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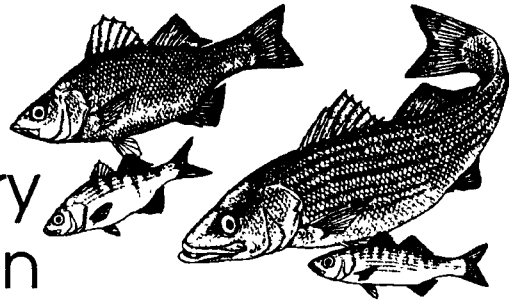
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CHESAPEAKE BAY PROGRAM

Annual Progress Report

U.S. Environmental Protection Agency
Region 4 (Chesapeake Bay Resource
Center) (4030)
811 Greenway Street
Faintel, Va., VA 23107

Chesapeake Bay Striped Bass Fishery Management Plan



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Regional Center for Environmental Information
U.S. EPA Region III
1650 Arch St
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Chesapeake Bay Striped Bass Fishery Management Plan

Annual Progress Report

U.S. Environmental Protection Agency
Region III Information Resource
Center (3PM32)
841 Chestnut Street
Philadelphia, PA 19107

Chesapeake Bay Program

June 1992

Introduction

Under the 1987 Chesapeake Bay Agreement, the Bay jurisdictions committed to developing a series of fishery management plans (FMPs) for commercially, recreationally, and selected ecologically valuable species. Striped bass was selected as an important species and a management plan was completed in 1989. The plan was developed by the Fisheries Management Workgroup under the Chesapeake Bay Program's Living Resources Subcommittee. The workgroup is composed of representatives from government agencies, the academic community, the fishing industry, and public interest groups representing the District of Columbia, Maryland, Pennsylvania, and Virginia. The Striped Bass FMP contains biological information, a discussion of problem areas, and recommended management actions. The FMP also provides the framework for regulating an open striped bass fishery.

Background

In order to counteract the severe decline in striped bass landings and recruitment, Maryland enacted a moratorium on striped bass fishing on January 1, 1985 and Virginia enacted size limits and seasonal restrictions. Four years later the Potomac River and the Virginia fisheries were also closed. The 1989 Maryland striped bass juvenile index exceeded the Atlantic States Marine Fisheries Commission's (ASMFC) trigger (a three year running average of 8.0) for opening the fishery. The 1989 Maryland index was the highest value since 1970 and a limited striped bass fishery was opened for the 1990-1991 season. The ASMFC Interstate Striped Bass Management Plan established measures to control and monitor fishing along the coast. State management guidelines were to limit fishing mortality (F) to 0.25 or about 18% of the legal size fish being harvested. The ASMFC recommendations included measures at least as conservative as the following: restriction of commercial fishing to those months which accounted for 20% of the average commercial catch from 1972 to 1979; a year-round recreational creel limit of one fish per person per day; minimum size limits of 18 inches total length (TL) for resident stocks in inland waters and 28 inches TL for migratory stocks (generally in the Atlantic Ocean); and a recommended prohibition on fishing striped bass on their spawning grounds during the spawning season. Each state submitted fishery plans describing how they would meet the criteria for ASMFC's approval.

During the 1990-1991 Chesapeake Bay fishing season, the total estimated striped bass harvest was 650,700 lbs. for Maryland, 264,200 lbs. for Virginia, and 249,870 lbs. for the Potomac River. The District of Columbia reported no recreational catch and commercial fishing was prohibited. In addition, estimated losses due to bycatch and poaching mortality from recreational and commercial fisheries activities was 168,300 lbs. for Maryland and 129,642 lbs. for Virginia.

The primary objectives of striped bass management in the Chesapeake Bay and along the Atlantic coast are to control fishing mortality at $F=0.25$ and to continue rebuilding the spawning stock. As part of the fishery management process, the Chesapeake Bay Striped Bass Plan is annually reviewed and updated. This report gives an overview of the regulations, enforcement, and harvest pertaining to the 1991-1992 striped bass fishery in the Chesapeake Bay. For specific information on the management plan, refer to the 1989 Chesapeake Bay Striped Bass Management Plan. For specific information on the 1990-1991 striped bass fishing season, refer to the April 1991 Annual Progress Report, Chesapeake Bay Striped Bass Fishery Management Plan.

