the Secretary of Commerce in March, 1990. This FMP, the result of a joint effort by the ASMFC and the Mid-Atlantic Fishery Management Council (MAFMC), is unique in that it represents the first management plan to be jointly developed by an interstate commission and a Federal Fishery Management Council.

ASMFC and MAFMC approved Amendment 1 to the FMP in October, 1998 and the Secretary of Commerce partially approved the Amendment on July 29, 1999. The member states were responsible for implementation of the management measures contained in the Amendment prior to January 1, 2000. On July 26, 2000 the National Marine Fisheries Service published the final rule to implement the measures contained in the Amendment. The goal of the Amendment is to conserve the bluefish resource along the Atlantic coast. Five objectives have been adopted:

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

States with a declared interest in the bluefish FMP include all member states except Pennsylvania and the District of Columbia. Management issues are addressed through the ASMFC Bluefish Management Board and the MAFMC Coastal Migratory Species Committee. Technical advice is provided by an ASMFC Bluefish Technical Committee, annual plan monitoring and framework adjustment recommendations are the responsibility of a joint ASMFC-MAFMC Technical Monitoring Committee, and stock assessment issues are handled by the ASMFC Stock Assessment Subcommittee.

II. Status of the Stock

The stock is considered to be over-exploited and at a low level of abundance for the period in which recreational catch and survey abundance indices are available (1974-1999). Present recreational catch levels (11.49 million fish-1999) are about 40% of the catch levels of the early 1980's. According to Lazar (2000) fishing mortality rates (F) for bluefish increased from about 0.29 in 1978 to about 0.96 and 0.98 in 1987 and 1991, respectively. The assessment indicates that fishing mortality rates on bluefish have decreased steadily since 1991 to F=0.28 in 1999. Fishing mortality rates are below F_{MSY} for the first time since 1985. Stock biomass declined from 202.2 million pounds in 1981, the historic high, to 32.0 million pounds in 1995, a decrease of 84%. Recruitment varied from 75 to 87 million fish during 1982-1984, but has declined substantially since then, with the best recent year classes recruiting to the stock in 1988 and 1989. Recruitment since 1989 has been below average, and the 1993 year class of 4 million fish is the poorest in the time series. The NEFSC autumn inshore bottom survey (Cape Cod to Cape Hatteras) is used to predict recruitment. The survey indicated an increase in recruitment from 1994 to 1996, and in 1999 the recruitment was the highest since 1989.

The Bluefish Technical Committee recognized shortcomings of the latest assessment but concluded that it represents the "best scientific" characterization of the Atlantic bluefish stock given the currently available data. An important caveat to this assessment discussed at length by many scientists and stakeholders is that the sharp decline in landings and inshore surveys may be due to migration of adult bluefish to offshore areas presumably in response to environmental and fish population alteration in coastal areas. If indeed the epicenter of the bluefish stock has shifted to offshore waters, then inshore survey abundance for bluefish would be biased low and fishing mortality estimated by the biomass production model would be estimated high. The lack of scientific data to prove stock displacement coupled with recruitment failures observed by several monitoring surveys since 1990 suggested to take a conservative approach by NMFS, the ASMFC, and the MAFMC regarding the status of the Atlantic stock.

Gibson and Lazar (1998) and Lazar (2000) using a biomass dynamic model most recently assessed the status of the bluefish stock. This assessment was reviewed and accepted by the MAFMC's Science and Statistical Committee.

III. Status of the Fishery

Commercial bluefish landings, which had declined by over 34% to 10.3 million pounds in 1989, increased to 13.7 million pounds in 1990 and then dropped to the lowest value in the time series 7.1 million pounds in 1999. The recreational bluefish catch declined steadily from a 1986 value of 30.4 million fish to 9.2 million fish in 1998, the lowest value in the time series. The 1999 recreational catch increased to 11.49 million fish. Both the 1999 commercial landings and recreational catch were below the 1981 to 1999 average of 12.66 million pounds and 18.36 million fish, respectively.

Five states, MA, RI, NY, NJ, and NC, accounted for almost 90% of the commercial landings in 1999 with most landings occurring in the states of North Carolina (39%), New York (20%), and New Jersey (15%).

MRFSS estimates indicate that by number, recreational catches dropped to a series low of 9.2 million fish in 1998 (Table 1). Catches increased in 1999 to 11.49 million fish but were still below the 1981 to 1999 average of 18.36 million fish.

Table 2 provides bluefish commercial landings and recreational catch comparisons.

