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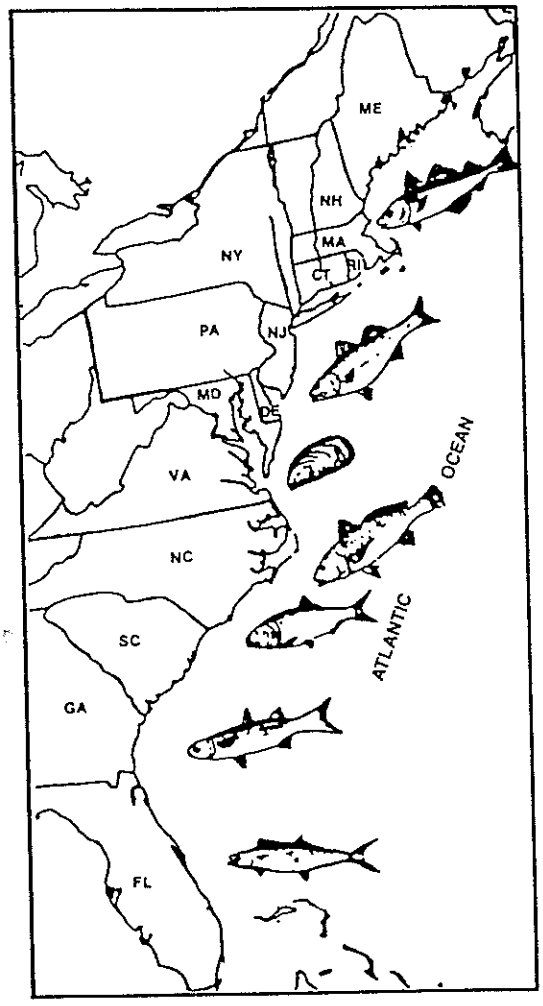

REPORT ON STATUS OF STOCK AND FISHERY MANAGEMENT PLAN DEVELOPMENT FOR SCUP AND *(Stenotomus chrysops)* BLACK SEA BASS *(Centropristis striata)*

December 1993

REPORT ON STATUS OF STOCK

AND FISHERY MANAGEMENT PLAN DEVELOPMENT

FOR SCUP AND BLACK SEA BASS

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Preface

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Acknowledgements

This report is a compilation of state and federal data submitted to, and discussed by the Commission's Scup and Black Seabass Technical Committee (see Attachment 3 for complete list of committee members) in development of an interjurisdictional fishery management plan (FMP) for these species. The text was prepared by Dr. Chris Moore of the Mid-Atlantic Fishery Management Council staff to serve as a framework for a joint state/federal FMP. The Commission would like to extend its thanks to the individual states and Regional Fishery Management Councils for dedicating personnel and fisheries data to this effort. A special thanks goes to the Mid-Atlantic Fisheries Management Council for providing additional financial resources to assist state committee members in meeting associated travel costs.

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INTRODUCTION

Development of a fishery management plan for scup and black seabass began as a joint effort between the Atlantic States Marine Fisheries Commission and the Mid-Atlantic Regional Fishery Management Council in March, 1992. However, neither body has yet adopted a formal plan for the species. Originally considered for inclusion in the species complex with summer flounder, the Commission and Council concurred to single out summer flounder for immediate action in 1990. Development of a fishery management plan (FMP) for scup and black seabass was temporarily placed on hold in order to expedite implementation of regulations for summer flounder. In order to assure protection for these important species, the Commission established a Technical Committee (Attachment 3) of state, council and federal scientist. The role of the committee is to review and updated fisheries data from all available sources to form the basis of an interstate/federal FMP.

In a series of meeting conducted over the past two year period, the Scup and Black Seabass Technical Committee has developed recommendations for management of these stocks utilizing stock assessment information from state and federal sources. The Committee has determined that both scup and black seabass resources are in a condition where overfishing is occurring. Subsequently, the Mid-Atlantic Council and the ASMFC Summer Flounder Management Board approved a recovery strategy based on committee recommendations to reduce overfishing on both species over an eight year time frame. The recovery strategy calls for minimum sizes and commercial gear regulations in year 1 and 2. In years 3 through 5, target exploitation rates would be recalculated.

In addition, the Commission's Artificial Reef Committee has requested inclusion of language in the FMP for Special Management Zone (SMZ) designation around artificial reefs within the management unit. The proposed language and justification for the SMZs is modeled after language from the South Atlantic Council's Snapper/Grouper FMP. Such language would allow the permit holder for an artificial reef established in federal waters to petition a Regional Fishery Management Council for SMZ designation based on site specific factors. When artificial reefs are in state waters the process may be utilized for compatible SMZ designations among states. Although such a provision is intended to regulate gear conflicts on permitted reefs, some feel that such designation also could embrace a much broader management concept that could include effort reductions and area closures, among others.

Scup Report

Fisheries Information

Commercial scup landings declined steadily from 1983 to 1989. In fact, landings declined 35% from 1988 to 1989 (Table 1). However, commercial landings increased to 15.1 million pounds in 1991 and the 1992 landings of 13.2 million pounds were only slightly below the 1983-1992 average of 13.6 million pounds. Recreational landings in 1992, at 4.9 million pounds, were well below the 1991 landings of 7.9 million pounds and the ten year average of 6.6 million pounds. Based on 1983-92 average landings, the commercial-recreational distribution was 67% to 33%.

A total of 74% of the commercial landings of scup was attributed to otter trawls from 1983 to 1992. Floating fish traps and hand lines accounted for 12% and 2% of the landings, respectively. By water area, 30% of the commercial landings originated in state waters and 69% from the EEZ. A total of 52%, 45%, and 3% of the average, coastwide commercial landings were from New England, Mid-Atlantic, and North Carolina areas, respectively.

Approximately 86% of the scup landed by recreational fishermen were caught in state waters from 1983 to 1992. On average, 62% and 38% of the scup caught by recreational fishermen were caught in the New England and Mid-Atlantic areas, respectively. Finally, more scup (82%) were landed by anglers fishing from private/rental boats than from party/charter vessels (12%) during those years.

Indices of Abundance

Abundance indices are available from NMFS trawl surveys, and surveys conducted by the states of Massachusetts, Rhode Island, and Connecticut. The NEFC autumn offshore survey indices of scup (age 1+) abundance from 1988 was the lowest value measured since the survey began in 1967 (Table 2). However, the 1989 index increased sharply (indicating a strong 1988 year class) and the 1992 index was above the mean. These survey results should be interpreted with caution as the estimates are arithmetic means and as a result high catches in only one of the sampling areas could significantly affect the estimates. In addition, more extensive analyses have not been conducted to determine if this index or other state indices accurately track year class strength.

Biological Reference Points and Current Fishing Mortality Rates

The Mid-Atlantic Fishery Management Council (MAFMC) has adopted an overfishing definition for scup based on an estimate of F_{max}. F_{max} is a biological reference point derived from yield per recruit analysis and is defined as the fishing mortality rate that maximizes the yield per recruit. Best available information indicates that F_{max} is 0.25 for scup based on a size at recruitment to the fisheries of 6" TL (Simpson pers. comm.).

Mortality rates on scup have increased substantially in recent years. Based on a review of coastwide data, mortality rates in the early 1980's were slightly greater than 0.3, the value derived by Mayo (1980) for scup caught in the late 1970's. Howell (1990) estimated F increased from 0.4 in the early 1980's to over 1.0 in 1988 based on catch curve and length based analysis of scup taken in Connecticut and Massachusetts surveys. Current estimates of F are 1.2 or higher. This information would indicate that scup have been overexploited (F's in excess of F_{max}) since the early 1980's. Assuming a current fishing mortality rate of 1.2 for scup, exploitation rates would have to be reduced 69% to achieve an F_{max} of 0.25.

Gear Selectivity

Mayo (1982) derived retention lengths for scup based on the relationship between length and body depth as derived by Smith and Norcross (1968) (Table 3). Although this data was derived using body measurements, the results agree very well with preliminary selectivity experiments conducted by personnel at the University of Rhode Island (DeAlteris and Reifsteck 1990). Their results indicated that the L50 for scup was 8.3" TL for a mesh size of 4.0".

Scup are also targeted by trap fishermen. The body length/depth relationship derived by Smith and Norcross (1968) was used to derive the minimum sizes of scup that would be retained by fish traps fitted with escape vents (Table 4).

Management Measures

Background Information

As a review, scup has an overfishing definition based on F_{max} and the stock is overfished; i.e., current F exceeds F_{max}. The MAFMC and the ASMFC Management Board approved a recovery strategy that reduces overfishing on scup over an 8 year time frame (Attachment 1). The recovery strategy calls for minimum fish sizes and commercial gear regulations in year 1 and 2. In years 3 through 5, target exploitation rates would be 47% for scup. Assuming current exploitation rates are 65% (F=1.2) for scup and current estimates of mortality still approximate these rates, exploitation would have to be reduced 28% in the third year.

Minimum sizes and gear restrictions - Years 1 and 2

Neither the Council nor the Commission have determined which minimum sizes they would implement in the first year. The staff had proposed an 8" TL minimum size for scup for both commercial and recreational fishermen. Since that initial proposal, several alternatives were proposed which included lower size limits for the entire coast, or area (state vs EEZ), or region (New England vs New Jersey and south). Some commercial fishermen have suggested that no minimum fish size be implemented in the commercial scup fishery as long

as minimum mesh sizes are used. They argue that this would reduce waste as well as sorting time for large trawling operations.

The MAFMC staff proposal included a minimum mesh size of 4.5" for vessels retaining more than 100 lbs of scup. Based on body size measurements, the L50 associated with this mesh would be 9.1" TL. Proposed management measures also included minimum diameters of 2.75" for scup escape vents to release undersized fish.

Effects of size limits

Yield per recruit analysis for scup conducted by Dave Simpson indicates that an increase in the minimum size to 8" TL for both the commercial and recreational fisheries will increase yields by approximately 12.5% (Table 5). Table 5 also lists changes in yield with alternative size limits. In addition, there is a slight change in F_{max}, the biological reference point, with increasing size. As a review, the size at which 50% of scup are sexually mature is 6.8" TL.

In general, because minimum sizes increase the size at full recruitment, yields are increased as fishermen catch larger, heavier fish. In addition, minimum size regulations can increase the resilience of the stock to overfishing; i.e., the biological reference points (F_{max}) can increase.

