2002 REVIEW OF THE ATLANTIC STATES MARINE FISHERIES COMMISSION FISHERY MANAGEMENT PLAN FOR

Black Sea Bass *(Centropristis striata)*

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I. Status of the Fishery Management Plan

Commission management of black sea bass was initiated as one component of a multi-species FMP addressing summer flounder, scup and black sea bass. In 1990, summer flounder was singled out for immediate action under a joint ASMFC and Mid-Atlantic Fishery Management Council (MAFMC) Plan. Further action on the scup and black sea bass plan was delayed until 1992 to expedite the summer flounder FMP and the series of amendments that followed. Work continued on the joint ASMFC/MAFMC Black Sea Bass FMP in 1996. The ASMFC approved the Fishery Management Plan for Black Sea Bass in October 1996. The MAFMC approved regulations for black sea bass as Amendment 9 to the Summer Flounder FMP in May 1996.

The objectives of the plan are to reduce fishing mortality to assure overfishing does not occur, reduce fishing mortality on immature black sea bass to increase spawning stock biomass, improve yield from the fishery, promote compatible regulations among states and between Federal and State jurisdictions, promote uniform and effective enforcement, and to minimize regulations necessary to achieve the stated objectives. Overfishing was defined as fishing in excess of Fmax, which is equal to F=0.29. This represents an annual exploitation rate of 23%. The plan intends to reduce fishing mortality over an 8 year period through the use of a coastwide commercial quota allocated on a quarterly basis and a recreational harvest limit constrained through the use of minimum size, possession limit and seasonal closures.

Amendment 12 to the Summer Flounder, Scup, and Black Sea Bass FMP was approved by the Commission in October 1998 and established revised overfishing definitions, identification and description of essential fish habitat, and defined the framework adjustment process. The updated overfishing definition, with Fmax serving as a proxy for Fmsy, is 0.32 under current stock conditions.

Addendum IV was approved on January 29, 2001 and provides that, upon the recommendation of the relevant monitoring committee and joint consideration with the Council, the Board will make a decision concerning what state regulations will be rather than forward a recommendation to NMFS. The states will then be responsible for implementing the Board's decision.

The fishery has been subjected to lengthy closures and some significant quota overages in recent years. Fishery closures occurring as a result of filled/exceeded quotas can result in increased discards of legal sized black sea bass in mixed fisheries for the remainder of the closed period. Significant financial hardship on the part of the fishing industry can also result due to a decrease in market demand caused by a fluctuating supply. To address these issues, the Management Board enacted a series of Emergency Rules in 2001establishing initial possession limits, triggers and adjusted possession limits. While these measures helped reduce the length of fishery closures, the rapidly changing regulations were confusing for fishermen and added significant administrative burden to the states. To simplify the process for all parties, the Board approved Addendum VI to provide a mechanism for initial

possession limits, triggers and adjusted possession limits to be set during the annual specification setting process without the need for further Emergency Rules.

Amendment 13, approved by the Commission in May 2002, will implement a federal coastwide, annual quota to be managed by the Commission using a state-by-state allocation system. This amendment will be implemented in 2003 and 2004, followed by a review of its effectiveness and possible re-implementation or revision. State-specific shares will be as follows: Maine and New Hampshire .5%, Connecticut 1%, Delaware 5%, New York 7%, Rhode Island, North Carolina and Maryland 11%, Massachusetts 13%, New Jersey and Virginia 20%. The amendment also removed the necessity for fishermen who have both a NER BSB permit and a SER S/G permit to relinquish their permits for a 6 month period prior to fishing south of Cape Hatteras during a northern closure.

The management unit of the joint ASMFC/MAFMC Black Sea Bass FMP includes all black sea bass in U.S. waters in the western Atlantic Ocean from Cape Hatteras, North Carolina northward to the Canadian border. Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Virginia, and North Carolina have declared an interest in black sea bass. The Commission's Summer Flounder, Scup, and Black Sea Bass Management Board and the MAFMC Demersal Species Committee guide development of the Plan. Technical issues are addressed through the Summer Flounder, Scup, and Black Sea Bass Technical Committee, annual review and monitoring is handled by the Black Sea Bass Plan Review Team, and industry input and advice is provided by the Scup and Black Sea Bass Advisory Panel.

