

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

**ATLANTIC STRIPED BASS**  
*(Morone saxatilis)*

2007 FISHING YEAR



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## **I. Status of the Fishery Management Plan**

<u>Date of FMP Approval:</u>	Original FMP: October 1981
<u>Amendments:</u>	Amendment 6: February 2003 (active January 2004)
<u>Management Unit:</u>	Migratory stocks of Atlantic striped bass from Maine through North Carolina
<u>States With Declared Interest:</u>	Maine - North Carolina, including Pennsylvania
<u>Additional Jurisdictions:</u>	District of Columbia, Potomac River Fisheries Commission, National Marine Fisheries Service, United States Fish and Wildlife Service
<u>Active Boards/Committees:</u>	Atlantic Striped Bass Management Board, Advisory Panel, Technical Committee, Stock Assessment Subcommittee, Tagging Subcommittee, Plan Review Team, and Plan Development Team

Under the Atlantic Striped Bass Conservation Act (P.L. 98-613), implementation of the Fishery Management Plan (FMP) is mandatory. Compliance with the FMP is monitored by the Commission's Striped Bass Management Board (Board) and Striped Bass Plan Review Team (PRT). Amendment 6 to the FMP was approved in February 2003, fully implemented by January 1, 2004, and completely replaces all previous Commission plans for Atlantic striped bass.

Amendment 6 was developed to address five limitations within the previous management program: potential inability to prevent the Amendment 5 exploitation target from being exceeded; perceived decrease in availability or abundance of large striped bass in the coastal migratory population; a lack of management direction with respect to target and threshold biomass levels; inequitable effects of regulations on the recreational and commercial fisheries, and coastal and producer area sectors; and excessively frequent changes to the management program.

Amendment 6 established biological reference points (BRPs) to define overfished and overfishing status. Overfished status is defined by a threshold female spawning stock biomass (SSB) comparable to the 1995 level, with a target female SSB of 125 percent the threshold. Overfishing is defined by a threshold fishing mortality rate (F) of  $F_{msy}$ , with a target F based on the plan's objective to maintain an age structure for long-term sustainability. (The Chesapeake Bay and Albemarle-Roanoke stocks operate under a separate target F; see next paragraph.) The BRPs form the basis of a list of triggers for appropriate management response if reached.

The striped bass fisheries are managed with regulations set to achieve the target fishing mortality rate. Most recreational fisheries are constrained by a two fish creel limit, 28 inch minimum size limit, and year-round fishing season except in spawning areas. Through Management Program Equivalency, Amendment 6 allows a smaller minimum size limit (18 inches) in the Chesapeake Bay and Albemarle Sound/Roanoke River with the penalty of a lower target F.

Commercial striped bass fisheries are constrained by minimum size limits and state-by-state quotas. The same minimum size standards regulate the commercial fisheries as the recreational fisheries, except for a 20 inch size limit in the Delaware Bay spring gillnet fishery. Amendment 6 restored the coastal commercial quotas to the average reported landings from 1972-1979, except for Delaware's coastal commercial quota, which remains at the level allocated in 2002. The responsible jurisdictions set quotas for the Chesapeake Bay and Albemarle Sound/Roanoke River commercial fisheries based on the area's target F.

States are permitted the flexibility to deviate from these standards by submitting proposals for review by the Striped Bass Technical Committee, Advisory Panel, and Plan Review Team and contingent upon the approval of the Management Board. Alternative proposals must be "conservationally equivalent" to the management standards. This practice has resulted in a variety of regulations among states (see Tables 1 and 2).

Addendum I to Amendment 6 was approved and implemented in October 2007. The addendum establishes a bycatch monitoring and research program to increase the accuracy of data on striped bass discards, as required by Amendment 6, and also recommends that states, through the Commission if possible, develop a web-based angler education program on fishing techniques known to reduce post-release hooking mortality. The bycatch program establishes a suite of mandatory and voluntary data collection standards, discard mortality studies, and Technical Committee analyses for commercial, recreational, and for-hire fisheries.