Stock Status

The Striped Bass Stock Assessment Subcommittee (SBSAS) evaluated the current status of the Atlantic coast striped bass stock. Their assessment of the 1991 fishing season was based on 1) mortality estimates from the Chesapeake Bay, Hudson River and the mixed coastal stock; 2) trends in relative spawning stock biomass (weight of all sexually mature fish in the population) from the Chesapeake Bay and Hudson River; and 3) trends in juvenile production from various Virginia, Maryland, Delaware, and Hudson rivers. Their analysis suggests that the current fishing mortality rate (F) on legal and sublegal striped bass ranges from 0.09 to 0.26. Indices of spawning stock biomass from along the coast suggest that striped bass spawning biomass is rebuilding at a steady rate. From an examination of juvenile indices, dominant year-classes are apparent in the last several years and support the evidence of increasing spawning stock biomass (Crecco 1991). Overall instantaneous rates of mortality (Z) from along the Atlantic coast are stable with an average of 0.43 ($SE=0.042$). The SBSAS conclusions suggest that striped bass exploitation is being controlled and the stock is rebuilding. However, the stock is not fully recovered and will require more time before current fishing regulations can be relaxed to allow an exploitation rate of $F=0.50$.

The major fishing regulations adopted by each Chesapeake Bay jurisdiction during the 1991-1992 fishing season are presented in Table 1. In addition to seasons, creel limits, size limits, and quotas or caps, there were also gear, area, and other types of restrictions. These restrictions are included in Table 2 which presents an overview of all actions taken in response to the Chesapeake Bay Striped Bass Management Plan.

Fishery Dependent Monitoring Programs

Fishery dependent monitoring during the 1991-1992 season consisted of collecting commercial and recreational catch and effort data. For comparison, results from the 1990-1991 and the 1991-1992 fishing seasons are presented in Tables 3 and 4. The

following is a summary of the fishery dependent monitoring programs for each jurisdiction during 1991-1992.

Maryland

A Maryland striped bass trophy fishery was held from May 11th to May 25th, 1991. During this period, a person could catch one striped bass, 36" TL or larger. The fishing area was restricted to the area south of the Chesapeake Bay Bridge to the Maryland-Virginia state line excluding all bays, sounds, tributaries, creeks, and rivers, except Tangier and Pocomoke Sounds. The area restrictions protected the striped bass spawning grounds in compliance with ASMFC recommendations. The use of gaffs and live bait were prohibited. Each angler had to have a special permit and 45,800 trophy permits were issued. All harvested fish had to be tagged and checked at a check-in station where a biological data form was completed. The trophy fishery was monitored through a combination of telephone and access/intercept surveys, reports from check-in stations, and individual fishing permits. During the May 1991 trophy season, 149 fish were checked in with an average length of 39.9" TL (101.3 cm) and an average weight of 23.8 lbs. (10.8 kg). Using information from the telephone survey, it was estimated that 43% of the trophy anglers failed to check-in their catch. Non compliance was probably a combination of confusing the access/intercept contact with the requisite check-in procedure and intentionally disregarding the procedure. Based on the telephone and access/intercept surveys, the 1991 trophy fishery harvested an estimated 336 striped bass weighing 7,973 lbs. Losses due to illegal harvest and hook and release were estimated at 6,148 fish or 49,184 lbs. (Jones et al. 1991).

In order to regulate the striped bass fisheries and maintain exploitation within ASMFC guidelines, particularly the limitation of fishing mortality to 18% of the stock, the Maryland Department of Natural Resources (MDNR) developed a harvest control model (Rugolo and Jones 1989). The 1991-1992 quota for all fisheries was 1,071,700 lbs. and was allocated as follows: 455,473 lbs. (42.5%) to the recreational fishery; 455,473 lbs. (42.5%) to the commercial fishery; and 160,754 lbs. (15%) to the charterboat fishery.

The recreational fishery was monitored through telephone and access-intercept surveys. The open season was October 9 - 26, 1991, with a 2 fish per person per season creel limit. Since the quota was not reached during the scheduled season, a supplemental season was implemented. The recreational fishery was reopened on November 2-3 and 8-10 with a one fish per person per day creel limit and on November 16-17 with a 2 fish per person per day creel limit. All recreational fishermen were required to have a special fishing permit and were given two tags. All landed striped bass had to be tagged. The estimated 1991 harvest of striped bass (18"-36" TL) for the recreational fishery was 460,866 lbs. or 1.2% over the 455,473 pound quota (MDNR 1992). Recreational fishermen on Maryland's

Atlantic coast were not included in the Bay quota. The Atlantic coast season was the same as the Chesapeake Bay season but with a 28" TL minimum size limit and a 1 fish per person per day creel limit.

Charter boat captains had to declare their intent to fish before the season began and were required to record their daily catch in logbooks. The fishery was monitored through the mandatory logbook reporting and a creel survey conducted by MDNR. The charter season was scheduled from October 9 - November 11, 1991 but was closed on October 27th after an in-season projection of harvest exceeded the charter boat quota. Upon further analysis, the charter boat fishery was reopened on November 16-17. Charter boat anglers were allowed 2 fish per person per day. The estimated 1991 harvest of striped bass for the charter boat fishery was 159,218 lbs. or 99% of the 160,754 lb. quota (MDNR 1992).