Historic commercial and recreational length frequencies were used as an estimate of potential short-term impacts of length limits on the scup fisheries (Tables 6 to 12). Intercept data from the National Marine Fisheries Service (NMFS) Marine Recreational Fishery Statistics Survey (MRFSS) were examined for the years 1987 to 1991. Commercial length frequencies from the NMFS Weighout Data and North Carolina Division of Marine Fisheries (DMF) from 1982 to 1991 were also used to determine potential size limit effects. In general, size frequency data indicated that potential size limit effects increased from north to south, were gear dependent, and varied from one year to the next.

Effort Controls

There is still some misunderstanding on the part of both fishermen and administrators regarding the impact of minimum size regulations on the status of scup stocks. There have been extensive discussions concerning this topic for many of the regulated species such as New England groundfish and weakfish. The minimum sizes that have been proposed only reduce mortality on sublegal fish (i.e., juveniles and young adults). Without additional effort controls, the F on the fully recruited fish is unchanged and as a result the stock continues to be overfished. Reductions in F on the fully recruited fish can only occur with additional management measures. These could include seasons, area closures, bag limits, trip limits, and other measures.

Initially, staff had proposed that effort controls on the commercial fishery be achieved

principally through the use of coastwide quotas. However, the Demersal Committee an Management Board requested that the technical committee develop an alternative for th commercial fishery. After extensive discussions, the technical committee decided that th best alternative to a commercial quota would be gear specific seasonal closures.

Season Closures - Commercial Fishery

NMFS General Canvass Data from 1988 to 1992 were used to determine the potentia impact of seasonal closures on commercial landings of scup. The technical committe decided that these years would be most representative of current conditions in the fisherie

After an initial presentation, the committee decided that seasonal closures for scup an black sea bass otter trawl fishermen be identical and be applied on a coastwide basi Calculations restricted the smallest unit of closure to one week. Calculated reductions wer as close to 28% (the target reduction in the third year of the management program) a could be derived based on average monthly data from 1988-92 and the criteria decided o by the committee. In addition, seasonal closures were derived assuming that fisherme would recoup 0% and 15% of their landings during the open season. The 15% level applie to all mobile gears, including hook and line. Because of the fixed nature of the pots an traps, I only a 0% (no recoupment) level was used for these gears.

If a recoupment level was assumed, calculations were made using a simple algorithm tha accounted for changes in landings per day (LPD) during the open and closed seasons. Fo example, for scup landed by otter trawl fishermen, the time period from November 15 t January 31 accounted for 28% of the landings during 1988-1992. A closed season durin these months would result in a fishing season that would be open for 8 1/2 month (February through November 14) or approximately 288 days. The amount of discretionar time during this open period would be 43 days (15% x 288 days). Since 72% of the landing occurred during the open period, the LPD during the open period would be 72 divided b the days fished or 245 (288-43). This LPD multiplied times the discretionary time (43 days would result in a recoupment of 13%. As a result, the realized reduction in landings for th closed period February through May would be 15% (28% - 13%).

Seasonal closures ranged from slightly more than one month to four months depending o location (north or south) and gear type (Table 13). Note that because otter trawls are th only gear that land significant amounts of scup in the south, all gear specific seasona closures for scup would be coastwide. Seasonal closures could achieve the desire reductions if the following criteria were met:

1. The level of discretionary time used to derive the reductions is realistic. Th assumed value of 15% may be an underestimate for some mobile gears.

2. All gear capable of catching scup be removed from the water during the close period. Without such a provision, fishermen would continue to fish for other specie

during the closed period, catching and discarding scup in the process. For trawl fisheries, the technical committee recommended that mesh sizes of 5.5" diamond mesh or larger could continue to operate and exemptions be required for squid and fly net fisheries.

3. Landings patterns do not vary much from one year to the next; i.e., anticipated landings in year three of the management program are similar to the landings observed for 1988-1992.

It is also important to note that fishermen could negate seasonal closure effects by increasing effort or efficiency during the open season. These increases could produce conditions in the stock that were equivalent to or worse than those before regulations.

Finally, any effective area/seasonal closure would require that NMFS be able to track commercial vessels on a real time basis to ensure a high level of compliance. Such a system could be comparable to the Vessel Monitoring System that will be implemented for groundfish and scallops by NMFS.

Sea Sampling Data

The NMFS contracted with the Monomet Bird Observatory to place onboard observers on US boats in 1989, 1990 and 1991 to collect a variety of data on the vessels, personnel, and catch. A total of 125,220 pounds of scup were caught by surveyed fishermen in 1989. Of those, 22% were discarded because they were too small (Table 14). Fish were discarded because they were too small either for market or regulation.

Discard rates increased in 1990 and 1991 for scup. In fact, in 1990, more scup were discarded than landed by commercial trawl fishermen participating in the sea sampling program.

Recreational Possession and Size Limits

The 1990-1992 MRFSS data were used to derive the effects of the proposed size limits on recreational landings. Based on the technical committee discussions, the coast was divided into northern (ME-NY) and southern (NJ-Hatteras) subregions. Based on 1990-92 intercept data, an 8" TL minimum size for scup would reduce exploitation by 11.1% and 37.3% for the northern and southern subregions, respectively (Table 15). This compares to 14.3% reduction on a coastwide basis. Based on catch frequencies for 1990-92 (Tables 16-18), comparable possession limits would be 38 scup in the north and 4 scup in the south (Table 19). Combined with a 7" TL minimum size, the possession limits that would produce similar reductions in exploitation would be 44 scup in the north and 6 scup in the south (Table 20). Coastwide, a 37 fish possession limit combined with a minimum size of 7" TL would have resulted in a reduction comparable to the effects of the 8" TL minimum size limit.

Other Management Measures

The management measures drafted by MAFMC Staff included a moratorium provision to limit the entry of additional commercial vessels (see Attachment 1). The language is similar to that of Amendment 2 of the Summer Flounder FMP. The draft management measures also include a requirement for permits and logbooks. Attachment 1 summarizes the management measures that have been proposed by the staff and the technical committee for scup.

Table 1. Commercial and recreational landings (thousands of pounds) of scup.

Year	Comm	Rec	Total	% Comm	% Rec
1983	17183	7650	24833	69	31
1984	17128	3145	20273	84	16
1985	14828	6929	21757	68	32
1986	15252	12573	27825	55	45
1987	13380	6372	19752	68	32
1988	12628	5264	17892	71	29
1989	8192	7125	15317	53	47
1990	9518	4563	14081	68	32
1991	15140	7944	23084	66	34
1992	13184	4875	18059	73	27
Avg	13643	6644	20287		

Source: NMFS General Canvas and MRFSS Data.

Table 2. The NEFC autumn offshore survey index (stratified mean catch per tow) for age 1 and older scup.

Year	Wt/tow	Year	Wt/tow
1967	0.66	1979	0.68
1968	0.27	1980	1.22
1969	2.13	1981	3.00
1970	0.09	1982	0.98
1971	0.16	1983	0.42
1972	1.60	1984	1.13
1973	1.01	1985	2.49
1974	1.06	1986	0.79
1975	3.91	1987	0.13
1976	2.86	1988	0.05
1977	1.87	1989	1.65
1978	1.79	1990	0.59
		1991	0.27
		1992	1.40
		Mean	1.24

Table 3. The average length (L50) at which scup are first fully recruited to the trawl fishery by mesh size. Estimates are based on retention lengths as derived by Mayo (1982).

Mesh Size	Total Length
1.5	3.9
2.0	4.8
2.5	5.7
3.0	6.5
3.5	7.4
4.0	8.3
4.5	9.1
5.0	10.1
5.5	10.9

Note: Mesh sizes are inside stretch measurements.

Note: Total lengths were derived from fork lengths using the following relationship (Hamer 1979): TL = 1.14(FL)-0.44.

Table 4. The minimum theoretical size of scup (TL inches) that would be retained by a fish trap fitted with escape vents (inches). The derived lengths are based on the body depth/total length relationship for scup derived by Smith and Norcross (1983).

Scup Size	Vent Diameter
7	2.3
8	2.7
9	3.1
10	3.5
11	3.9
12	4.3

Table 5. Yield per recruit and the target fishing rates (Fmax) for scup for different minimum mesh and fish sizes.

Mesh	Minimum Size Comm	Rec	YPR (g)	Fmax
2.0	6	6	179.6	0.250
4.0	8	8	199.3	0.350
4.5	8	8	202.0	0.375
4.5	9	8	201.1	0.375
4.5	9	9	204.8	0.375
5.0	9	8	202.3	0.375
5.0	10	8	200.2	0.375
5.0	9	9	206.0	0.400
5.0	10	10	204.1	0.400
5.5	10	8	200.4	0.375
5.5	10	9	203.8	0.400
5.5	10	10	204.5	0.425

Source: Dave Simpson pers. comm.