The Exclusive Economic Zone (EEZ) has been closed to the harvest and possession of striped bass since 1990, with the exception of a defined route to and from Block Island in Rhode Island. A recommendation was made in Amendment 6, and submitted to the Secretary of Commerce, to re-open federal waters to commercial and recreational fisheries. Starting in July 2003 and continuing for several years, NOAA Fisheries took steps in the rulemaking process to consider the proposal. In September 2006, NOAA Fisheries concluded that it would be imprudent to open the EEZ to striped bass fishing and chose not to proceed further in its rulemaking.

## **II. Status of the Stocks**

The most recent striped bass stock assessment was conducted by the Striped Bass Technical Committee, Stock Assessment Subcommittee, and Tagging Subcommittee in 2007 and includes data through 2006 (NEFSC 2008a, NEFSC 2008b). Two models were included as the main models for stock assessment: the age-based statistical catch-at-age (SCA) model, and the tag-based catch equation (CE) model. Based on the results of both models and comparison to the Amendment 6 BRPs, the assessment team determined that striped bass were not overfished nor experiencing overfishing in 2006.

The assessment was peer reviewed through the 46th Northeast Regional Stock Assessment Workshop (Murphy and others 2008). The Stock Assessment Review Committee (SARC) found each term of reference to have been met and endorsed the results of the assessment. Of the candidate assessment models, the SARC found that, the SCA model "best estimated parameters that could be judged against the current biological benchmarks... Based on these, the SARC agreed with the assessment team's stock status determination that striped bass is not currently overfished and overfishing is not occurring. Fishing mortality has increased in recent years and is currently (data up to and including 2006) at or very near the target level."

The SARC also advised the assessment team to: 1) reconsider the ratio of male to female fish used in the estimation of female SSB; 2) re-estimate the F threshold (F<sub>msy</sub>) based on data and stock estimates from the SCA model; and 3) link the female SSB target and threshold to the SCA model's 1995 SSB estimate. The assessment team undertook this work and in August 2008, the Board approved updated Amendment 6 biological reference points (see table below), as well as improved estimates of female SSB for 1982-2006 (developed with an empirical sex ratio). With these new estimates, the status of striped bass remains not overfished and not experiencing overfishing (Figures 1 and 2).

	Old BRPs		New BRPs	
	SSB (mt)	F	SSB (mt)	F
Threshold	14,000	0.41	30,000	0.34
Target	17,500	0.30	37500	0.30

(The following discussion of stock status is based on the updated biological reference points and female SSB estimates.)

Spawning stock biomass and recruitment estimates were derived from the SCA model. Female SSB for 2006 is estimated at 40,639 metric tons (mt), well above the threshold SSB (30,000 mt), as well as the target SSB (37,000 mt; Figure 1). Female SSB grew steadily through 2003, when it peaked at 51,277 mt, but has since declined. However, this trend is expected to reverse when several strong year classes enter the ages included in SSB. The 2003 cohort is the strongest in the time series. Recruitment of the 2005 cohort was estimated at 10.04 million age-1 fish, which is near the average age-1 recruitment observed since the stocks were declared recovered in 1995.

Coastwide fishing mortality rate (F) estimates are available from the SCA model and tag-based CE model (Figure 2). The F estimates from both models are for fully recruited fish, estimated as the average F on ages 8-11 fish for the SCA model, and the average F on fish 28 inches plus for the CE model. The F estimates from the SCA and CE models show similar increasing trends from the late 1980s to the late 1990s, followed by declines through 2002. After 2002, Fs from the SCA model increase to 0.31 in 2006, while Fs from the CE model remain relatively flat, estimated at 0.16 in 2006. Only the terminal estimate of F from the SCA model exceeds the target F of 0.30. Results from retrospective analysis of the SCA, as well as the CE model results, suggest that the 2006 F estimate is likely overestimated and could therefore decrease below the F<sub>target</sub> of 0.30 with the addition of future data. As previously mentioned, the SARC endorsed the SCA model for determining stock status.