The commercial fishery was monitored through a complete enumeration. The quota was allocated by gear type and based on historic averages. Pound nets, haul seines, and gill nets were assigned 98% of the commercial quota. Each commercial fisherman was required to file an intent to fish and specify the gear type. Allocations were determined according to the number of individuals fishing a particular gear type. All harvested striped bass had to be tagged and passed through a check station. The check stations certified the daily harvest for each fisherman and provided daily tallies of striped bass harvest to MDNR. Check stations also provided weekly reports of daily harvest. Fishermen were required to report their striped bass harvest on individual permits and monthly fishing reports. Data from individual permits, monthly reports and check station reports were generally corroborative (MDNR 1992). Due to small catches, the pound net and haul seine season was extended through October 18, 1991 and the Atlantic drift gill net season was extended through January 31, 1992. The use of fyke nets, fish pots, and hoop nets was prohibited. For the 1991-1992 commercial fishing season, the total Maryland harvest from the Chesapeake Bay was 327,590 lbs. or 72% of the total commercial quota. The total Atlantic harvest was 14,454 lbs. or 58% of the Atlantic quota (MDNR 1992). Biological monitoring occurred during the commercial gill net and pound net fisheries. Fish were measured (length and weight), sexed, and aged. Length frequency distributions, mean lengths, age structure, and sex ratios are being analyzed.

In addition to estimating fishing mortality, ASMFC requested that each state also estimate losses due to bycatch and illegal harvest. Maryland DNR estimated losses to the stock from 1) recreational and charter boat angler-induced mortality; 2) bycatch from the striped bass, white perch and American shad commercial gill net operations; 3) bycatch from the commercial hook and line striped bass fishery; 4) bycatch from the ocean trawl fishery; and

5) angler-induced mortality from the commercial striped bass hook and line fishery. Estimated losses to the Maryland striped bass stock in 1991 due to illegal fishing, hook and release mortality, and bycatch were 952,142 lbs. (MDNR 1992). Subtotals for each of the sources are presented in Table 5.

Virginia

The recreational striped bass harvest was estimated using an independent access/telephone survey similar to the Marine Recreational Fisheries Statistics Survey (MRFSS). There was no quota for the recreational fishery but two fishing periods (Oct. 11-27 and Nov. 21- Dec. 5, 1991) and a 2 fish per person per day creel limit (18"-36" TL). A permit was required for all striped bass anglers and 52,309 permits were issued. Estimated trips by area and fishing period were combined with area specific catch rate data collected from the intercept survey to provide estimates of the number of fish harvested (VMRC 1992). Statistics from charter boats were combined with the angler survey. Charter boat captains were required to report number of fishing trips and number of fish harvested. Using an average weight of 5.9 lbs. per fish, the estimated recreational harvest for 1991 was 277,078 lbs.

During 1991, there was a commercial harvest quota of 211,000 lbs. which was distributed among the different gear types. In addition to gear allocations, there were also daily harvest limits to aid quota management. The commercial fishery was divided into two fishing periods, Nov.5 - Dec. 5, 1991 for all gear types and Dec. 6 - Dec. 20 for gill nets only. All fishermen and buyers were required to obtain permits from the Marine Resources Commission, report daily harvests by telephone, and mail weekly reports. From the written reports, the commercial harvest for the 1991 season was calculated at 201,831 lbs. (VMRC 1992).

Biological characteristics were sampled from the commercial harvest by VMRC. Approximately 5.4% (by weight) were sampled for size characteristics (length and weight), 2.5% for sex characteristics, and 1.8% for age. Mean length of the commercial catch was 57.7 cm (22.7") with a mean weight of 2.0 kg (4.5 lbs). Of the 1,141 fish sexed, 69.3% were males. The fish ranged in age from 2 to 8 (year-classes 1989-1983) with 80% from the 1985, 1986, and 1987 year-classes.

Additional losses to the Virginia striped bass stock during 1991 were estimated using 1) bycatch from the commercial shad fishery and Rappahannock gill net fishery; 2) illegal harvest from the commercial fishery; 3) hook and release mortality from the recreational and charterboat fishery; and 4) mortality due to biological monitoring. The estimate of additional striped bass losses in Virginia during 1991 was 198,349 lbs. (VMRC 1992). Subtotals for each of the sources is presented in Table 6.