Table 6. The percent of measured scup (TL) less than a given size based on 1987-1991 MRFSS intercept data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1987	11.2	20.7	42.0	64.0	777
1988	1.2	6.4	31.4	56.4	2,156
1989	16.2	34.3	55.2	73.6	4,110
1990	2.9	17.0	51.7	78.0	2,698
1991	5.2	17.8	37.0	58.0	4,230

Table 7. The percent of measured scup (TL) less than a given size based on 1987-1991 MRFSS intercept data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
ME	-	-	-	-	-
NH	-	-	-	-	-
MA	1.6	6.7	23.7	48.7	3,725
RI	11.4	30.1	49.9	73.0	2,281
CT	1.1	7.4	28.9	55.6	1,397
NY	12.3	25.9	51.4	71.9	5,250
NJ	4.0	32.1	84.5	96.7	705
DE	6.4	55.2	92.0	97.0	299
MD	0.0	13.3	86.7	100.0	15
VA	16.7	44.1	77.6	94.3	245
NC	16.7	42.6	63.0	85.2	54

Table 8. The percent of measured scup (TL) less than a given size based on 1991 MRFSS intercept data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
ME	-	-	-	-	-
NH	-	-	-	-	-
MA	0.7	2.1	13.5	42.5	1,196
RI	12.7	28.9	37.4	57.6	727
CT	0.6	0.6	8.2	19.4	170
NY	5.5	15.6	35.0	57.1	1,467
NJ	2.9	33.9	86.7	96.6	384
DE	9.2	63.2	98.4	99.5	185
MD	0.0	0.0	71.4	100.0	7
VA	4.8	34.9	92.1	100.0	63
NC	29.0	64.5	83.9	96.8	31

Table 9. The percent of measured scup (TL) less than a given size based on 1983-1991 NEFSC weighout data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1983	1.5	10.2	28.9	53.2	7,860
1984	1.4	11.4	32.1	53.1	6,303
1985	6.0	20.4	36.5	56.7	3,058
1986	0.3	3.1	9.9	48.7	5,467
1987	1.8	8.4	34.6	65.2	6,491
1988	0.9	7.1	32.3	64.0	8,691
1989	0.3	9.8	29.9	55.3	4,806
1990	1.4	11.4	38.7	72.4	4,736
1991	0.1	7.6	38.3	69.9	3,150

Table 10. The percent of measured scup (TL) less than a given size based on 1982-1992 North Carolina winter trawl data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1982-1983	5.6	27.7	50.0	69.6	280,551
1983-1984	2.1	31.8	50.1	68.9	316,159
1984-1985	0.8	64.5	86.5	93.2	200,807
1985-1986	0.6	17.8	35.3	55.4	112,932
1986-1987	0.4	9.7	26.8	44.9	127,217
1987-1988	0.2	12.4	49.7	76.4	79,323
1988-1989	17.0	45.4	86.3	95.6	19,859
1989-1990	1.2	18.2	43.8	78.7	75,094
1990-1991	2.9	38.5	66.3	87.2	223,967
1991-1992	14.4	54.1	84.9	91.1	130,520

Table 11. The percent of measured scup (TL) less than a given size based on 1983-1991 NEFSC weighout data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
MA	0.4	6.0	22.4	81.8	1,010
RI	0.2	5.8	13.3	48.9	17,436
CT	-	-	-	-	-
NY	1.6	8.9	29.7	59.1	2,438
NJ	1.7	10.4	37.3	67.1	23,533
DE	-	-	-	-	-
MD	2.0	41.0	92.0	100.0	100
VA	3.2	16.0	24.8	54.8	6,045

Table 12. The percent of measured scup (TL) less than a given size based on 1983-1991 NEFSC weighout data for each major gear type.

Gear	< 7.0	< 8.0	< 9.0	< 10.0	N
Handline	0.0	1.0	13.2	43.2	486
Otter Trawl, Bottom	1.4	9.5	19.3	59.1	48,077
Float Traps	0.0	13.6	25.9	59.2	316
Pound Nets	0.6	8.4	30.8	97.7	704
Otter Trawl, Mid-Water	0.4	0.6	8.7	37.5	472
Pot/Traps	0.0	6.3	19.3	66.9	507

Table 13. Closed seasons necessary to achieve the third year reduction in exploitation for scup.

Subregion	Gear	Closed Season	% Reduction 0% Rec	% Reduction 15% Rec
Coast	Otter Trawl	Nov 15-Jan 31	28	15
		Oct 15-Feb 7	38	28
North (ME-NY)	Float Traps	Apr 1-May 7	34	-
	Pair Trawls	May 1-May 31	28	15
		Mar 1-Jun 15	39	28
	Pots/Traps	Jun 1-Jul 21	29	-
	Pound Nets	May 1-Jul 31	30	-
	Hand Lines	May 1-Jul 31	32	20
		May 1-Aug 7	38	27

Table 14. Discard rates for scup from otter trawl trips sampled by the NMFS Sea Sample observers, 1989-1991.

Year	Scup
1989	22
1990	58
1991	48

Table 15. The percent reduction in exploitation associated with various size limits for scup, 1990-1992. The reductions are based on measured fish from the MRFSS survey and assume a post-release mortality of 15%. The number in parentheses is the sample size.

Size (TL)	Coast (7148)	ME-NY (885)	NJ-Hat (6263)
7	3.5	2.9	7.7
8	14.3	11.1	37.3
9	33.8	28.1	74.3
10	56.5	52.9	82.2

Table 16. The percent of successful anglers landing 1 to 200 scup (MRFSS A fish) day, coastwide, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	782	22.4	782	22.4
2	362	10.4	1144	32.8
3	331	9.5	1475	42.2
4	194	5.6	1669	47.8
5	211	6.0	1880	53.8
6	154	4.4	2034	58.2
7	85	2.4	2119	60.7
8	135	3.9	2254	64.5
9	65	1.9	2319	66.4
10	122	3.5	2441	69.9
11	37	1.1	2478	71.0
12	83	2.4	2561	73.3
13	45	1.3	2606	74.6
14	38	1.1	2644	75.7
15	108	3.1	2752	78.8
16	31	0.9	2783	79.7
17	37	1.1	2820	80.8
18	40	1.1	2860	81.9
19	21	0.6	2881	82.5
20	61	1.7	2942	84.2
21	12	0.3	2954	84.6
22	8	0.2	2962	84.8
23	28	0.8	2990	85.6
24	42	1.2	3032	86.8
25	32	0.9	3064	87.7
26	15	0.4	3079	88.2
27	16	0.5	3095	88.6
28	18	0.5	3113	89.1
29	2	0.1	3115	89.2
30	64	1.8	3179	91.0
31	13	0.4	3192	91.4
32	10	0.3	3202	91.7
33	9	0.3	3211	92.0
34	5	0.1	3216	92.1
35	6	0.2	3222	92.3
36	23	0.7	3245	92.9
37	5	0.1	3250	93.1
38	8	0.2	3258	93.3
39	9	0.3	3267	93.6
40	24	0.7	3291	94.2
41	9	0.3	3300	94.5
42	10	0.3	3310	94.8
43	3	0.1	3313	94.9
44	9	0.3	3322	95.1
45	10	0.3	3332	95.4
46	1	0.0	3333	95.4
47	3	0.1	3336	95.5
48	6	0.2	3342	95.7
49	2	0.1	3344	95.8
50	37	1.1	3381	96.8
51	4	0.1	3385	96.9
52	2	0.1	3387	97.0
53	4	0.1	3391	97.1
54	11	0.3	3402	97.4
55	10	0.3	3412	97.7
56	5	0.1	3417	97.9
58	3	0.1	3420	97.9
60	10	0.3	3430	98.2
62	1	0.0	3431	98.3
63	7	0.2	3438	98.5
66	5	0.1	3443	98.6
67	3	0.1	3446	98.7

Table 16 cont'd.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
68	1	0.0	3447	98.7
72	1	0.0	3448	98.7
74	1	0.0	3449	98.8
75	8	0.2	3457	99.0
76	3	0.1	3460	99.1
77	3	0.1	3463	99.2
78	1	0.0	3464	99.2
80	1	0.0	3465	99.2
81	2	0.1	3467	99.3
82	2	0.1	3469	99.3
84	1	0.0	3470	99.4
90	4	0.1	3474	99.5
94	3	0.1	3477	99.6
99	3	0.1	3480	99.7
100	1	0.0	3481	99.7
102	1	0.0	3482	99.7
103	1	0.0	3483	99.7
120	1	0.0	3484	99.8
134	2	0.1	3486	99.8
150	2	0.1	3488	99.9
152	2	0.1	3490	99.9
179	1	0.0	3491	100.0
200	1	0.0	3492	100.0

Table 17. The percent of successful anglers landing 1 to 200 scup (MRFSS A fish) pe day, Maine-New York, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	430	15.3	430	15.3
2	288	10.2	718	25.5
3	270	9.6	988	35.1
4	170	6.0	1158	41.2
5	175	6.2	1333	47.4
6	123	4.4	1456	51.7
7	79	2.8	1535	54.5
8	123	4.4	1658	58.9
9	59	2.1	1717	61.0
10	100	3.6	1817	64.6
11	36	1.3	1853	65.8
12	80	2.8	1933	68.7
13	39	1.4	1972	70.1
14	37	1.3	2009	71.4
15	96	3.4	2105	74.8
16	30	1.1	2135	75.9
17	36	1.3	2171	77.1
18	37	1.3	2208	78.5
19	21	0.7	2229	79.2
20	52	1.8	2281	81.1
21	12	0.4	2293	81.5
22	8	0.3	2301	81.8
23	24	0.9	2325	82.6
24	41	1.5	2366	84.1
25	29	1.0	2395	85.1
26	14	0.5	2409	85.6
27	16	0.6	2425	86.2
28	18	0.6	2443	86.8
29	2	0.1	2445	86.9
30	61	2.2	2506	89.1
31	12	0.4	2518	89.5
32	9	0.3	2527	89.8
33	9	0.3	2536	90.1
34	5	0.2	2541	90.3
35	6	0.2	2547	90.5
36	23	0.8	2570	91.3
37	5	0.2	2575	91.5
38	8	0.3	2583	91.8
39	9	0.3	2592	92.1
40	23	0.8	2615	92.9
41	9	0.3	2624	93.2
42	9	0.3	2633	93.6
43	3	0.1	2636	93.7
44	9	0.3	2645	94.0
45	10	0.4	2655	94.3
46	1	0.0	2656	94.4
47	3	0.1	2659	94.5
48	5	0.2	2664	94.7
49	2	0.1	2666	94.7
50	37	1.3	2703	96.1
51	4	0.1	2707	96.2
52	2	0.1	2709	96.3
53	4	0.1	2713	96.4
54	11	0.4	2724	96.8
55	10	0.4	2734	97.2
56	5	0.2	2739	97.3
58	3	0.1	2742	97.4
60	10	0.4	2752	97.8
62	1	0.0	2753	97.8
63	7	0.2	2760	98.1
66	5	0.2	2765	98.3
67	3	0.1	2768	98.4

Table 17 cont'd.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
68	1	0.0	2769	98.4
72	1	0.0	2770	98.4
74	1	0.0	2771	98.5
75	8	0.3	2779	98.8
76	3	0.1	2782	98.9
77	3	0.1	2785	99.0
78	1	0.0	2786	99.0
80	1	0.0	2787	99.0
81	2	0.1	2789	99.1
82	2	0.1	2791	99.2
84	1	0.0	2792	99.2
90	4	0.1	2796	99.4
94	3	0.1	2799	99.5
99	3	0.1	2802	99.6
100	1	0.0	2803	99.6
102	1	0.0	2804	99.6
103	1	0.0	2805	99.7
120	1	0.0	2806	99.7
134	2	0.1	2808	99.8
150	2	0.1	2810	99.9
152	2	0.1	2812	99.9
179	1	0.0	2813	100.0
200	1	0.0	2814	100.0

Table 18. The percent of successful anglers landing 1 to 200 scup (MRFSS A fish) per day, New Jersey-Cape Hatteras, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	352	51.9	352	51.9
2	74	10.9	426	62.8
3	61	9.0	487	71.8
4	24	3.5	511	75.4
5	36	5.3	547	80.7
6	31	4.6	578	85.3
7	6	0.9	584	86.1
8	12	1.8	596	87.9
9	6	0.9	602	88.8
10	22	3.2	624	92.0
11	1	0.1	625	92.2
12	3	0.4	628	92.6
13	6	0.9	634	93.5
14	1	0.1	635	93.7
15	12	1.8	647	95.4
16	1	0.1	648	95.6
17	1	0.1	649	95.7
18	3	0.4	652	96.2
20	9	1.3	661	97.5
23	4	0.6	665	98.1
24	1	0.1	666	98.2
25	3	0.4	669	98.7
26	1	0.1	670	98.8
30	3	0.4	673	99.3
31	1	0.1	674	99.4
32	1	0.1	675	99.6
40	1	0.1	676	99.7
42	1	0.1	677	99.9
48	1	0.1	678	100.0

Table 19. The percent reduction in exploitation associated with various possession limits for scup, 1990-1992. The reductions assume a post-release mortality of 15%.