II. Status of the Stocks

Black sea bass were last assessed at the 27th Stock Assessment Workshop (27th SAW) in June 1998. The Stock Assessment Review Committee (SARC) found that the stock is over-exploited and at a low biomass level. Catches reviewed by the SAW were well below the historical average, age and size structure was truncated, and survey biomass indices from the late 1980's through 1998 were one-tenth of those observed in the late 1970's. Estimated fishing mortality rates during 1984-1997 were well above Fmax (F=0.32), with a mean value of F=0.68 over the period. Spawning stock biomass was reported to have been relatively stable during 1984-1995, with an increase in 1996. Recruitment in 1997, as indicated by survey indices, was well below the 1972-1996 average. In spite of a potential maximum age of 15 years, the age structure was highly truncated. Since most black sea bass begin life as females and change to males between ages 2 and 5, the SAW stated that the truncated age structure may result in a shortage of males and ultimately disrupt reproduction. As fishing mortality on fully recruited fish had been in excess of biological reference points defined for the stock, the SAW recommended that it be substantially reduced.

The SARC concluded that the available data were inadequate to provide the basis for conducting an assessment using either age-based or surplus production models. The biggest obstacles to development of an age-based assessment were determined to be inadequate estimation of discards and insufficient sea sampling. Neither observer nor VTR data was considered reliable for estimating the magnitude of discarding, and sea sampling was not sufficient to characterize the length distribution of discards. Length and age composition of the catch was poorly estimated due to a lack of adequate biological sampling.

The NEFSC has provided spring survey results for 2002. The current biomass threshold, established by Amendment 12, is defined as the maximum value of a three-year moving average of this survey (1977-1979 average of 0.9 kg/tow). The 2001 biomass index is 0.594 (the average for 2000-2002), or approximately 2/3 of the threshold. According to the 2002 Black Sea Bass Technical Monitoring Committee memorandum from Dr. Chris Moore (Moore 2002), extremely small or large catches during a single tow can have a strong influence. As a result, Gary Shepherd (NEFSC) has suggested that the survey indices be log transformed to give a better indication of stock status. The transformed series indicates a general increase in the exploitable biomass since 1993. The preliminary index for 2002 of 0.626 is the highest value in the time series, substantiating fishermen's observations that black sea bass have become more abundant in recent years.

The spring survey can also be used as an index of recruitment. The survey indicates good 1988, 1990, 1991 and 1992 year classes. These were followed by a moderate year class in 1995 and poor year classes in 1993, 1994 and 1996 through 1998. The 1999 index was approximately three times the average for the period and the fourth largest value since 1968. 2000 results indicate a strong year class, with an index of 2.782 setting a new high for the time series. Preliminary results indicate another good year class (above average) for 2002 (Moore 2002).

Fishery dependent data can also be used as an indicator of stock status. For example, increased abundance is evident in the recreational data; landing-per-hour fished increased 48% from 1999 to 2001 (Moore 2002).

Relative exploitation based on the total commercial and recreational landings and the moving average of the transformed spring survey index indicates a significant reduction in mortality from 1998 to 2001 relative to 1996 and 1997 levels. Based on length frequencies from the spring survey, and assuming length of full recruitment at 25 cm, the average F based on two length based methods was 0.75 (48% exploitation rate) in 1998 (Moore 2002). Length-based estimates are very sensitive to changes in the length used for full recruitment; average F's were 0.51 (37% exploitation rate) or 1.25 (66% exploitation rate) if a length of 23 or 27 cm was used in the calculations. Based on the relative index, exploitation rates in 2001 decreased relative to the 1998 values; assuming a 48% rate for 1998, the exploitation rage in 2001 was 33%. The target exploitation rate in 2001 was 37% (Moore 2002).

In an effort to gather data for use in conducting a more effective black sea bass stock assessment, a comprehensive tagging study was begun in 2002. This study was designed by Gary Shepherd at the Northeast Fisheries Science Center, in conjunction with the Summer Flounder, Scup and Black Sea Bass Technical Committee, to provide information on mortality and migration. Implementation has been greatly aided by the cooperation of recreational and commercial fishermen throughout the coast. A benchmark stock assessment for black sea bass is currently scheduled for fall 2003.