Potomac River

The striped bass recreational fishery on the Potomac River was limited to 1 fish per person per day during a 30 day season with no target cap or quota. The recreational season was comprised of two fishing periods, Oct. 11-17 and Nov. 8-20, 1991. Each boat operator was issued a permit with a log form to be returned at the end of the season. An estimate of the recreational harvest was calculated using the summation of the log sheets plus information gathered from a follow-up telephone survey of the non-respondents. The estimated 1991 striped bass recreational harvest from the Potomac River was 109,960 lbs. (PRFC 1992).

The charter fishery operated under a 14,000 lb. cap and a creel limit of 2 fish per paying passenger per day. Potomac River charter boat captains are also licensed by MDNR and report their catch to Maryland DNR. Virginia charter boat captains operating on the Potomac report directly to the Potomac River Fisheries Commission (PRFC). The Potomac charter fishery was monitored through mandatory reporting to MDNR and PRFC. The charter fishery opened Oct. 11 and closed Oct. 30 when reports indicated the cap was reached. The 1991 Potomac River charter fishery caught 14,193 lbs. of striped bass.

The PRFC established a commercial harvest of 158,619 lbs. or 20% of the 1970's average commercial harvest of striped bass from the Potomac River. Each gear type was allocated a proportion of the target harvest. Season length and additional fishing restrictions were determined according to gear type. The commercial fishery was monitored through mandatory reporting. The 1991 commercial striped bass harvest from the Potomac River was 216,755 or 37% over the target harvest (PRFC 1992).

Estimates of additional losses to the striped bass stock due to fishing on the Potomac River were calculated using a 15% poaching rate. This calculation resulted in approximately 51,140 lbs. added to the total estimated striped bass harvest from the Potomac River during 1991.

The District of Columbia had a recreational season from Oct. 5- Nov. 15, 1991 with a 2 fish/person/day creel limit. There is no estimate of recreational catch.

Fishery Independent Monitoring

Effective management of the striped bass stock is dependent on the data collected through fishery independent projects. These programs include spawning stock assessments, tagging, stock discrimination research, and juvenile surveys.

Striped bass spawning stocks have been monitored in Maryland waters since 1982. Data from 1990 and 1991 indicate a broader age

class structure with eight year-classes represented. The relative abundance of female striped bass in the upper Bay declined in 1991 but female abundance in the Choptank and Potomac Rivers has remained relatively stable. During the 1990-1991 sampling season, 2,162 striped bass were tagged through the United States Fish and Wildlife Service (USFWS) Cooperative Coastal Striped Bass Tagging Program. In addition, MDNR, in conjunction with the National Marine Fisheries Service and the North Carolina Department of Marine Fisheries, tagged 1,780 striped bass from the coastal migratory stock off the coast of Virginia and North Carolina. Tagging results will be used to evaluate striped bass stock dynamics. Although the 1991 Maryland juvenile index (4.4) was below the long-term average of 8.6, it is an improvement from the 1990 index (Table 7).

From the Virginia portion of the Chesapeake Bay, brood stock data from the York River suggests no change in the relative abundance of female spawners between 1990 and 1991. Estimates of egg abundance and female biomass from the ichthyoplankton survey, however, decreased in 1991. Data from the York shows that approximately 27% of the spawning stock was composed of age eight and older females. Catch-per-unit-of-effort (CPUE) data from the spring monitoring survey on the Rappahannock River also indicates that the spawning stock is relatively stable and has a fair representation of older females. The Virginia Institute of Marine Science (VIMS) has successfully tagged close to 40,000 fish since 1987. From over 10,000 returns, only 3.8% have been from out-of-state. Relatively high tag recoveries in Virginia indicate that bycatch mortality from gill nets and hook and line, are potentially large sources of mortality. The overall Virginia juvenile index dropped to 3.8 fish per seine haul in 1991 (Table 7), the lowest value recorded in the past six years (Loesch and Hill 1991).

Biological data on striped bass within the District of Columbia was collected during 1991. Standardized gear and methods of collecting data were adopted from Maryland DNR and Virginia. Striped bass were tagged in conjunction with the USFWS tagging program. Young-of-the-year (YOY) and adult striped bass were collected during the 1991 survey. The 1991 YOY index of 4.4 was almost identical to 1990. Striped bass older than age 5 (600 mm and larger) were absent from the samples.

Since 1985, Maryland, Virginia and USFWS have conducted an artificial propagation program to supplement the Chesapeake Bay striped bass stock. The success of the hatchery program was validated by the successful recapture and spawning of mature females produced by the hatchery. From tag recovery data, over 12% of the 1991 recreational catch was of hatchery origin. The contribution of hatchery fish to the coastal striped bass stock was estimated at 3%. In the future, the hatchery program will be used to estimate stock abundance by examining the ratio between hatchery and wild caught juveniles.