BAG	COAST	ME-NY	NJ-HAT
1	77.3	78.4	63.1
2	71.4	72.8	52.7
3	66.3	67.9	44.6
4	61.9	63.6	38.4
5	57.9	59.7	33.0
6	54.4	56.3	28.8
7	51.2	53.1	25.6
8	48.2	50.1	22.6
9	45.5	47.4	20.0
10	42.9	44.8	17.5
11	40.7	42.5	15.8
12	38.4	40.2	14.1
13	36.4	38.2	12.5
14	34.5	36.2	11.0
15	32.6	34.3	9.7
16	31.0	32.6	8.7
17	29.5	31.0	7.7
18	28.0	29.5	6.8
19	26.6	28.1	5.9
20	25.3	26.8	5.1
21	24.1	25.5	4.5
22	22.9	24.3	4.0
23	21.8	23.1	3.5
24	20.7	21.9	3.0
25	19.7	20.9	2.7
26	18.7	19.9	2.4
27	17.8	19.0	2.1
28	17.0	18.0	1.8
29	16.1	17.2	1.6
30	15.3	16.3	1.3
31	14.6	15.6	1.2
32	14.0	14.9	1.0
33	13.3	14.2	0.9
34	12.7	13.6	0.9
35	12.1	12.9	0.8
36	11.5	12.3	0.7
37	11.0	11.7	0.6
38	10.5	11.2	0.5
39	9.9	10.6	0.4
40	9.5	10.1	0.3
41	9.0	9.7	0.2
42	8.6	9.2	0.1
43	8.2	8.8	0.1
44	7.8	8.4	0.1
45	7.4	8.0	0.0
46	7.1	7.6	0.0
47	6.7	7.2	0.0
48	6.4	6.9	.
49	6.1	6.5	.
50	5.8	6.2	.

Table 20. The percent reduction in exploitation associated with various possession limits and a 7" TL minimum size for scup, 1990-1992. The reductions assume a post-release mortality of 15%.

Bag	Coast	ME-NY	NJ-HAT
1	80.4	80.9	69.3
2	74.6	75.4	59.5
3	69.5	70.5	51.8
4	65.2	66.3	45.8
5	61.2	62.4	40.7
6	57.8	59.0	36.7
7	54.6	55.8	33.5
8	51.6	52.8	30.6
9	48.9	50.1	28.0
10	46.4	47.6	25.6
11	44.1	45.2	23.8
12	41.9	43.0	22.0
13	39.8	40.9	20.4
14	37.9	39.0	19.0
15	36.1	37.1	17.6
16	34.5	35.4	16.6
17	32.9	33.9	15.6
18	31.4	32.3	14.7
19	30.1	30.9	13.9
20	28.7	29.6	13.1
21	27.5	28.3	12.5
22	26.4	27.1	12.0
23	25.2	25.9	11.4
24	24.1	24.8	11.0
25	23.1	23.7	10.7
26	22.2	22.7	10.4
27	21.3	21.8	10.2
28	20.5	20.9	9.9
29	19.6	20.0	9.6
30	18.8	19.2	9.4
31	18.1	18.5	9.2
32	17.5	17.8	9.1
33	16.8	17.1	8.9
34	16.2	16.5	8.8
35	15.6	15.8	8.7
36	15.0	15.2	8.6
37	14.5	14.6	8.4
38	14.0	14.1	8.3
39	13.5	13.5	8.2
40	13.0	13.0	8.0
41	12.5	12.5	7.9
42	12.1	12.1	7.9
43	11.7	11.7	7.8
44	11.3	11.3	7.8
45	11.0	10.9	7.8
46	10.6	10.5	7.8
47	10.3	10.1	7.7
48	9.9	9.8	3.3
49	9.6	9.4	3.3
50	9.3	9.1	3.3

Attachment 1

Scup Management Measures

Overfishing Reduction Strategies

Fishing in excess of the F_{max} level is defined as overfishing for scup. F_{max} is 0.25 for scup (equivalent to an annual exploitation rate of 20%) and the current instantaneous fishing mortality (F) is 1.2 or higher (equivalent to an annual exploitation rate of 65%).

It is proposed that fishing mortality will not exceed the F_{max} level by the eighth year following FMP implementation for scup. The following recovery strategy will be implemented. In years 1 and 2, minimum fish sizes and commercial gear regulations will be imposed. In years 3 to 5, target exploitation rates will be 47% for scup. In years 6 and 7, the target exploitation rates will be 33% and in year 8 and subsequent years, the target exploitation rate will be 20%. This recovery schedule is:

Exploitation Rates	
Current	65%
Year 3	47%
Year 6	33%
Year 8	20%

This eight-year strategy reflects the pressure now being placed on fishermen by other FMPs. Although the scup resource should be rebuilt as quickly as possible, scup management measures can be implemented over an eight-year time frame to minimize the short term economic burden placed on fishermen and still reduce the overfished condition of the stocks.

Preferred Management Measures

Scup - Years One and Two

It is proposed that for the first two years following FMP implementation that the minimum fish size be 8" TL for scup caught by commercial fishermen. The minimum mesh size for vessels retaining more than 100 pounds of scup would be 4.5" (stretch mesh inside measure). Scup traps would be required to have a minimum escape vent of 2.75" in diameter.

The coastwide minimum size for recreational fishermen would be 8" TL. In year one and two, states would have an option for a 7" TL minimum in conjunction with possession limits which result in reductions comparable to the 8" TL minimum size.

Degradable Panels

In scup traps, the hinges and fasteners of each panel or door must be made of one of the following degradable materials:

1. untreated hemp, jute, or cotton string of 3/16" (4.8 mm) diameter of smaller;

2. magnesium alloy, timed float releases (pop-up devices) or similar magnesium alloy fasteners; or

3. ungalvanized or uncoated iron wire of 0.062" (1.6 mm) diameter or smaller.

Years Three Onward

The minimum size for scup in all commercial and recreational fisheries would be 8" TL.

Prior to year three and annually thereafter, the Council, working through a Monitoring Committee, would evaluate the success of the FMP relative to the overfishing reduction goal and propose adjustments to the management system. Beginning with year three, additional measures would be implemented by the Regional Director to change the regulations based on the recommendations of the Council. Additional management measures could be any or all of the following:

- a commercial quota allocated by State with Federal permit holders being prohibited from landing in any State where the quota had been landed.

- a coastwide recreational possession limit.

- closed seasons for the commercial and/or recreational fisheries.

Management Measures for all Years

Moratorium

There will be a moratorium on entry of additional commercial vessels into the scup fisheries in the EEZ. Each State is encouraged to adopt complementary moratorium measures for those participating in the commercial fishery. Vessels with documented landings of scup for sale between 26 January 1985 and 26 January 1990 qualify for a moratorium permit to land and sell scup under this moratorium program. Under the moratorium, vessels and moratorium permits together may be bought and sold. Vessels that involuntarily leave the fishery (for example, vessels that were sunk or burnt) and vessels that are judged unseaworthy by the Coast Guard may be replaced with vessels of

the same Gross Registered Tonnage (GRT), horsepower (as listed by the engine manufacturer), and overall registered length as the vessel being replaced. Permits may not be combined to create larger replacement vessels. The moratorium terminates at the end of the fifth year following implementation unless extended by FMP amendment. The moratorium may be terminated or replaced at any time by FMP amendment establishing an alternative limited entry system.

A vessel is eligible for a moratorium permit if it meets any of the following criteria:

1. The vessel landed and sold scup in the management unit for scup between 26 January 1985 and 26 January 1990; or

2. The vessel was under construction for, or was being rerigged for, use in the directed fishery for scup on 26 January 1990 and provided the vessel has landed scup for sale prior to implementation of this FMP. For the purpose of this paragraph, "under construction" means that the keel has been laid, and "being rerigged" means physical alteration of the vessel or its gear had begun to transform the vessel into one capable of fishing commercially for scup; or

3. The vessel is replacing a vessel of substantially similar harvesting capacity which involuntarily left the scup fishery during the moratorium or a vessel judged unseaworthy by the Coast Guard, and both the entering and replaced vessels are owned by the same person. "Substantially similar harvesting capacity" means the same GRT, horsepower (as listed by the engine manufacturer), and vessel registered length for commercial vessels.

Eligibility must be established during the first year of the FMP. In other words, the moratorium permit may not be applied for more than twelve months following the effective date of the final regulations or if a vessel is retired from the fishery. This does not affect annual permit renewals.

Applicants for moratorium permits shall provide information with the application sufficient for the Regional Director to determine if the vessel meets the eligibility requirements. Sales receipts or dealer weighout forms signed by the dealer and, for condition 3, a notarized statements from marine architects or surveyors or shipyard officials will be considered acceptable forms of proof.

Other Management Measures

The amount of scup on board a vessel using small mesh trawl gear may not exceed 100 pounds.