Because Amendment 6 implemented a distinct management program for the Chesapeake Bay with a fishing mortality target of 0.27, the assessment also includes a separate estimate of fishing mortality for the Chesapeake Bay. The CE model was used with Maryland and Virginia tagging data. Chesapeake Bay F estimates range from 0.0 to 0.16 throughout the time series (1987-2006), and is estimated at 0.14 in 2006.

The CE model, which allows for a variable natural mortality, also provides program-specific estimates of F for the eight tagging programs participating in the FWS Atlantic coastwide striped bass tagging program. Among the “producer area” programs (Delaware River, Hudson River,

Potomac River and Upper Chesapeake Bay, and Rappahannock River), the 2006 stock-specific estimates of F for fully recruited fish ranged from 0.16 to 0.28. Among the coastal programs (Massachusetts, North Carolina, New Jersey Delaware Bay, and New York), the same estimates ranged from 0.11 to 0.19.

Population estimates are available from both the SCA and CE models. The estimate of total abundance for January 1, 2007 from the SCA model was 55.8 million age-1 and older fish. This estimate is about 9.0 million fish lower than the peak in 2004, and 3.2 million fish lower than the average population size of the previous 10 years. From the CE model, the 2006 population estimates were 47.9 million age 3+ fish and 13.0 million age 7+ fish. These tag-based estimates are higher than the SCA estimates, which were 38.7 million age 3+ fish and 7.8 million age 7+ fish.

### **III. Status of the Fishery**

Total striped bass harvest in 2007 is estimated at 3.21 million fish (29.79 million pounds; Tables 3-6). The commercial and recreational fisheries harvested 32 and 68 percent by number and 24 and 76 percent by weight, respectively. Since 2006, total harvest decreased by 15.6% by number and 16.4% by weight. This decrease is largely attributable to the recreational harvest.

In 2007, the recreational fishery harvested an estimated 2.19 million fish (22.7 million pounds), down from 2.76 million fish (29.2 million pounds) in 2006 (Tables 5 and 6). Recreational releases also decreased by over 9 million fish to 16.9 million fish, for an estimated 1.35 million dead discarded fish (8% of releases; Table 7). Total recreational removals in 2007 (harvest and dead discards combined) decreased by nearly 27% from the previous year. Maryland harvested 31.0% of the coastwide recreational landings in number of fish, followed by New York (16.9%), Massachusetts (15.8%), Virginia (11.1%), and New Jersey (9.4%). The remaining states each landed less than 5.1% of the 2007 recreational harvest by number of fish. Massachusetts released 34.2% of the coastwide recreational releases in number of fish, followed by Maryland (17.7%), Connecticut (10.9%), New Jersey (8.9%), New York (8.6%), Maine (6.5%), and Rhode Island (4.4%). The remaining states produced less than two percent of the coastwide releases each.

The commercial fishery landed an estimated 1.02 million fish (7.05 million pounds) in 2007 (Tables 3 and 4). Whereas commercial landings by number decreased from 1.05 million fish in the preceding year, commercial landings by weight increased from 6.39 million pounds. The Chesapeake Bay jurisdictions dominated the 2007 commercial harvest; by pounds, Maryland landed 33.2%, Virginia landed 21.7%, and PRFC landed 8.5%. Elsewhere along the coast, Massachusetts landed 14.8% and New York 10.4%. North Carolina, Delaware, and Rhode Island each landed between two and six percent of the total commercial landings by pounds. An estimate of commercial dead discards in 2007 is currently unavailable. In 2006, commercial dead discards numbered 216,753 fish (Figure 3).

See Figure 4 for the number of fish removed by commercial and recreation harvest and dead discards from 1982 to 2007 (except 2007 commercial dead discards).

### **IV. Status of Assessment Advice**

The 2007 Atlantic striped bass stock assessment was favorably peer reviewed at the 46<sup>th</sup> SAW. The SARC identified several topics deserving special attention or improvement in future assessments, including: examining sensitivity of assessment results to discard estimates and improving those estimates; age determination for striped bass older than about age 10; extracting more information out of the young-of-year indices; employing better methods of averaging multiple survey indices; using regional surveys to get direct information about differences in recruitment levels for the sub-stocks of the fishery; and better standardization of state surveys (NEFSC 2008a).