Enforcement Program

The limited striped bass fall 1991 recreational season generated heavy fishing activity. Increased effort and aggressive enforcement of striped bass regulations were conducted by Natural Resources Police officers and park rangers throughout the Bay area. Natural Resources officers inspected approximately 27,000 recreational fishermen and 14,000 fishing boats. Most violations were for fishing without a license (33), possession of undersized fish (22), and exceeding the daily limit (17). Written warnings were also given for untagged fish (201) and no license in possession (30).

Enforcement of striped bass regulations during the commercial fishing season consisted of checking boat and shoreside fishermen, dockside boats, and wholesale/retail establishments. Fishing activity in Maryland was light except in the northern section of the Bay. Net fishermen were the major source of arrests due to illegal nets, non-attended nets and nets set with the intent to catch striped bass. The tagging system allowed the successful tracking of commercially caught fish and made it difficult for illegal activities. Virginia is considering a tagging system for the commercial fishery to help alleviate enforcement problems.

Water Quality

The jurisdictions have continued to support water quality goals developed by the 1987 Chesapeake Bay Agreement. Water quality and habitat requirements for striped bass were defined (Setzler-Hamilton and Hall 1991). Dissolved oxygen of at least 5 mgL^{-1} is required for all life stages of striped bass. Increasing dissolved oxygen concentrations, especially in the upper Bay will increase suitable summer habitat. Water quality improvements in spawning and nursery areas need to be continued. Striped bass eggs and larvae are adversely affected by low pH and high concentrations of aluminum, cadmium, and copper. Concentrations of suspended particles should be kept below 200 to 500 mgL^{-1} . Higher levels adversely affect larval feeding.

A critical issue that must be addressed, not just for striped bass but for all finfish and shellfish in the Bay, is managing population growth. The health and vitality of the Bay is directly dependent on the management of the land that drains into it. As the population has increased, land use has intensified. Balancing growth with living resource protection is important. Failure to address the situation will result in the weakening of Bay Program water quality goals and continuing degradation of water quality in the Bay.

Conclusion

The striped bass stock in the Chesapeake Bay and along the coast is rebuilding and current fishing rates are acceptable. Monitoring and regulatory procedures for the 1991-1992 Chesapeake Bay striped bass fishery were successful at keeping harvest close to target goals. Fishery independent monitoring indicates that age structure has broadened and spawning stock biomass is increasing.

Areas that need to be emphasized during 1992 to improve management of striped bass are:

- 1) Continue the quota and monitoring systems during the 1992-1993 recreational and commercial fishery seasons;
- 2) Develop an improved striped bass stock indicator and trigger for management action;
- 3) Obtain more detailed information on current and historical fishing rates, growth, maturation, and migration for assessing spawning stock biomass.

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Table 1. 1991-1992 Striped Bass Fishing Regulations in the Chesapeake Bay.

SEASONS	MARYLAND		VIRGINIA		PRFC		D. C.	
	Start Date	End Date	Start Date	End Date	Start Date	End Date	Start Date	End Date
COMMERCIAL Gill Net	Jan. 2	Feb. 28 '92	Nov. 5	Dec. 5 '91	Feb. 4	18 '92	No commercial fishery	
			Dec. 6	Dec. 20 '91	Mar. 3	'92		
Pound Net	Sep. 2	Oct. 18 '91	Nov. 5	Dec. 5 '91	Oct. 1	7 '91		
Hook/Line	Dec. 2	Dec. 31 '91	Nov. 5	Dec. 5 '91	Aug. 8	15, 22 '91		
					Nov. 1	7, 15-21 '91		
All Other			Nov. 5	Dec. 5 '91				
RECREATIONAL	May 11	25 '91	Oct. 11	27 '91	Oct. 11	17 '91	Oct. 5 - Nov. 15 '91	
	Oct. 9	Oct. 26 '91	Nov. 21	Dec. 5 '91	Nov. 8	20 '91		
	Nov. 2	3, 8-10, 16-17						
CHARTER	May 11	25 '91	Oct. 11	27 '91	Oct. 11	30 '91	No charter fishery	
	Oct. 9	Nov. 11 '91	Nov. 21	Dec. 5 '91				
CAPS/QUOTAS <LBS>	Commercial	455,473		211,000		158,619	No fishery	
	Recreational	455,473		No cap		No cap	No cap	
	Charter	160,754		No cap		14,000	No fishery	
CREEL LIMITS								
	Recreational	1 fish/person/season	2 fish/person/day	2 fish/person/day	1 fish/person/day	2 fish/person/day		
Charter	Spring	1 fish/person/season	2 fish/person/day	2 fish/person/day	2 fish/person/day	2 fish/person/day		
	Fall	2 fish/person/day						
LEGAL SIZE <inches>	Spring	Fall						
	Minimum	36	18	18	18	18	18	
Maximum		36	36	36	36	36	36	