All scup on vessels fishing with a mesh smaller than the legal minimum size must have

any scup on board boxed in a manner that will facilitate enforcement personnel knowing whether the vessel has more than 100 pounds of scup on board to meet the minimum mesh size criterion. Any unboxed scup on board a vessel fishing with a net smaller that the legal minimum is considered a violation of this FMP.

The Regional Director may place sea samplers aboard vessels if he determines a voluntary sea sampling system is not giving a representative sample from the scup fishery

Commercial vessels would be allowed to sell only to permitted dealers and permitted dealers would be allowed to buy only from permitted commercial vessels.

The following would be required to have permits: vessels landing scup for sale, dealers purchasing scup from permitted vessels, and party and charter boats in the scup fisheries

Operators of commercial vessels (vessels with permits to sell scup) and operators of party and charter boats will be required to obtain permits. The operator is the person on board and in change of the operation of the vessel.

Vessels landing scup for sale would need to submit logbook reports. Dealers purchasing scup from permitted commercial vessels would need to submit reports. Operators of charter and party boats would need to submit logbooks.

Black Sea Bass Report

Fisheries Information

Black sea bass commercial landings in 1992 were slightly lower than the 1983-1992 average of 3.6 million pounds (Table 21). However, recreational landings in 1992, at 3.3 million pounds, were nearly 2 million pounds lower than the 1983-1992 average of 4.9 million pounds. The commercial-recreational distribution was 42% to 58% for the years 1983 to 1992.

A total of 56% of the commercial landings of black sea bass was attributed to otter trawls from 1983 to 1992. Fish pots/traps and hand lines accounted for 33% and 5% of the landings, respectively. By water area, 15% of the commercial landings came from state waters and 84% from the EEZ. A total of 20%, 68%, and 11% of the average, coastwide commercial landings were from New England, the Mid-Atlantic, and North Carolina areas, respectively.

Approximately 31% of the black sea bass landed by recreational fishermen were caught in state waters from 1981 to 1990. On average, 3%, 84% and 13% of the black sea bass landed by recreational fishermen were caught in New England, Mid-Atlantic, and North Carolina water areas, respectively. More black sea bass were landed by anglers fishing from party/charter boats (61%) than from private/rental boats (37%) during this period.

Indices of Abundance

The Northeast Fisheries Center (NEFC) has used the spring offshore survey as an index for black sea bass recruits and the autumn inshore survey for pre-recruits. The index for larger fish declined from a high of 6.09 fish per tow in 1977 to a low of 0.20 per tow in 1982 (Table 22). The 1992 value of 1.99 is slightly above the 1972 to 1990 average of 1.63.

The index for pre-recruits indicates that above average year classes were produced in 1977, 1982, and 1986 (Table 22). Recruitment for 1992, based on this index, was well below average.

Biological Reference Points and Current Fishing Mortality Rates

The Mid-Atlantic Fishery Management Council (MAFMC) adopted an overfishing definition for black sea bass based on an estimate of F_{max}. F_{max} is a biological reference point derived from yield per recruit analysis and is defined as the fishing mortality rate that maximizes the yield per recruit. Recent analyses conducted by the NEFC indicate that F_{max} for black sea bass is 0.17 (NEFC 1992).

Mercer (1978) estimated that fishing mortality rates for black sea bass were greater then 0.6 in the mid-1970's. Estimates were based on catch curve analysis of sea bass collected from the winter trawl fishery from 1974-1975. An estimate of F equal to 0.9 was also derived for black sea bass collected from the summer pot fishery during 1973-1974. Based on length composition data from the commercial and recreational fisheries, current fishing mortality rates are 0.6 or higher, indicating that black sea bass are overexploited and have been since at least the mid-1970's. Exploitation rates would have to be reduced 66% to reach the target fishing mortality rate of 0.17 for black sea bass, assuming a current F of 0.6.

Gear Selectivity

Because mesh selectivity studies have not been conducted for black sea bass, the relationship between body depth and total length as derived by Weber and Briggs (1983) was used to calculate retention lengths for black sea bass (Table 23).

Body length/width and body length/depth relationships (Weber and Briggs 1983) were used to derive the minimum sizes of black sea bass that would be retained by fish traps fitted with escape vents (Table 24) or openings between the slats (Table 25). Because black sea bass are caught by lobster fishermen, it is important to note that effective January 26, 1992, the FMP for American Lobster requires that all lobster traps must contain one of the following minimum dimensions for escape vents: a rectangular escape vent not less than 1-7/8 inches by 6 inches wide or two circular escape vents with openings less than 2-3/8 inches in diameter.

The South Atlantic Fishery Management Council's (SAFMC) Snapper/Grouper FMP implemented an 8" TL minimum size for black sea bass south of Cape Hatteras, NC. The plan also regulates black sea bass traps. These regulations state in part that traps must have doors or panels fastened with biodegradable material. Traps must also have a 2-square-inch minimum open mesh area, a 1-inch minimum length for shortest side, a minimum distance of 1 inch between parallel sides of rectangular openings and 1.5 inches between parallel sides of mesh openings with more than 4 sides and 1.9 inch minimum distance for diagonal measurement.

Management Measures

Background Information

As a review, black sea bass has an overfishing definition based on F_{max} and the stock is overfished; i.e., current F exceeds F_{max}. The MAFMC and the ASMFC Management Board approved a recovery strategy that reduces overfishing on black sea bass over an 8 year time frame (Attachment 2). The recovery strategy calls for minimum fish sizes and

commercial gear regulations in year 1 and 2. In years 3 through 5, target exploitation rates would be 29% for black sea bass. Assuming current exploitation rates are 41% (F=0.6) and current estimates of mortality still approximate these rates, exploitation would have to be reduced 29% in the third year.

Minimum sizes and gear restrictions - Year 1 and 2

Neither the MAFMC nor the ASMFC have determined which minimum sizes they would implement in the first year. The staff had proposed a 10" TL minimum size for black sea bass for both commercial and recreational fishermen. Since that initial proposal, several alternatives were proposed including lower size limits for the entire coast, or area (state vs EEZ), or region (New England vs New Jersey and south). Black sea bass pot fishermen in the Mid-Atlantic have stated that a 10" TL minimum fish size would place too large an economic burden on their commercial fishing operations.

The MAFMC staff proposal included a minimum mesh size of 4.5" for vessels retaining more than 100 lbs of black sea bass. Based on body size measurements, the L50 associated with this mesh would be 11.6" TL. Proposed management measures also included minimum diameters of 2.75" for sea bass escape vents or a 1.5" slat opening in sea bass pots to release undersized fish.

Some pot fishermen have argued that escape vents will not work to release small sea bass before the trap is hauled back. Other Mid-Atlantic pot fishermen have suggested that rectangular vents will work but not circular escape vents. New England pot fishermen have indicated that they prefer circular escape vents which would release small sea bass and not valuable scup.

I have proposed research to investigate the use of rectangular escape vents in pots this spring. Hopefully, results of these studies will become available by late 1994 or early 1995.

Effects of size limits

NEFSC analysis for black sea bass indicated an increase in yield of approximately 25% with an increase in the minimum size to 10" TL (Table 26). The change in yield was less with a smaller minimum size. The size at which 50% of the black sea bass are sexually mature is 7.5" TL. Black sea bass are protogynous hermaphrodites and transition rates of females to males continues to increase to a size of 9.4" TL and then decline; highest transition rates occurred between 8 and 10" TL (Table 27).

In general, because minimum sizes increase the size at full recruitment, yields are increased as fishermen catch larger, heavier fish. In addition, minimum size regulations can increase the resilience of the stock to overfishing; i.e., the biological reference points (F_{max}) can increase.

Historic commercial and recreational length frequencies were used as an estimate of potential short-term impacts of length limits on the black sea bass fisheries (Tables 28 to 34). Intercept data from the MRFSS were examined for the years 1987 to 1991. Commercial length frequencies from the NMFS Weighout Data and North Carolina DMF from 1982 to 1991 were also used to determine potential size limit effects. In general, size frequency data indicated that potential size limit effects increased from north to south, were gear dependent, and varied from one year to the next.

Effort Controls

There is still some misunderstanding on the part of both fishermen and administrators regarding the impact of minimum size regulations on the status of sea bass stocks. There have been extensive discussions concerning this topic for many of the regulated species such as New England groundfish and weakfish. The minimum sizes that have been proposed only reduce mortality on sublegal fish (i.e., juveniles and young adults). Without additional effort controls, the F on the fully recruited fish is unchanged and as a result the stock continues to be overfished. Reductions in F on the fully recruited fish can only occur with additional management measures. These could include seasons, area closures, bag limits, trip limits, and other measures.

Initially, staff had proposed that effort controls on the commercial fishery be achieved principally through the use of coastwide quotas. However, the Demersal Committee and Management Board requested that the technical committee develop an alternative to a quota based system for the commercial fishery. After extensive discussions, the technical committee decided that the best alternative to a commercial quota would be gear specific seasonal closures.

Season Closures - Commercial Fishery

NMFS General Canvass Data from 1988 to 1992 were used to determine the potential impact of seasonal closures on commercial landings of black sea bass. The technical committee decided that these years would be most representative of current conditions in the fisheries. These data include monthly landings data from Delaware and state corrections for black sea bass landings in Massachusetts.

After an initial presentation, the committee decided that seasonal closures for black sea bass and scup otter trawl fishermen be identical and be applied on a coastwide basis. Calculations restricted the smallest unit of closure to one week. Calculated reductions were as close to 29% (the target reduction in the third year of the management program) as could be derived based on average monthly data from 1988-92 and the criteria decided on by the committee. In addition, seasonal closures were derived assuming that fishermen would recoup 0% and 15% of their landings during the open season. The 15% level applied to all mobile gears, including hook and line. Because of the fixed nature of the pots and traps, only a 0% (no recoupment) level was used for

these gears.

If a recoupment level was assumed, calculations were made using a simple algorithm that accounted for changes in landings per day (LPD) during the open and closed seasons. For example, for black sea bass landed by otter trawl fishermen, the time period from November 15 to January 31 accounted for 34% of the landings during 1982-1991. A closed season during these months would result in a fishing season that would be open for 8 1/2 months (February through November 14) or approximately 288 days. The amount of discretionary time during this open period would be 43 days (15% x 288 days). Since 66% of the landings occurred during the open period, the LPD during the open period would be 66 divided by the days fished or 245 (288-43). This LPD multiplied times the discretionary time (43 days) would result in a recoupment of 12%. As a result, the realized reduction in landings for the closed period February through May would be 22% (34% - 12%).