IV. Status of Assessment Advice

The most recent quantitative stock assessment was conducted by Mark Gibson and Najih Lazar from Rhode Island Fish and Wildlife in March 1998. This assessment has been updated by Lazar in 1999 and 2000. The assessment and the updates used the dynamic population model (ASPIC) tuned to the NMFS inshore survey and the recreational catch-per-unit of effort from 1979 to 1999. The major source of uncertainty in this assessment was the lack of reliable data to characterize the state of abundance in the offshore portion of the stock.

After a series of peer reviews of bluefish assessment models the Mid-Atlantic Fishery Management Council (MAFMC) Scientific and Statistical Committee adopted the biomass dynamic model to reflect the best information on the status of the stock. Results were therefore adopted for the development of Amendment 1 to the Bluefish Fishery Management Plan.

V. Status of Research and Monitoring

Many states and the NMFS conduct fishery-independent surveys. Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, North Carolina, and South Carolina use trawls to monitor adults and juveniles. New York, Maryland, and Virginia conduct haul seine surveys. Year class strength is monitored through the NMFS autumn trawl survey.

The NEFSC fall offshore index was explored as a possible indicator of offshore abundance of bluefish by Mark Gibson and Najih Lazar. However, the bluefish catches in the offshore survey were low and the survey showed no significant trend and high variance for the 1974-1999 period.

Commercial landings information is collected by most states through dealer or fisherman reporting programs, and fishermen in the EEZ are required to report their landings to the NMFS. North Carolina is the only state that significantly samples bluefish commercial fisheries to determine the size and age composition of the catch. Recreational harvest is monitored by the Marine Recreational Fisheries Statistics Survey.

VI. Status of Management Measures and Issues

The FMP allows a commercial quota and recreational harvest limit to reduce fishing mortality. Both are adjusted annually by the Commission and Council by the specification setting process that is detailed in Amendment 1. Amendment 1 provides a series of permitting and reporting requirements for the commercial and for hire fisheries.

Amendment 1 limits the commercial fishery to 17% of the total allowable landings each year through a commercial quota intended to maintain the traditional uses of bluefish and protect the stock from a rapid increase in commercial harvest. However, the commercial quota can be increased to 10.5 million pounds if the recreational fishery is not anticipated to land their entire allocation for the upcoming year. The overall commercial quota is divided into individual state-by-state quotas based on historic landings from 1981-1989.

The Technical Monitoring Committee is responsible for reviewing the best available data and recommending an annual commercial quota and recreational possession limit. Based on the latest stock assessment information and the rebuilding schedule contained in Amendment 1 the Technical Monitoring Committee recommended a total allowable landings (TAL) of 37.84 million pounds for 2001. Both the Council and Commission voted to accept the recommendations of the Committee which will establish a 9.58 million pound commercial and a recreational harvest limit of 28.26 million pounds. Also, the Council and Commission voted to increase the recreational bag limit from 10 fish to 15 fish for 2001.

VII. Current State-by-State Implementation of FMP Compliance Requirements as of August 1, 1999

These states or jurisdictions are required to comply with the provisions of the Bluefish FMP: Maine, New Hampshire, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Potomac River Fisheries Commission, Virginia, North Carolina, South Carolina, Georgia, and Florida.

The following are specific FMP compliance requirements:

1. Each state must restrict the possession of bluefish by anglers to not more than ten fish per day, or have an ASMFC-approved equivalent conservation program (Table 4).

Compliance required by: January 1, 2000

2. Each state must restrict its commercial fishery to the quota adopted under procedures specified in the FMP.

The Atlantic States Marine Fisheries Commission's Bluefish Management Board will be finalizing the compliance criteria for Amendment 1 during a meeting in October, 2000. The Amendment contains a series of compliance criteria, however the Board is concerned that these criteria may need to be adjusted to reflect the partial disapproval of Amendment 1 by the Secretary of Commerce.

The final compliance criteria will include:

Monitoring requirements for the commercial fishery
Commercial and party/charter vessel permitting requirements
Dealer permitting requirements
Fishermen and dealer reporting requirements
Annual compliance reporting

The Bluefish Plan Review Team will review the compliance of each state following the decision from the Management Board regarding the final compliance criteria for Amendment 1. The Chair of the Plan Review Team has reviewed the states' compliance and is recommending that each state be found in compliance with respect to implementing the recreational bag limit and limiting their commercial fishery to their state quota.

VIII. Prioritized Research Needs

1. Size and age composition of the fisheries by gear type and statistical area should be collected.

2. Commercial and recreational landings of bluefish should be targeted for biological data collection wherever possible.

3. Increase intensity of biological sampling of the NER commercial and coastwide recreational fisheries.

4. Initiate research on species interactions and predator/prey relationships

5. A scale-otolith age comparison study needs to be completed for bluefish

6. Explore alternative methods for assessing bluefish, such as length-based and modified DeLury models.

7. Measures of CPUE under different assumptions of effective effort should be evaluated to allow evaluation of sensitivity of results.