## **V. Status of Research and Monitoring**

The management plan requires certain jurisdictions to implement fishery-dependent monitoring programs for striped bass. All jurisdictions with commercial fisheries (Massachusetts, Rhode Island, New York, Delaware, Maryland, Virginia, PRFC, and North Carolina) or significant recreational fisheries (Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and PRFC) are required to define the catch composition of these fisheries. Jurisdictions with significant commercial fisheries (Massachusetts, New York, Maryland, Virginia, and PRFC) and those agencies monitoring recreational fisheries (NOAA Fisheries, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Maryland, Virginia, and PRFC) are required to gather representative catch and effort data for these fisheries.

In addition to fishery-dependent monitoring programs, the management plan requires certain states to monitor the striped bass population independent of the fishery. Juvenile abundance indices are required from Maine (Kennebec River), New York (Hudson River), New Jersey (Delaware River), Maryland (Chesapeake Bay tributaries), Virginia (Chesapeake Bay tributaries), and North Carolina (Albemarle Sound). Spawning stock sampling is mandatory for New York (Hudson River), Pennsylvania (Delaware River), Delaware (Delaware River), Maryland (Upper Chesapeake Bay and Potomac River), Virginia (Rappahannock River and James River), and North Carolina (Roanoke River and Albemarle Sound). Amendment 6 requires NOAA Fisheries, USFWS, Massachusetts, New York, New Jersey, Maryland, Virginia, and North Carolina to continue their tagging programs, which provide data used to determine survivorship and migration patterns.

## **VI. Status of Management Measures and Issues**

### ***Status of Amendment 6***

Amendment 6 provided the regulatory measures for the 2007 fishing year. Implemented in October 2007, Addendum I to Amendment 6 also provided measures for part of the year. The web-based angler education material recommended in the addendum is currently under development at the Commission.

Following Board acceptance of the 2007 stock assessment, potential issues for a second addendum were discussed in 2008. Further deliberation on initiating the addendum process was postponed until completion of the Amendment 6 BRP update, as recommended by the 46<sup>th</sup> SARC.

The BRP update was presented to the Board in October 2008. Included in the Technical Committee's report was a recommendation for the development of new biological reference points appropriate to the fishery's multiple management objectives once defined by the Board. In

response, the Board tasked the Technical Committee with providing background information for use in defining management objectives, and with evaluating the performance of the fishery with the management objectives of Amendment 6. The Board will receive a Technical Committee report in October 2008 before continuing discussion on the possibility of an addendum.

### ***Coastal Commercial Quota***

Table 8 shows a history of coastal commercial quotas and harvests since the implementation of Amendment 6. In 2007, five states had coastal commercial quotas lower than their Amendment 6 allocation: Massachusetts and Virginia due to quota overages in 2006, and Rhode Island, New York, and Maryland due to conservation equivalencies related to their minimum size limits.

In 2007, two states exceeded their coastal commercial quotas and should have their 2008 quotas lowered accordingly (Table 8). Massachusetts exceeded its coastal commercial quota by 52,265 pounds, resulting in an adjusted 2008 quota of 1,107,485 pounds. Rhode Island exceeded its coastal commercial quota by 664 pounds, for an adjusted 2008 quota of 239,299 pounds.

### ***Chesapeake Bay Quota***

Amendment 6 implements a separate management program for the Chesapeake Bay due to the size availability of striped bass in this area. Based on a target fishing mortality rate of  $F=0.27$ , a bay-wide quota for resident fish is established for the Chesapeake Bay and shares are allocated to Maryland, Virginia, and the PRFC. In 2007, the bay-wide quota of 9,479,441 pounds was allocated among the three jurisdictions. (Based on historical harvest, Maryland is allocated ~52%, PRFC ~15%, and Virginia ~33%). Each jurisdiction then allocates portions of the quota to its recreational and commercial fisheries (Table 9). In 2007, the bay-wide harvest was over one million pounds less than the bay-wide quota.