Table 2. Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
1.1 Over-fishing	1.1.1 The jurisdictions will utilize a combination of harvest restrictions to meet target fishing mortality rates	1991	MDNR - R DCFM - R PRFC - R VMRC - R	Commercial harvest caps, seasons, area restrictions, gear restrictions, minimum size and other measures were implemented. See actions below.
	1.1.2 The jurisdictions will cap commercial harvest with a quota not to exceed 20% of the average annual commercial catch from 1972-1979.	1991	MDNR - R PRFC - R VMRC - R	1991 - 1992 commercial harvest caps: MD Bay: 455,473 lbs; Ocean: 25,000 lbs; PRFC: 159,000 lbs; VA: 211,000 lbs. DC: No commercial fishing. Commercial allocations were further subdivided by gear type. MD also established individual recreational quotas. See section 2.1 below.
1.2 Reduced Spawning Stock	1.2.1 The jurisdictions will establish a minimum size limit of 18" in the Bay.	1991	MDNR - R DCFM - R PRFC - R VMRC - R	Each jurisdiction established a minimum size of 18 inches in the Bay. The minimum size in the Atlantic Ocean was 28 inches. A MD trophy fishery (May 11-25) had a minimum size limit of 36".
	1.2.2 The jurisdictions will prohibit the keeping and sale of sublegal striped bass bycatch.	1991	MDNR - R PRFC - R VMRC - R	Gill net mesh sizes were set to target fish larger than 18" (see 2.2.1), minimizing harvest of small fish. Regs prohibited keeping and selling fish under 18 inches. Losses due to sublegal bycatch were estimated.
	1.2.3 The jurisdictions will establish a maximum size limit of 36" in the Bay.	1991	MDNR - R DCFM - R PRFC - R VMRC - R	Not required by ASMFC, but established as a conservation method. No maximum size was established in the ocean and coastal bays.

Table 2 (cont'd). Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
1.3 Poor Recruitment	1.3.1 During the transition fishery, age VIII and older females will be protected so they become sufficiently represented in the spawning pop.	1991	MDNR - A DCFM - A PRFC - A VMRC - A	The combination of size limits, minimum mesh sizes, harvest caps, and other actions will keep fishing mortality low enough for sufficient numbers of age VIII and older females to become part of the spawning stock.
	1.3.2 During a recovered fishery, females age VIII and older will be protected so they continue to be represented in the spawning population.	Open	MDNR - A DCFM - A PRFC - A VMRC - A	Action date depends on when a recovered fishery is reached.
	1.3.3 Maryland and Virginia will continue hatchery production to enhance the striped bass spawning stock.	Continue	MDNR - A VMRC - A USFWS - A	Besides stocking, larvae are marked, released and recaptured for larval mortality studies. The contribution of hatchery fish to the wild stock has been documented.
	1.3.4 Hybrid and non-native SB stocking will be restricted according to RSMFC guidelines.	1991	MDNR - A PFC - A USFWS - A	Hybrids still occur in the upper Bay and are attributed to annual stocking in the Susquehanna River drainage.
2.1 Allocation Issues	2.1.1 Maryland quota will be allocated as follows- 42.5% commercial; 42.5% recreational; 15% charter. VA and PRFC will use various restrictions to equitably allocate harvest.	1991	MDNR - R PRFC - R VMRC - R	Sub-allocating for various commercial gears continued and allocations could not be transferred. The 1991-1992 SB recreational caps were: MD Recreational - 455,473 lbs, Charter - 160,754 lbs; PRFC Charter - 14,000 lbs.