III. Status of the Fishery

Commercial landings have varied without trend since 1981, ranging from a low of 2.0 million pounds in 1994 to a high of 4.3 million pounds in 1984. Landings since 1998 have been restricted by a coastwide quota. The 2001 landings of 2.8 million pounds were below the average for 1981-2001 and substantially below the peak landings of 21.8 million pounds estimated for 1952. Most commercial landings are taken in otter trawls, fish pots and traps Black

sea bass landings in Massachusetts have increased dramatically, almost doubling from 1998 to 1999 and increasing again in 2000 to 626 thousand pounds. In 2001, Rhode Island and New York landings increased significantly relative to 2000. Black sea bass are an important recreational species along the mid-Atlantic, however recreational landings in 1999 decreased substantially relative to the levels of the early to mid 1990's. The decrease in recreational landings may be partially attributed to an increase in minimum size limits (Shepherd: www.nefsc.noaa.gov/sos/spsyn/og/seabass/). Landings were estimated at 3.99 million pou8nds in 2000 and dropped to 3.42 million pounds in 2001.

IV. Status of Research and Monitoring

Commercial landings information is collected by the Vessel Trip Reporting system and dealer reports. States are also required to collect and report landings data. Sea sampling data from the NEFSC sea sampling program is used to estimate discards. Commercial age and length information is provided by the NEFSC weighout program. Recreational landings and discards are estimated through the Marine Recreational Fisheries Statistics Survey.

Fishery independent surveys are conducted in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and North Carolina. The Virginia Game Fish Tagging Program has targeted black sea bass since 1997. Recruitment and stock abundance data are provided by the NEFSC spring, autumn, and winter trawl surveys.

As indicated above, a tagging study is currently under way to allow development of an analytical, age based assessment.

V. Status of Assessment Advice

There is no current stock assessment available. The next assessment/update is scheduled for fall, 2003. The 27th Stock Assessment Review Committee concluded that the available data were inadequate for conducting either an age-based or surplus production model assessment. The status of the resource was evaluated from NEFSC spring and autumn survey indices. Fishing mortality was estimated using two different length based methods applied to length distribution of commercial and recreational landings.

VI. Status of Management Measures and Developing Issues

The management strategy for black sea bass calls for a reduction in fishing mortality to the target exploitation of Fmax, currently 0.32, over an 8 year time frame. In years 1 and 2 (1996 and 1997) minimum fish sizes and commercial gear restrictions are implemented. A commercial quota and recreational harvest limit were added in years 3 through 5 (1998-2000) to achieve the targeted 48% exploitation rate. The commercial quota has been allocated coastwide into quarterly segments and has included trip limits when necessary. The recreational harvest limit can be regulated through size limits, possession limits, and seasonal closures. In years 6 and 7 (2001-2002) the target exploitation rate droped to 37%. In year 8 (2003) and beyond, the target exploitation rate is Fmax. The FMP also requires federal dealer and vessel permitting and reporting.

Amendment 13 to the Summer Flounder, Scup and Black Sea Bass FMP will be implemented in 2003 and 2004. States will be required to establish management measures that will restrict landings to their share of the commercial quota.

Black Sea Bass Rebuilding Schedule

Year	FMP Year	Target
1996	1	none
1997	2	none
1998	3	48%
1999	4	48%
2000	5	48%
2001	6	37%
2002	7	37%
2003 +	8 +	23%

Black Sea Bass Compliance Criteria

COMMERCIAL FISHERY

Management measures have changed over time. The 2002 requirements are indicated below:

Minimum size of possession: 11”
Minimum mesh: larger nets - no more than 25 meshes of 4.5" mesh in the codend with at least 100 meshes of 5.0" mesh forward of the 4.5" mesh; smaller nets - 4.5" mesh or larger throughout
Mesh Threshold: 500 lbs for January-March and 100 lbs for April-December
Maximum roller rig trawl roller diameter: 18”
Pot and trap escape vents: 2-3/8" for circular, 2" for square, and 1-3/8 x 5-3/4" for rectangular
Pot and trap degradeable fastener provisions: a) untreated hemp, jute, or cotton string 3/16” (4.8 mm) or smaller; b) magnesium alloy timed float releases or fasteners; c) ungalvanized, uncoated iron wire of 0.094” (2.4mm) or smaller. The opening covered by a panel affixed with degradable fasteners would be required to be at least 3” x 6”.
Commercial quota: 3.133 million pounds
Trip limits: See Table 3

The following measures are not subject to annual adjustment:

Commercial quota: (*see “Developing Issues”)* A quarterly quota system was implemented in year 3 (1998). Under the provisions of this program, states must prohibit fishing for, and possession of, black sea bass if and when NMFS determines that a quarter’s share is landed. States must report all landings from state waters to the NMFS.