### ***Chesapeake Bay Spring Trophy Fishery***

Recreational fishermen in the Chesapeake Bay are permitted to take adult migrant fish during a limited seasonal fishery, commonly referred to as the Spring Trophy Fishery. Starting in 1993, the fishery has been controlled by a Board-approved harvest cap: 3,000 fish in 1993, 5,000 fish in 1994, 25,000 fish in 1995, and 30,000 fish from 1996-2003. In December 2003, the Board approved a new methodology to establish the annual quota for the fishery. The Chesapeake Bay states were required to submit a harvest report for the spring trophy fishery and propose a new quota for the subsequent year. This quota was based on the number of age 8+ striped bass in the population, as determined annually by the VPA output, minus any overage from the previous year's fishery. This system was used to establish the quotas from 2004-2006.

In January 2007, Maryland proposed to eliminate the quota system for the spring trophy fishery. Instead, the Board approved a target harvest for 2007 of the VPA calculated quota minus the 2006 overage, to be no less than 30,000 fish. This method resulted in a 30,000 fish target for 2007. The trophy fishery harvest in 2007 was 36,328 fish (see Table 10).

### ***Law Enforcement***

The 2007 Law Enforcement Committee reports that the FMP for striped bass is enforceable as written. Striped bass enforcement is a high priority with all Atlantic states and a significant amount of effort has been expended to obtain overall compliance. Joint Enforcement Agreements (JEAs) between NOAA-Office of Law Enforcement, United States Coast Guard, and the individual state exist in all states of the management unit, except North Carolina. The JEAs



expanded enforcement efforts in the EEZ for the third year in a row in 2007. The absence of a JEA between NOAA-OLE, USCG, and North Carolina Marine Patrol prevents expanded EEZ patrols for striped bass violations. Enforcement of the Atlantic Striped Bass plan could be enhanced with this agreement. Some states have been aggressively monitoring commercial catches and the quota allocations. These investigations are difficult and time consuming, but necessary to ensure a high level of compliance.

### ***Juvenile Abundance Indices***

In response to the suite of management triggers introduced in Amendment 6, the Technical Committee annually examines the trends in all required Juvenile Abundance Index (JAI) surveys. The Technical Committee is to recommend appropriate action to the Management Board if any JAI shows recruitment failure for three consecutive years. Recruitment failure is defined as a JAI lower than 75% of all other values in the dataset. The geometric mean is the preferred index of YOY striped bass abundance to model stock status.

The Technical Committee has yet to examine the trends in the JAIs for 2007; however, the Plan Review Team provides the following preliminary summary of the indices. The JAIs in New York, New Jersey, Maryland, and Virginia indicate that the 2007 year class is above the time-series average. All indices were also increases from the previous year, and New York's is the highest in the 29-year time series. Following its highest value in 2006, the Maine index dropped to the fifth lowest and is below the time series average. The North Carolina index increased from the previous year, but is below the time-series average for the second year in a row.

### ***Albemarle/Roanoke Striped Bass FMP***

The Interstate FMP for Atlantic Striped Bass requires North Carolina to inform the Commission of changes to striped bass management in the Albemarle Sound/Roanoke River (A/R) System. North Carolina must adhere to the compliance criteria in Amendment 6. After a Technical Committee review, the PRT previously determined that North Carolina's FMP complies with the mandatory components of Amendment 6.