Seasonal closures ranged from slightly more than one month to four months depending on location (north or south) and gear type (Table 35). Seasonal closures could achieve the desired reductions if the following criteria were met:

1. The level of discretionary time used to derive the reductions is realistic. The assumed value of 15% may be an underestimate for some gears, especially for the black sea bass trawl fisheries where there are few directed trips; i.e., most sea bass are caught incidentally with other species.

2. All gear capable of catching black sea bass be removed from the water during the closed period. Without such a provision, fishermen would continue to fish for other species during the closed period, catching and discarding black sea bass in the process. For trawl fisheries, the technical committee recommended that mesh sizes of 5.5" diamond mesh or larger could continue to operate and exemptions be required for squid and fly net fisheries.

3. Landings patterns do not vary much from one year to the next; i.e., anticipated landings in year three of the management program are similar to the landings observed for 1988-1992.

It is also important to note that fishermen could negate seasonal closure effects by increasing effort or efficiency during the open season. These increases could produce conditions in the stock that were equivalent to or worse than those before regulations.

Finally, any effective area/seasonal closure would require that NMFS be able to track commercial vessels on a real time basis to ensure a high level of compliance. Such a system could be comparable to the Vessel Monitoring System that will be implemented by NMFS for groundfish and scallops.

Sea Sampling Data

The NMFS contracted with the Monomet Bird Observatory to place onboard observers on US boats in 1989, 1990 and 1991 to collect a variety of data on the vessels, personnel, and catch. A total of 10,359 pounds of black sea bass was caught by surveyed fishermen in 1989. Of those, 3% were discarded because they were too small (Table 36). Approximately 5% of the 9,500 pounds of black sea bass caught by pot fishermen in 1989 were discarded. Fish were discarded because they were too small either for market or regulation.

Discard rates increased in 1990 and 1991 for black sea bass. In 1991, more black sea bass (12%) were discarded than in any of the other three years.

Recreational Possession and Size Limits

The 1990-1992 MRFSS data were used to derive the effects of the proposed size limits on recreational landings. Based on the technical committee discussions, the coast was divided into northern (ME-NY) and southern (NJ-Hatteras) subregions. Based on 1990-92 intercept data, a 10" TL minimum size limit for black sea bass would reduce exploitation by 22.7% and 36.1% in the northern and southern subregions, respectively (Table 37). Based on catch frequencies for 1990-92 (Tables 38-40), comparable possession limits would be 3 and 8 sea bass for the north and south, respectively, without a size limit (Table 41). Combined with a 9" TL minimum size, the possession limits that would produce similar reductions in exploitation as the size limit would be 6 fish in the north and 32 fish in the south (Table 42). Coastwide, a 25 fish possession limit combined with a minimum size of 9" TL would have resulted in a reduction comparable to the effects of the 10" TL minimum size limit.

Habitat Concerns, Gear Prohibitions, and SMZ's

A number of commercial and recreational fishermen expressed concern about the ability of specific bottom-tending trawl gear, also known as roller rigs, roller trawls, or rock hoppers, to harvest excessive quantities of small tautog and black sea bass and destroy productive tautog and sea bass habitat in the process. A similar issue was addressed by the South Atlantic Council in the mid 1980's in Amendment 1 to the Snapper/Grouper FMP. Because roller rig trawls were damaging live bottom, the SAFMC developed a management measure to prohibit the use of trawl gear (<u>all</u> trawl gear and not just roller rigs) from harvesting fish in the directed snapper/grouper fishery in the South Atlantic.

The ASMFC Artificial Reef Committee has also drafted language regarding Special Management Zones (SMZ's). The Committee has requested that this language be included in the FMP. The proposed language and justification for SMZ's is attached (Attachment 3).

Other Management Measures

The management measures drafted by MAFMC Staff included a moratorium provision to limit the entry of additional commercial vessels (see Attachment 2). The language is similar to that of Amendment 2 of the Summer Flounder FMP. The draft management measures also include a requirement for permits and logbooks. Attachment 1 summarizes the management measures that have been proposed by the staff and the technical committee for black sea bass.

Table 21. Commercial and recreational landings (thousands of pounds) of black sea bass.

Year	Comm	Rec	Total	% Comm	% Rec
1983	3336	5776	9112	37	63
1984	4332	2840	7172	60	40
1985	3420	4836	8256	41	59
1986	4191	14233	18424	23	77
1987	4168	2194	6362	66	34
1988	4143	5151	9294	45	55
1989	2918	3588	6506	45	55
1990	3502	3300	6802	51	49
1991	2805	4568	7373	38	62
1992	3007	3246	6253	48	52
Avg	3582	4973	8555		

Table 22. The NEFC autumn inshore survey index (stratified mean number per tow) for black sea bass pre-recruits and the spring offshore survey index (stratified mean number per tow) for black sea bass recruits.

Year	Pre-recruit No/tow	Recruit No/tow
1972	0.02	0.49
1973	0.45	0.87
1974	0.33	2.36
1975	3.95	2.02
1976	0.93	1.62
1977	15.87	6.09
1978	0.08	2.94
1979	0.91	5.21
1980	0.60	1.41
1981	0.10	0.89
1982	11.63	0.20
1983	1.42	0.67
1984	0.61	0.25
1985	2.90	0.39
1986	6.66	2.06
1987	0.34	1.17
1988	0.26	0.68
1989	2.17	0.76
1990	0.46	1.00
1991	0.74	1.13
1992	0.45	1.99
Mean	2.42	1.63

Table 23. The average length at which black sea bass are first fully recruited to the trawl fishery by mesh size. Estimates represent L50's and are based on retention lengths as calculated from the body depth/total length relationship for black sea bass derived by Weber and Briggs (1983).

Mesh size	Total Length
2.0	5.0
2.5	6.3
3.0	7.6
3.5	8.9
4.0	10.3
4.5	11.6
5.0	12.9

Table 24. The minimum theoretical size of black sea bass (TL inches) that would be retained by a fish trap fitted with escape vents (inches). The derived lengths are based on the body depth/total length relationship for black sea bass derived by Weber and Briggs (1983).

Bass Size	Vent Diameter
7	1.9
8	2.2
9	2.5
10	2.76
11	3.0
12	3.3

Table 25. The minimum theoretical size of black sea bass (TL inches) that would be retained by a fish trap constructed with the associated distance (inches) between the slats. The derived lengths are based on the body width/total length relationship for black sea bass derived by Weber and Briggs (1983).

Bass Size	Slat Opening
7	1.00
8	1.19
9	1.38
10	1.57
11	1.75
12	1.94

Table 26. Yield per recruit estimates (at an F=0.6) and Fmax estimates for black sea bass based on age (size) at entry into the fishery.

Age	Size (TL)	YPR (Kg)	Fmax
2	7.7	0.156	0.17
3	10.6	0.211	0.21
4	12.8	0.259	0.26
5	14.4	0.301	0.33
6	16.7	0.334	0.45
7	18.4	0.353	0.63

Source: Gary Shepherd pers. comm.

Table 27. The probability that a female black sea bass will transform to a male by size.

SL (cm)	TL (in)	Probability of Transition
7	2.7	0.000
8	3.3	0.010
9	3.8	0.015
10	4.4	0.025
11	4.9	0.050
12	5.5	0.072
13	6.1	0.100
14	6.6	0.125
15	7.2	0.145
16	7.7	0.150
17	8.3	0.151
18	8.9	0.152
19	9.4	0.152
20	10.0	0.150
21	10.5	0.140
22	11.1	0.130
23	11.7	0.120
24	12.2	0.110
25	12.8	0.095
26	13.3	0.080
27	13.9	0.060
28	14.5	0.045
29	15.0	0.035
30	15.6	0.030
31	16.1	0.025
32	16.7	0.020
33	17.3	0.015
34	17.8	0.010
35	18.4	0.005
36	18.9	0.002
37	19.5	0.001
38	20.0	0.000

Source: Gary Shepherd pers. comm.

Table 28. The percent of measured black sea bass (TL) less than a given size based on 1987-1991 MRFSS intercept data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1987	3.8	14.0	31.7	52.0	1,092
1988	4.4	12.1	22.7	37.1	1,068
1989	2.6	9.1	22.4	42.7	4,097
1990	4.6	16.9	30.5	47.4	2,740
1991	4.4	14.0	31.9	52.9	2,654

Table 29. The percent of measured black sea bass (TL) less than a given size based on 1987-1991 MRFSS intercept data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
ME	-	-	-	-	-
NH	-	-	-	-	-
MA	1.2	1.8	2.3	2.9	171
RI	0.0	6.2	12.3	27.2	81
CT	0.0	2.2	17.4	37.0	46
NY	0.9	3.8	9.9	24.0	1,809
NJ	3.5	17.5	35.0	54.6	2,375
DE	3.2	11.6	32.1	54.6	1,226
MD	2.7	7.7	19.0	41.1	968
VA	5.6	14.3	30.5	50.7	3,174
NC	5.2	18.0	33.9	53.5	1,801

Table 30. The percent of measured black sea bass (TL) less than a given size based on 1991 MRFSS intercept data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
ME	-	-	-	-	-
NH	-	-	-	-	-
MA	8.0	8.0	8.0	8.0	25
RI	0.0	14.3	28.6	28.6	7
CT					0
NY	3.6	13.0	23.6	56.5	276
NJ	3.6	16.3	37.8	59.9	913
DE	2.4	10.5	36.5	64.0	381
MD	5.5	10.4	21.9	47.3	201
VA	7.5	14.4	24.2	33.5	562
NC	3.5	14.2	39.4	58.8	289

Table 31. The percent of measured black sea bass (TL) less than a given size based on 1983-1991 NEFSC weighout data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1983	0.2	5.5	19.3	50.5	3,219
1984	0.3	3.1	9.9	28.5	3,841
1985	0.0	2.1	13.3	38.5	2,509
1986	0.2	7.3	20.1	40.6	2,922
1987	0.0	4.6	13.3	35.4	1,545
1988	0.1	2.7	9.5	25.5	1,376
1989	0.0	6.9	17.0	30.7	883
1990	0.0	1.1	7.0	28.5	1,142
1991	0.0	2.9	19.0	42.4	735

Table 32. The percent of measured black sea bass (TL) less than a given size based on 1982-1992 North Carolina winter trawl data.