Table 2 (cont'd). Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
	2.1.2 Commercial fishing seasons will be closed when harvest caps are reached, regardless of time during season. Same for other MD seasons.	1991	MDNR - A, R PRFC - A, R VMRC - A, R	Each jurisdiction monitored effort to calculate harvest; fishing was terminated as appropriate and notification was given to the public. Preliminary catch figures are: MD: Recreational - 460,866 lbs; Charter - 159,218 lbs; Bay Commercial - 327,590 lbs; Atl. Commercial - 14,454 lbs; VA: Recreational - 277,078 lbs; Commercial - 201,831 lbs; PRFC: Recreational - 103,960 lbs; Charter - 14,193 lbs; Commercial - 216,755 lbs.
2.2 Gear Restrictions	2.2.1 The jurisdictions will establish minimum mesh sizes for gill nets.	1991	MDNR - R PRFC - R VMRC - R	Minimum mesh sizes were established: VA - 5"; MD - 5"; PRFC - 5 1/4". These mesh sizes target 18" and larger fish.
	2.2.2 MD and VA will require drift gill nets to be marked, tended, and recovered daily. Other VA gill nets must be marked. PRFC will continue fixed location for gill nets.	1991	MDNR - R PRFC - A VMRC - R	Appropriate regulations were implemented; MD and VA established similar drift net marking systems to reduce confusion.
	2.2.3 Maryland and Virginia will establish a maximum length of gill net allowed. PRFC will establish a maximum number of gill net licenses.	1991	MDNR - R PRFC - R VMRC - R	MD - 400 yds/licensee or 1200 yds/boat for 3 licensees; VA - 600 yds/vessel; PRFC - 200 yds/stand (licensed location), 2 stands/person or 4/boat.
	2.2.4 Maryland and Virginia will establish annual quotas for their commercial fisheries	1991	MDNR - R PRFC - R VMRC - R	Commercial harvest caps were enacted; see Action 1.1.2. MD also established daily/seasonal quotas for individual commercial fishermen. Caps for 1992-1992 are being discussed.

Table 2 (cont'd). Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
2.3 Selling and Buying Striped Bass	2.3.1 A) MD will establish check stations;	1991	MDNR - R	A) Through the check stations, fish were counted & weighed prior to sale.
	B) VA dealers and watermen will be required to have a special permit to sell;			B) VA established permit system for harvestors and dealers.
	C) Sale by recreational and charter fishermen will be prohibited.			C) Regulations were established.
2.4 Seasons, Creel Limits, and Fishing Areas	2.3.2 Will establish weekly reporting systems for buyers and commercial watermen.	1991	MDNR - R PRFC - R VMRC - R	MD: daily logs and weekly transmittal by watermen, weekly reports by dealers.
				VA: weekly reports from watermen and buyers.
	2.4.1 A-E The jurisdictions will establish fishing seasons in the Bay with as much consistency as possible.	1991	MDNR - R DCFM - R PRFC - R VMRC - R	PRFC: weekly reports from watermen. MD & VA provided buyer data to PRFC during their seasons.
				Seasons differed slightly because of striped bass migratory patterns and local practices. Seasons established: MD Bay - Trophy fishery: May 11-25; Pound net & seine: Sept 2 - Oct 18; Commercial gill net: Jan 2 - Feb 28; Recreational: Oct 9-26; Nov 2-3,8-10,16-17; Charter: Oct 9 - Nov 11,16-17. Ocean - Commercial: Dec 2 - Jan 31; Rec & charter: same as Bay. VA - Recreational: Oct 11-27, Nov 21-Dec 5; Commercial, all gears: Nov 5-Dec 5; gill nets: Dec 6-20. PRFC - Recreational: Oct 11-27, Nov 8-20; Charter: Oct 11-30; Commercial H & L: Aug 8,15,22; Pound net: Oct 1-17, Nov 1-7,15-21; Gill net: Feb 4,18, Mar 3. D.C. - Recreational: Oct 5-Nov 15.
	2.4.2 Maryland will prohibit commercial SB fishing on weekends and at night.	1991	MDNR - R	Regulations enacted. MD also prohibited recreational fishing at night.

Table 2 (cont'd). Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
	2.4.3 The jurisdictions will maintain striped bass fishing areas.	1991	MDNR - A,R PRFC - A VMRC - A,R	Striped bass fishing will not be allowed in spawning areas during spawning season. MD trophy fishery restricted to below the Bay bridge and in the mainstem to the VA line.
	2.4.4.1 The jurisdictions will establish creel limits of up to 5 fish for the recreational and charter fisheries.	1991	MDNR - R DCFM - R PRFC - R VMRC - R	MD fall creel limits: 1 fish/person/season for recreational; 2 fish/person/day for charter boats. VA: 2 fish/person/day; PRFC: 1 fish/person/day recreational; 2 fish/person/day charter boat. D.C.: 1 fish/person/day
	2.4.4.2 Maryland may allow one trophy fish per boat during a May trophy season.	1991	MDNR - R	In addition to the fall recreational season, MD had a spring trophy season. MD changed to 1 fish/person/season, May 11-25.
2.5 Monitoring	2.5.1 The jurisdictions will monitor striped bass harvest using a variety of methods.	1991	MDNR - A,R PRFC - A,R VMRC - A,R	Jurisdictions used a combination of access/intercept & telephone surveys, check stations and reports from harvesters/dealers.
	2.5.2 DC will conduct an angler survey to determine striped bass catch & effort.	1991	DCFM - A	Striped bass abundance in DC waters was monitored & biological data collected.
2.6 Management and Enforcement Authority	2.6.1 The jurisdictions will develop appropriate mechanisms for timely management of the striped bass resource.	1991	MDNR - R,L DCFM - R PRFC - R VMRC - R	MD has new authority to manage SB and other species. Other jurisdictions have adequate authority. Jurisdictions continue to coordinate management actions.
	2.6.2 The jurisdictions will adopt consistent enforcement policies.	1991	MDNR - A,R DCFM - A,R PRFC - A,R VMRC - A,R	Resources police and park rangers were utilized to enforce SB regulations.