The A/R System is managed jointly for striped bass by the North Carolina Department of Environment and Natural Resources, Division of Marine Fisheries, which manages the Albemarle Sound Management Area (ASMA), and the North Carolina Wildlife Resources Commission, Division of Inland Fisheries, which manages the Roanoke River Management Area (RRMA). The 2003 FMP, which updated the 1994 FMP, explores harvest options and identifies management measures and research needs to promote recovery of striped bass stock in the central and southern areas of North Carolina (Tar-Pamlico, Neuse, and Cape Fear rivers). The FMP contains a target fishing mortality rate ( $F_{\text{target}} = 0.22$ ) and threshold spawning stock biomass (400,000 pounds) for the A/R System. The annual total allowable catch (550,000 pounds in 2007) is allocated evenly between the recreational and commercial fisheries, with 25% for the RRMA recreational fishery, 25% for the ASMA recreational fishery, and 50% for the ASMA commercial fishery. The FMP implements quota overage penalties; addresses habitat and environmental issues, catch and release mortality in hook and release fisheries, discards in the multispecies gillnet fishery, and enforcement of creel limits; and maintains the Albemarle Sound Management Area boundary line.

Total 2007 harvest in the A/R System is estimated as 317,923 pounds, 232,077 pounds below the 2007 TAC. Each sector harvested within its quota allocation. Beginning in 2006, and continued

in 2007, the fall ASMA recreational fishery was regulated with a three fish creel limit (rather than two fish), due to low harvest in the spring fishery. Additionally in 2007, the RRMA recreational fishery operated under one open season for the whole river from March 1 to April 30 (rather than two zones with individual open seasons). Both of these regulations remain in effect in 2008.

## **VII. Annual State Compliance**

Based on the annual state compliance reports, the Plan Review Team determined that each state/jurisdiction implemented a management program that was approved by the Striped Bass Management Board for the 2007 fishing year and was consistent with the requirements of Amendment 6. (See Tables 1 and 2 for state-by-state regulations.) The Plan Review Team notes, however, that several states submitted their reports past the June 15 due date (see Table 11).

Following Board approval, the following regulatory changes were implemented in 2007:

- Rhode Island decreased the minimum size limit from 28" to 26" for the commercial trap fishery with a conservationally equivalent reduction in the coastal commercial quota from 243,625 pounds to 239,963 pounds.
- The Chesapeake Bay Spring Trophy Fishery operated under a 30,000 fish target from April 21 to May 15, with a one fish limit and 28-35" or  $\geq 41$ " size limit in Maryland.

Following Board approval where necessary, the following regulatory changes were implemented in 2008:

- New York revised its Delaware River regulations from a two fish bag limit and 34" minimum size limit to a one fish bag limit and a 28" minimum size limit.
- Maryland implemented a Board-approved, limited, recreational fishery in the Susquehanna Flats in 2008. The fishery operates from May 16 to May 31 with a one fish limit and 18-26" slot limit. Harvest is counted towards the bay wide quota. Circle hooks are required when fishing with a baited hook with a gap less than 1/2".
- The Chesapeake Bay Spring Trophy Fishery had its quota eliminated by the Board for a one year, trial season. In 2008, the Maryland trophy fishery operated from April 19 to May 13 with a 1 fish limit and 28" maximum size limit. The PRFC implemented complementary measures, while Virginia maintained its 1 fish, 32" minimum rule during its Chesapeake Bay trophy season from May 1 through June 15.
- The District of Columbia changed its 2008 fishing regulations to match the regulations mandated by the PRFC in its neighboring jurisdiction: recreational hook and line from May 16 to December 31, 2 fish limit, 18" minimum, and 28" maximum for one fish.
- North Carolina implemented a mandatory Coastal Recreational Fishing License in 2007 and continued a recreational angler requirement to report harvest from May through August from NC/VA line above Corolla, south to Oregon inlet.

The following regulatory changes were indicated as possible changes for 2009:

- Delaware indicated its intent to submit a proposal for a limited recreational fishery targeting mature males via a slot limit in the Delaware River and Bay. Pennsylvania has since indicated its intent to join in this proposal for its portion of the Delaware River.
- New York indicated that it is contemplating a proposal to increase its minimum length limit in the Hudson River from 18" to 28" total length.

Amendment 6 includes compliance requirements for monitoring programs (summarized in *Section V*). Compliance with these requirements is summarized in Table 11. The PRT found that all states carried out the required monitoring programs in the 2007 fishing year.