Year	< 7.0	< 8.0	< 9.0	< 10.0	N
1982-1983	0.3	8.7	28.9	58.0	38,238
1983-1984	0.3	5.0	18.3	48.9	94,136
1984-1985	2.9	12.7	24.2	48.3	175,971
1985-1986	1.2	23.3	40.2	59.7	106,683
1986-1987	2.8	10.5	30.0	64.8	110,595
1987-1988	2.0	18.6	40.7	65.3	120,191
1988-1989	0.8	12.1	27.1	57.4	31,734
1989-1990	1.7	12.6	31.2	62.9	158,064
1990-1991	9.8	25.0	41.4	65.2	6,378
1991-1992	0.0	6.5	27.5	65.4	84,174

Table 33. The percent of measured black sea bass (TL) less than a given size based on 1983-1991 NEFSC weighout data for each state.

State	< 7.0	< 8.0	< 9.0	< 10.0	N
MA	0.0	0.0	0.0	0.0	313
RI	0.0	0.0	2.6	14.5	2,136
CT					0
NY	0.0	0.0	0.0	5.6	197
NJ	0.2	5.2	18.8	46.4	9,950
DE					0
MD	0.1	2.5	13.6	33.5	966
VA	0.2	4.7	12.5	30.7	4,610

Table 34. The percent of measured black sea bass (TL) less than a given size based on 1983-1991 NEFSC weighout data for each major gear type.

Gear	< 7.0	< 8.0	< 9.0	< 10.0	N
Otter Trawl	0.2	3.3	10.8	29.6	13,374
Floating Traps	0.0	0.0	0.0	1.0	206
Pots/Traps	0.1	7.1	25.8	59.3	4,592

Table 35. Closed seasons necessary to achieve the third year reduction in exploitation for black sea bass.

Subregion	Gear	Closed Season	% Reduction 0% Rec	% Reduction 15% Rec
Coast	Otter Trawl	Nov 15-Jan 31	34	22
		Oct 15-Feb 7	41	31
North (ME-NY)	Pots/Traps	Apr 1-May 15	24	-
	Hand Lines	May 1-Jul 15	29	17
		May 1-Jul 31	40	33
South (NJ-NC)	Pots/Traps	Apr 1-May 31	27	-
	Hand Lines	Jul 1-Sep 30	30	18
		Jul 1-Oct 31	41	30

Table 36. Discard rates (%) for black sea bass from otter trawl trips sampled by the NMFS Sea Sample observers, 1989-1991.

Year	Sea Bass
1989	3
1990	9
1991	12

Table 37. The percent reduction in exploitation associated with various size limits for black sea bass, 1990-1992. The reductions are based on measured fish from the MRFSS survey and assume a post-release mortality of 25%. The number in parentheses is the sample size.

Size (TL)	Coast (7148)	ME-NY (885)	NJ-Hat (6263)
8	10.1	4.1	10.9
9	21.0	10.0	22.6
10	34.4	22.7	36.1
11	46.9	33.3	48.8
12	57.8	49.7	58.9

Table 38. The percent of successful anglers landing 1 to 150 black sea bass (MRFSS A fish) per day, coastwide, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1810	51.5	1810	51.5
2	426	12.1	2236	63.6
3	256	7.3	2492	70.9
4	177	5.0	2669	76.0
5	139	4.0	2808	79.9
6	81	2.3	2889	82.2
7	53	1.5	2942	83.7
8	91	2.6	3033	86.3
9	47	1.3	3080	87.7
10	85	2.4	3165	90.1
11	4	0.1	3169	90.2
12	14	0.4	3183	90.6
13	16	0.5	3199	91.1
14	19	0.5	3218	91.6
15	43	1.2	3261	92.8
16	9	0.3	3270	93.1
17	39	1.1	3309	94.2
18	2	0.1	3311	94.2
19	3	0.1	3314	94.3
20	15	0.4	3329	94.8
21	19	0.5	3348	95.3
22	12	0.3	3360	95.6
23	8	0.2	3368	95.9
24	13	0.4	3381	96.2
25	9	0.3	3390	96.5
27	8	0.2	3398	96.7
28	9	0.3	3407	97.0
30	33	0.9	3440	97.9
31	4	0.1	3444	98.0
32	3	0.1	3447	98.1
35	3	0.1	3450	98.2
36	1	0.0	3451	98.2
38	8	0.2	3459	98.5
40	2	0.1	3461	98.5
45	9	0.3	3470	98.8
48	5	0.1	3475	98.9
49	1	0.0	3476	98.9
50	7	0.2	3483	99.1
52	2	0.1	3485	99.2
57	2	0.1	3487	99.3
60	9	0.3	3496	99.5
61	1	0.0	3497	99.5
63	4	0.1	3501	99.7
68	2	0.1	3503	99.7
74	1	0.0	3504	99.7
76	1	0.0	3505	99.8
90	1	0.0	3506	99.8
100	2	0.1	3508	99.9
105	1	0.0	3509	99.9
120	1	0.0	3510	99.9
135	2	0.1	3512	100.0
150	1	0.0	3513	100.0

Table 39. The percent of successful anglers landing 1 to 120 black sea bass (MRFSS A fish) per day, Maine-New York, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	422	69.0	422	69.0
2	90	14.7	512	83.7
3	27	4.4	539	88.1
4	25	4.1	564	92.2
5	13	2.1	577	94.3
6	14	2.3	591	96.6
7	6	1.0	597	97.5
8	7	1.1	604	98.7
9	1	0.2	605	98.9
10	4	0.7	609	99.5
12	1	0.2	610	99.7
24	1	0.2	611	99.8
120	1	0.2	612	100.0

Table 40. The percent of successful anglers landing 1 to 150 black sea bass (MRFSS A fish) per day, New Jersey-Cape Hatteras, NC, 1990-92.

C_PER_T	Frequency	Percent	Cumulative Frequency	Cumulative Percent
1	1388	47.8	1388	47.8
2	336	11.6	1724	59.4
3	229	7.9	1953	67.3
4	152	5.2	2105	72.6
5	126	4.3	2231	76.9
6	67	2.3	2298	79.2
7	47	1.6	2345	80.8
8	84	2.9	2429	83.7
9	46	1.6	2475	85.3
10	81	2.8	2556	88.1
11	4	0.1	2560	88.2
12	13	0.4	2573	88.7
13	16	0.6	2589	89.2
14	19	0.7	2608	89.9
15	43	1.5	2651	91.4
16	9	0.3	2660	91.7
17	39	1.3	2699	93.0
18	2	0.1	2701	93.1
19	3	0.1	2704	93.2
20	15	0.5	2719	93.7
21	19	0.7	2738	94.4
22	12	0.4	2750	94.8
23	8	0.3	2758	95.1
24	12	0.4	2770	95.5
25	9	0.3	2779	95.8
27	8	0.3	2787	96.1
28	9	0.3	2796	96.4
30	33	1.1	2829	97.5
31	4	0.1	2833	97.7
32	3	0.1	2836	97.8
35	3	0.1	2839	97.9
36	1	0.0	2840	97.9
38	8	0.3	2848	98.2
40	2	0.1	2850	98.2
45	9	0.3	2859	98.6
48	5	0.2	2864	98.7
49	1	0.0	2865	98.8
50	7	0.2	2872	99.0
52	2	0.1	2874	99.1
57	2	0.1	2876	99.1
60	9	0.3	2885	99.4
61	1	0.0	2886	99.5
63	4	0.1	2890	99.6
68	2	0.1	2892	99.7
74	1	0.0	2893	99.7
76	1	0.0	2894	99.8
90	1	0.0	2895	99.8
100	2	0.1	2897	99.9
105	1	0.0	2898	99.9
135	2	0.1	2900	100.0
150	1	0.0	2901	100.0

Table 41. The percent reduction in exploitation associated with various possession limits for black sea bass, 1990-1992. The reductions assume a post-release mortality of 25%.

BAG	COAST	ME-NY	NJ-HAT
1	67.5	42.8	69.5
2	59.1	29.8	61.4
3	52.8	22.9	55.1
4	47.7	17.8	50.0
5	43.5	14.5	45.8
6	40.0	12.1	42.2
7	36.9	10.7	39.0
8	34.1	9.7	36.0
9	31.7	9.1	33.5
10	29.6	8.6	31.2
11	27.8	8.4	29.4
12	26.1	8.2	27.5
13	24.5	8.1	25.8
14	22.9	7.9	24.1
15	21.5	7.8	22.5
16	20.2	7.7	21.2
17	19.0	7.5	19.9
18	18.0	7.4	18.8
19	17.0	7.2	17.8
20	16.0	7.1	16.7
21	15.1	7.0	15.7
22	14.3	6.8	14.9
23	13.5	6.7	14.1
24	12.8	6.6	13.3
25	12.2	6.5	12.6
26	11.6	6.4	12.0
27	10.9	6.4	11.3
28	10.4	6.3	10.7
29	9.9	6.2	10.1
30	9.3	6.1	9.6
31	9.0	6.1	9.2
32	8.6	6.0	8.8
33	8.3	5.9	8.5
34	8.0	5.9	8.1
35	7.6	5.8	7.8
36	7.3	5.7	7.5
37	7.0	5.7	7.1
38	6.7	5.6	6.8
39	6.4	5.5	6.5
40	6.2	5.5	6.2
41	5.9	5.4	6.0
42	5.7	5.3	5.7
43	5.4	5.2	5.4
44	5.1	5.2	5.1
45	4.9	5.1	4.9
46	4.7	5.0	4.6
47	4.5	5.0	4.4
48	4.2	4.9	4.2
49	4.1	4.8	4.0
50	3.9	4.8	3.8

Table 42. The percent reduction in exploitation associated with various possession limits and a 9" TL minimum size for black sea bass, 1990-1992. The reductions assume a post-release mortality of 25%.