Pot and trap definition: A black sea bass pot or trap is defined as any pot or trap used by a fisherman to catch and retain black sea bass.

The ASMFC Summer Flounder, Scup, and Black Sea Bass Management Board will implement a state-by-state allocation of the 2003 commercial quota.

RECREATIONAL

The following measures may change annually.

Minimum size of possession: 11.5”
Possession limit: 25 fish
Seasonal closure: no seasonal closure

Recreational harvest limit: 3.43 million pounds

OTHER MEASURES

Reporting: States are required to submit an annual compliance report to the Chairman of the Black Sea Bass Plan Review Team by June 1. This report must detail the state's management program for the current year and establish proof of compliance with all mandatory management measures. It should include landings information from the previous year, and the results of any monitoring or research programs.

This summary of compliance criteria is intended to serve as a quick reference guide. It in no way alters or supersedes compliance criteria as contained in the Black Sea Bass FMP and any Amendments thereto. Also please note that the management measures that change annually may be altered if Amendment 12 is approved

Developing Issues

The Commission and Council originally planned to develop and implement a commercial quota management system during years 1 and 2 (1996 and 1997). Since this activity was not completed, the commercial quota default system, a quarterly coastwide allocation with trip limits, was implemented on January 1, 1998. Since the Board intended to address quota management during 1996 and 1997, compliance criteria and dates for quota management measures were not established under the original FMP.

The quarterly quota system implemented through the approval of Amendment 9 resulted in long closures of the commercial black sea bass fishery. In fact, the entire quota for quarters 3 and 4 of 2000 were harvested within one month, leaving the fishery closed for the remaining two months of those quarters. All four quarters closed early in 2001, with quarter 3 closing in less than three weeks.

Long closures have obvious economic consequences to fishermen and processors. A market glut at the beginning of the quarter allows a drop in prices as large numbers of fish flood the market. After a short landings period, the fishery is closed and fishermen, especially those that fish primarily for black sea bass, are faced with no or reduced income. The Management Board took action over the past few years to adjust possession limits once a certain percentage of the quarterly quota was landed in an attempt to limit the length of closures. This issue was behind the development of state-by-state quotas. Amendment 13, scheduled for implementation in 2003 and 2004, will provide states with the ability to tailor their commercial regulations to meet the specific needs of their fishermen.

VII. Compliance

States and jurisdictions required to comply with the provisions of the Black Sea Bass FMP are: Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Delaware, Maryland, Potomac River Fisheries Commission, Virginia, and North Carolina.

1997 - 2002 Black Sea Bass FMP Compliance Schedule

COMMERCIAL	
Size limit (9")	1/1/97
Size limit (10")	1/1/98

Size Limit (11”)	1/1/02
Minimum mesh and threshold provisions	1/1/02
Pot and trap escape vents and degradable fasteners	1/1/97
Roller diameter restriction	1/1/97
Quota Measures	
States must report to NMFS all landings from state waters	1/1/98
RECREATIONAL (See Table 4)	
Size limit	1/1/97
Harvest limit	1/1/98
Ability to implement possession limits and seasonal closures	1/1/98
GENERAL	
Annual compliance report	Annually, 7/1

VIII. Recommendations

SARC Data Recommendations (1998)

Increase sea sampling, particularly in the fish pot fishery of the Mid-Atlantic

Obtain commercial length frequency data, by market category, from North Carolina from 1984-1993 and 1997

A tagging program should be initiated through state fisheries agencies. The objective would be to tag several thousand black sea bass per state each year for several years. The information from tag returns would allow calculation of survival estimates independent of survey data. Use of several high reward tags or lottery-type system may be considered to evaluate tag reporting rate.

Ageing should be updated to include the most recent biological samples.

A study further investigating the size/age and density effects on sex changes in black sea bass would be valuable in stock assessments. Studies on sex-specific mortality rates and growth are also needed.