Table 2 (cont'd). Chesapeake Bay Striped Bass Fishery Management Plan Implementation Schedule

PROBLEM AREA	ACTION	DATE	RESPONSIBLE AGENCY & METHOD	COMMENTS/NOTES
3.1 Stock Assessment and Research Needs	3.1 The jurisdictions will continue their efforts to collect stock information.	Continue	MDNR - A DCFM - A PRFC - A VMRC - A	These programs include assessment of juvenile and adult abundance, monitoring the fisheries, tagging for stock discrimination and migration.
	3.2 The jurisdictions will review, update, and initiate studies as needed on reproduction, early mortality, etc.	Variable	MDNR - A DCFM - A PRFC - A VMRC - A	Information is being collected on direct & by-catch fishing mortality, survival of early life stages, and other data.
4.1 Water Quality	4.1 The jurisdictions will continue to support the commitments under the 1987 Chesapeake Bay Agreement.	Continue	MDNR - A DCFM - A PRFC - A VMRC - A	The habitat requirements document has been updated. Recommendations for SB are increase DO, improve water quality in spawning areas, determine hatchery contributions to the spawning stock, quantify estimates of YOY recruitment, and continue the protection of spawning stocks.

LEGEND

- ASMFC = Atlantic States Marine Fisheries Commission
- DCFM = District of Columbia Fishery Management Program
- MDNR = Maryland Department of Natural Resources
- PFC = Pennsylvania Fish Commission
- PRFC = Potomac River Fisheries Commission
- USFWS = U.S. Fish & Wildlife Service
- VMRC = Virginia Marine Resources Commission
- A = Administrative Action
- L = Legislation
- R = Regulation

Table 3. Results of the 1990-1991 Striped Bass Fishing Season in the Chesapeake Bay (pounds)

	Maryland	Virginia	Potomac River
Commercial	124,699	264,250	168,479
Recreational	381,376	180,000	63,186
Charterboat	97,971	8,000	18,204

Table 4. Results of the 1991-1992 Striped Bass Fishing Season in the Chesapeake Bay (pounds)

	Maryland	Virginia	Potomac River
Commercial	327,590	201,830	216,755
Recreational	460,866	210,690	162,500
Charterboat	159,218	9,540	14,193

* Data from MDNR and VMRC reports

Table 5. Summary of estimated losses to the Maryland striped bass stock in 1991 due to illegal fishing, hook and release mortality, and bycatch (MDNR 1991).

FISHERY	LOSSES # of Fish	LOSSES Lbs. of Fish
Open recreational season	76,833	212,824
Closed recreational season for striped bass	197,479	533,193
Striped bass gill net fishery	2,688	14,247
White perch gill net fishery	185,013	185,013
American shad gill net fishery	483	2,955
Commercial striped bass hook & line fishery	226	1,130
Ocean trawl fishery	509	2,780
TOTAL	463,281	952,142

Table 6. Summary of estimated losses to the Virginia striped bass stock in 1991 due to illegal fishing, hook and release mortality, and bycatch (VMRC 1991).

FISHERY	LOSSES # of Fish	LOSSES Lbs. of Fish
Commercial bycatch	25,120	105,751
Illegal commercial harvest	1,205	5,424
Recreational hook & release	20,055	59,162
Illegal hook and line catch	3,302	19,548
Other	2,138	8,464
TOTAL	51,820	198,349

Table 7. Mean Juvenile Indices^x of Striped Bass from Maryland and Virginia, 1980-1991.

Year-class	Maryland Seine	Virginia Seine	Virginia Trawl
1980	2.00	2.54	0.47
1981	1.20	1.57	1.11
1982	8.40	2.71	0.60
1983	1.40	3.48	0.50
1984	4.20	4.36	0.40
1985	2.90	2.41	0.33
1986	4.10	4.75	0.07
1987	4.80	15.75	1.29
1988	2.70	7.64	1.12
1989	25.20	11.23	0.79
1990	2.10	7.34	0.57
1991	4.40	3.80	

^xNumber of fish per tow