	Coast	ME-NY	NJ-Hat
1	85.9	51.1	93.3
2	78.5	39.3	86.3
3	73.0	33.2	80.8
4	68.4	28.4	76.2
5	64.5	25.3	72.2
6	61.2	22.9	68.8
7	58.2	21.6	65.7
8	55.6	20.6	62.9
9	53.2	20.0	60.4
10	51.1	19.5	58.2
11	49.4	19.3	56.4
12	47.7	19.1	54.6
13	46.2	18.9	53.0
14	44.7	18.8	51.4
15	43.4	18.6	50.0
16	42.1	18.5	48.6
17	40.9	18.4	47.3
18	39.9	18.2	46.2
19	38.9	18.1	45.2
20	37.9	18.0	44.2
21	37.0	17.8	43.2
22	36.3	17.7	42.4
23	35.5	17.5	41.6
24	34.8	17.4	40.9
25	34.2	17.3	40.2
26	33.6	17.3	39.5
27	33.0	17.2	38.9
28	32.4	17.1	38.3
29	31.9	17.1	37.7
30	31.4	17.0	37.2
31	31.0	16.9	36.8
32	30.6	16.9	36.3
33	30.3	16.8	36.0
34	29.9	16.7	35.6
35	29.6	16.7	35.3
36	29.3	16.6	34.9
37	28.9	16.5	34.6
38	28.6	16.4	34.2
39	28.3	16.4	33.9
40	28.0	16.3	33.6
41	27.8	16.2	33.3
42	27.5	16.2	33.0
43	27.2	16.1	32.8
44	27.0	16.0	32.5
45	26.8	16.0	32.3
46	26.6	15.9	32.1
47	26.3	15.8	31.8
48	26.1	15.8	31.6
49	25.9	15.7	31.4
50	25.8	15.6	31.2

Attachment 2

Black Sea Bass Management Measures

Overfishing Reduction Strategies

Fishing in excess of the F_{max} level is defined as overfishing for black sea bass. F_{max} is 0.17 for black sea bass (equivalent to an annual exploitation rate of 14%) and the current instantaneous fishing mortality (F) is 0.6 or higher (equivalent to an annual exploitation rate of 41%).

It is proposed that fishing mortality will not exceed the F_{max} level by the eighth year following FMP implementation for black sea bass. The following recovery strategy will be implemented. In years 1 and 2, minimum fish sizes and commercial gear regulations will be imposed. In years 3 to 5, target exploitation rates will be 29%. In years 6 and 7, the target exploitation rates will be 21% and in year 8 and subsequent years, the target exploitation rate will be 14%. This recovery schedule is:

Exploitation Rates

Current	41%
Year 3	29%
Year 6	21%
Year 8	14%

This eight-year strategy reflects the pressure now being placed on fishermen by other FMPs. Although the sea bass resource should be rebuilt as quickly as possible, management measures can be implemented over an eight-year time frame to minimize the short term economic burden placed on fishermen and still reduce the overfished condition of the stocks.

Preferred Management Measures

Years One and Two

It is proposed that for the first two years following FMP implementation that the minimum fish size be 9" TL for black sea bass caught by commercial fishermen. The minimum mesh size for vessels retaining more than 100 pounds of black sea bass would be 4.5" (stretch mesh inside measure). Black sea bass traps would be required to have a 1 3/8" x 6" slot or 2 1/2" diameter escape vent.

The coastwide minimum size for recreational fishermen would be 10" TL. In year one and two, states would have an option for a 9" TL minimum in conjunction with

possession limits which result in reductions comparable to the 10" TL minimum size.

Degradable Panels

In black sea bass traps, the hinges and fasteners of each panel or door must be made of one of the following degradable materials:

1. untreated hemp, jute, or cotton string of 3/16" (4.8 mm) diameter or smaller;

2. magnesium alloy, timed float releases (pop-up devices) or similar magnesium alloy fasteners; or

3. ungalvanized or uncoated iron wire of 0.062" (1.6 mm) diameter or smaller.

Years Three Onward

The minimum size for black sea bass in all commercial and recreational fisheries would be 10" TL.

Prior to year three and annually thereafter, the MAFMC, working through a Monitoring Committee, would evaluate the success of the FMP relative to the overfishing reduction goal and propose adjustments to the management system. Beginning with year three, additional measures would be implemented by the Regional Director to change the regulations based on the recommendations of the MAFMC. Additional management measures could be any or all of the following:

- a commercial quota allocated by State with Federal permit holders being prohibited from landing in any State where the quota had been landed.

- a coastwide recreational possession limit.

- closed seasons for the commercial and/or recreational fisheries.

Management Measures for all Years

Moratorium

There will be a moratorium on entry of additional commercial vessels into the black sea bass fisheries in the EEZ. Each State is encouraged to adopt complementary moratorium measures for those participating in the commercial fishery. Vessels with documented landings of black sea bass for sale between 26 January 1985 and 26 January 1990 qualify for a moratorium permit to land and sell black sea bass under this

moratorium program. Under the moratorium, vessels and moratorium permits together may be bought and sold. Vessels that involuntarily leave the fishery (for example, vessels that were sunk or burnt) and vessels that are judged unseaworthy by the Coast Guard may be replaced with vessels of the same Gross Registered Tonnage (GRT), horsepower (as listed by the engine manufacturer), and overall registered length as the vessel being replaced. Permits may not be combined to create larger replacement vessels. The moratorium terminates at the end of the fifth year following implementation unless extended by FMP amendment. The moratorium may be terminated or replaced at any time by FMP amendment establishing an alternative limited entry system.

A vessel is eligible for a moratorium permit if it meets any of the following criteria:

1. The vessel landed and sold black sea bass in the management unit for black sea bass between 26 January 1985 and 26 January 1990; or

2. The vessel was under construction for, or was being rerigged for, use in the directed fishery for black sea bass on 26 January 1990 and provided the vessel has landed black sea bass for sale prior to implementation of this FMP. For the purpose of this paragraph, "under construction" means that the keel has been laid, and "being rerigged" means physical alteration of the vessel or its gear had begun to transform the vessel into one capable of fishing commercially for black sea bass; or

3. The vessel is replacing a vessel of substantially similar harvesting capacity which involuntarily left the black sea bass fishery during the moratorium or a vessel judged unseaworthy by the Coast Guard, and both the entering and replaced vessels are owned by the same person. "Substantially similar harvesting capacity" means the same GRT, horsepower (as listed by the engine manufacturer), and vessel registered length for commercial vessels.

Eligibility must be established during the first year of the FMP. In other words, the moratorium permit may not be applied for more than twelve months following the effective date of the final regulations or if a vessel is retired from the fishery. This does not affect annual permit renewals.

Applicants for moratorium permits shall provide information with the application sufficient for the Regional Director to determine if the vessel meets the eligibility requirements. Sales receipts or dealer weighout forms signed by the dealer and, for condition 3, notarized statements from marine architects or surveyors or shipyard officials will be considered acceptable forms of proof.

Other Management Measures

The amount of black sea bass on board a vessel using small mesh trawl gear may not exceed 100 pounds.

All black sea bass on vessels fishing with a mesh smaller than the legal minimum size must have any black sea bass on board boxed in a manner that will facilitate enforcement personnel knowing whether the vessel has more than 100 pounds of black sea bass on board to meet the minimum mesh size criterion. Any unboxed black sea bass on board a vessel fishing with a net smaller that the legal minimum is considered a violation of this FMP.

The Regional Director may place sea samplers aboard vessels if he determines a voluntary sea sampling system is not giving a representative sample from the black sea bass fishery.

Commercial vessels would be allowed to sell only to permitted dealers and permitted dealers would be allowed to buy only from permitted commercial vessels.

The following would be required to have permits: vessels landing black sea bass for sale, dealers purchasing black sea bass from permitted vessels, and party and charter boats in the black sea bass fisheries.

Operators of commercial vessels (vessels with permits to sell scup) and operators of party and charter boats will be required to obtain permits. The operator is the person on board and in change of the operation of the vessel.

Vessels landing black sea bass for sale would need to submit logbook reports. Dealers purchasing black sea bass from permitted commercial vessels would need to submit reports. Operators of charter and party boats would need to submit logbooks.

Attachment 3

PROPOSED LANGUAGE FOR INCLUSION IN THE SCUP AND BLACK SEABASS FISHERIES MANAGEMENT PLAN

Management Measure # : Prohibition or Restraint of Specific Fishing Gear from Artificial Reefs.

Upon request to the Council from the permittee (possessor of a U.S. Army Corps of Engineers permit) for any artificial reef or other modification of habitat for the purpose of fishing, the modified area and an appropriate surrounding area may be designated as a **Special Management Zone** (SMZ) that prohibits or restrains the use of specific types of fishing gear that are not compatible with the Fishery Management Plan(s) (FMP's), and/or the intent of the permittee for the artificial reef. The mechanism for this is regulatory amendment similar to adding or changing minimum sizes (Section_____):

1. A Monitoring Team[1] will evaluate the request in the form of a written report considering the following criteria:
   a. fairness and equity;
   b. promotion of conservation;
   c. excessive shares; and
   d. consistency with the objectives of the FMP's, the Magnuson Fishery Conservation and Management Act, and other applicable law;
   e. cumulative impacts.
2. The Council Chairperson may schedule meetings of the Advisory Panel (AP) and/or Scientific and Statistical Committee (SSC) to review the report and associated documents and to advise the Council. The Council Chairperson may also schedule public hearings.

[1] The Team will be comprised of members of Council staff, Fishery Operations Branch (Northeast Region, NMFS), and the NMFS Northeast Fisheries Center.

3. The Council, following review of the Team's report, supporting data, public comments and other relevant information, may recommend to the northeast Regional Director (RD) of the national Marine Fisheries Service that a SMZ be approved. Such a recommendation would be accompanied by all relevant background data.
4. The RD will review the Council's Recommendation and, if s/he concurs in the recommendation, will propose regulations in accordance with the recommendations. S/he may also reject the recommendation, providing reasons for rejection in writing.
5. If the RD concurs in the Council's recommendations, s/he shall publish proposed regulations in the *Federal Register* and shall afford a reasonable period for public comment which is consistent with the urgency of the need to implement the management measure(s).

Impact and Rationale

The intent of a SMZ is to enhance management of fishery resources on or around artificial reefs while optimizing fishing opportunities that would not otherwise exist. Artificial reefs are costly and provide benefits that can be easily nullified by the use the certain types of fishing gear. In addition, certain types of gear pose various threats to the reeef structure and associated fishery resources, including: a) entanglement of other boating and fishing gear; b)entanglement in the reef structure ("ghost gear"); and c) damage to or movement of reef structure.

Atlantic States Marine Fisheries Commission
Scup and Black Seabass Technical Committee
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Established March 1992

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