A study determining the value of artificial reefs for increased production of black sea bass would be valuable in estimating potential yield.

Consideration should be given to a pot survey for an index because of the catchability problems in the trawl survey for a species such as black sea bass that is structure oriented.

Table 1. Black Sea Bass commercial landings, 1989-2001, by state in thousands of pounds.

State	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
MA	351	436	244	43	39	21	42	40	91	281	574	626	570
RI	208	198	74	141	222	87	89	157	178	135	176	101	376
CT	11	14	9	5	5	4	9	17	12	9	15	15	20
NY	77	72	92	112	125	122	193	260	270	136	209	139	249
NJ	841	990	1034	1245	1381	957	797	1,222	705	579	501	587	647
DE		150	189	194	86	70	166	166	152	126	168	94	25
MD	296	343	481	468	362	334	303	546	513	315	486	305	147
VA	648	886	499	580	744	387	349	790	486	827	740	648	607
NC*	778	1031	707	791	713	704	491	778	767	732	588	556	645
Total	3210	4120	3329	3579	3677	2686	2439	3,976	3174	3140	3457	3,072	3,288

* Includes all landings from NC, both North and South of Cape Hatteras.

Table 2. Black Sea Bass recreational landings by state, 1987-2001, in thousands of pounds. Data from MRFSS online query.

State	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
ME	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NH	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	2.9
MA	66.2	214.5	47.7	36.4	46.6	8.7	13.5	10.6	6.7	22.4	21.0	10.0	22.3	79.5	69.7
RI	70.9	10.7	24.5	9.3	12.9	15.9	28.5	26.2	53.7	55.1	44.9	25.0	38.7	352.5	177.7
CT	4.0	19.7	25.6	0.8	2.6	5.5	7.0	0.0	3.8	7.8	1.3	3.6	2.5	23.7	19.7
NY	608.6	241.6	756.4	307.9	141.6	220.0	312.1	107.1	48.7	78.6	153.1	10.6	126.1	309.6	312.9
NJ	444.4	572.3	1,460.7	1,037.9	1,645.8	1,218.6	3,344.3	1,627.4	3,409.9	4,479.1	2,893.6	291.5	522.5	2,052.2	2,152.0
DE	18.5	91.5	153.5	71.5	235.4	102.1	151.8	36.0	156.0	57.5	77.1	60.7	36.7	174.3	198.8
MD	203.6	766.4	312.9	318.8	423.9	469.5	481.0	215.9	1,811.7	376.8	370.9	309.3	152.7	455.7	134.9
VA	501.7	937.8	498.7	968.6	1,623.8	559.8	486.7	903.2	672.8	820.4	683.1	410.2	699.9	529.9	338.2
NC*	473.6	1,090.3	340.8	295.8	182.9	314.2	159.7	127.3	141.3	141.6	150.4	168.7	95.1	144.0	188.8
Total	2,391.6	3,944.8	3,620.7	3,047.0	4,316.0	2,914.1	4,984.7	3,053.6	6,304.6	6,039.3	4,395.4	1289.6	1696.5	4,121.8	3,595.5

* Includes all landings from North Carolina, both North and South of Cape Hatteras.

Table 3: 2002 Possession Limits

Quarter	2002 Initial Possession Limit	Trigger	Adjusted Possession Limit
I	7,000 lbs/day	N/A	N/A
II	1,500 lbs/day 6,000 lbs/week	60%	150 lbs./day 1,000 lbs./week
III	500 lbs./day 3,000lbs./week	60%	100 lbs./day 700 lbs./week
IV	750 lbs./day 4,000 lbs./week	60%	100 lbs./day 700 lbs./week

Table 4. 2002 recreational management measures for black sea bass by state.

STATE	Minimum Size (inches)	Possession Limit	Open Season
Massachusetts	12	20 fish	All Year
Rhode Island	11.5	25 fish	All Year
Connecticut	11.5	25 fish	All year
New York	11.5	25 fish	All year
New Jersey	11.5	25 fish	All year
Delaware	11.5	25 fish	Opened May 10
Maryland	11.5	25 fish	May 10, 2002 – February 28, 2003
PRFC	11.5	25 fish	All Year
Virginia	11.5	25 fish	All year
North Carolina	11.5	25 fish	All year