8. Initiate fisheries dependent and independent sampling of offshore populations of bluefish during the winter months

9. Conduct research to determine the timing of sexual maturity and fecundity of bluefish.

10. Work should continue on catch and release mortality.

11. Any archived age data for bluefish should be aged and used to supplement NC DMF keys in future assessments.

12. Conduct research on oceanographic influences on bluefish recruitment.

13. Study tag mortality and retention rates for ALS dorsal loop and other tags used for bluefish.

14. A coastal surf-zone seine study needs to be initiated to provide more complete indices of juveline abundance.

15. Test the sensitivity of the bluefish assessment to assumptions concerning age-varying M, level of age 0 discard, and the selection pattern.

16. Scientific investigations should be conducted on bluefish to develop an understanding of the long term, synergistic effects of combinations of environmental variables on various biological and sociological parameters such as reproductive capability, genetic changes, and suitability for human consumption.

17. Studies on the interactive effects of pH, contaminants, and other environmental variables on survival of bluefish.

TABLE 1. Estimated number of bluefish caught and the estimated number of bluefish landed by marine recreational fishermen each year, 1981 to 1999.

State	Catch ('000)	Landing ('000)
1981	31,261	23,888
1982	27,220	23,724
1983	30,137	24,884
1984	26,508	20,798
1985	22,474	19,246
1986	30,411	24,441
1987	27,603	21,076
1988	13,365	9,905
1989	18,637	13,600
1990	16,446	11,365
1991	18,292	11,943
1992	11,440	7,158
1993	9,925	5,725
1994	11,920	5,768
1995	10,494	5,168
1996	9,521	4,205
1997	12,574	5,413
1998	9,204	4,202
1999	11,488	3,682
Average	18,362	12,957

TABLE 2. Bluefish Commercial Landings and Recreational Catch (thousands of pounds) for the period of 1981 to 1999.

Year	Comm.	Rec.	Total	% Comm.
1981	16,454	95,288	111,742	15
1982	15,430	83,006	98,436	16
1983	15,799	89,122	104,921	15
1984	11,863	67,453	79,316	15
1985	13,501	52,515	66,016	20
1986	14,677	92,887	107,564	14
1987	14,504	76,653	91,157	16
1988	15,790	48,222	64,012	25
1989	10,341	39,260	49,601	21
1990	13,779	30,557	44,336	31
1991	13,581	32,997	46,578	29
1992	11,477	24,275	35,753	32
1993	10,122	20,292	30,414	33
1994	9,495	15,541	25,036	38
1995	8,004	14,306	22,310	36
1996	9,295	11,746	21,041	44
1997	9,063	14,302	23,366	39
1998	8,253	12,334	20,588	40
1999	7,052	8,253	15,306	54
Average	12,664	43,632	55,657	28

Source: NMFS General Canvass and MRFSS data.

TABLE 3. State-by-state commercial bluefish quotas for 2000 based on a coastwide quota of 9.583 million pounds and 1981-1989 NMFS General Canvass Data.

State	1981-89 Total	%	Quota
ME	858,177	0.6685	64,062
NH	532,032	0.4145	39,721
MA	8,621,803	6.7167	643,661
RI	8,739,090	6.8081	652,420
CT	1,625,500	1.2663	121,349
NY	13,330,736	10.3851	995,204
NJ	19,018,645	14.8162	1,419,836
DE	2,410,900	1.8782	179,987
MD	3,853,253	3.0018	287,662
VA	15,248,930	11.8795	1,138,412
NC	41,154,504	32.0608	3,072,386
SC	45,161	0.0352	3,373
GA	12,205	0.0095	910
FL	12,912,995	10.0597	964,021
TOTAL	128,363,931	100.000	9,583,000

Table 4. Status Of Bluefish Fishery Management Plan Implementation by States as of August 1997.

State	10 Fish Recreational Limit	Date Adopted
ME	Yes	5/09/92
NH	Yes	2/27/90
MA	Yes	8/22/90
RI	Yes	3/11/91
CT	Yes*	4/22/94
NY	Yes	9/01/91
NJ	Yes	2/06/95
DE	Yes	10/23/90
MD	Yes	5/01/90
PRFC	Yes	7/01/90
VA	Yes	5/01/90
NC	Yes	7/13/94
SC	Yes	4/10/92
GA	Yes*	9/13/89
FL	Yes	6/17/93

* Georgia implemented a 15 bluefish creel limit, a minimum size limit of 12" FL. Georgia's regulation determined to have conservation equivalency to the FMP (l990).