Amendment 6 also requires states to submit annual law enforcement activity reports. These reports detail the effort and success involved in enforcing striped bass regulations in each jurisdiction. For the 2007 fishing year, the states submitted their law enforcement reports to the Commission's Law Enforcement Coordinator and one Law Enforcement Report was submitted on behalf of all the states in the striped bass management unit. The striped bass law enforcement report is summarized in *Section VI* of this report.

## **VIII. Recommendations**

### **Management Recommendations**

- The 2008 coastal commercial quotas for Massachusetts and Rhode Island should be lowered by the amounts the states harvested in excess of their 2007 quotas (Table 8).
- Membership on the Plan Review Team should be increased (recently decreased from three to two state/federal representatives).
- Adopt the new biological reference points as recommended by the Striped Bass Technical Committee. New biological reference points should be developed as management objectives for the fishery are further defined.

### **Research Recommendations**

#### **STOCK ASSESSMENT AND POPULATION DYNAMICS**

##### ***High Priority***

- Develop method to integrate VPA and tagging models to produce a single estimate of F and stock status (ongoing, G. Nelson)
- Develop a spatial and temporal catch at age model incorporating tag-based movement information
- Examine reporting rates by commercial and recreational fishermen using high reward tags (ongoing, J. Hoenig)
- Develop methods for combining tag results from programs releasing fish from different areas on different dates.
- Examine potential biases associated with the number of tagged individuals, such as gear-specific mortality (associated with trawls, pound nets, gill nets, and electrofishing), tag-induced mortality, and tag loss.

##### ***Medium Priority***

- Improve methods for determining population sex ratio for use in estimates of spawning stock biomass and biological reference points.
- Evaluate the overfishing definition relative to uncertainty in biological parameters.
- Develop studies to provide information on gear-specific discard mortality rates and to determine the magnitude of bycatch mortality (ongoing, G. Nelson).
- Develop refined and cost-efficient fisheries-independent coastal population index for striped bass stocks.

- Examine methods to estimate annual variation in natural mortality (ongoing, Striped Bass Tagging Subcommittee).
- Examine causes of different tag-based survival estimates among programs estimating similar segments of the population.
- Evaluate truncated matrices and covariate-based tagging models.
- Develop reliable estimates of poaching loss from striped bass fisheries.
- Develop maturity ogive applicable to coastal migratory stock.
- Improve estimates of striped bass harvest removals in coastal areas during wave 1 and in inland waters of all jurisdictions year-round.

#### ***Low Priority***

- Develop simulation models to look at the implications of overfishing definitions relative to development of a striped bass population that will provide “quality” fishing. Quality fishing must first be defined.
- Examine issues with time saturated tagging models for the  $\geq 18$  inch length group.

### **RESEARCH AND DATA NEEDS**

#### ***High Priority***

- Continue in-depth analysis of migrations, stock compositions, etc. using mark-recapture data (ongoing, e.g., Cooperative Winter Tagging Cruise 20 Year Report, W. Laney)
- Continue evaluation of striped bass dietary needs and relation to health condition.

#### ***Medium Priority***

- Continue to conduct research to determine limiting factors affecting recruitment and possible density implications.
- Evaluate the percentage of fishermen using circle hooks.
- Conduct study to calculate the emigration rates from producer areas now that population levels are high and conduct multi-year study to determine inter-annual variation in emigration rates.

#### ***Low Priority***

- Determine inherent viability of eggs and larvae.
- Conduct additional research to determine the pathogenicity of the IPN virus isolated from striped bass to other warm water marine species, such as flounder, menhaden, shad, and largemouth bass.

## **IX. References**

Murphy, M, C Darby, N Klaer, G Tingley. Summary Report of the 46<sup>th</sup> Northeast Regional Stock Assessment Review Committee (SARC 46). Prepared for 46<sup>th</sup> SAW, January 2, 2008. 30 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026.

Northeast Fisheries Science Center (NEFSC). 2008a. 46th Northeast Regional Stock Assessment Workshop (46th SAW) Assessment Summary Report. US Dept Commer, Northeast Fish Sci

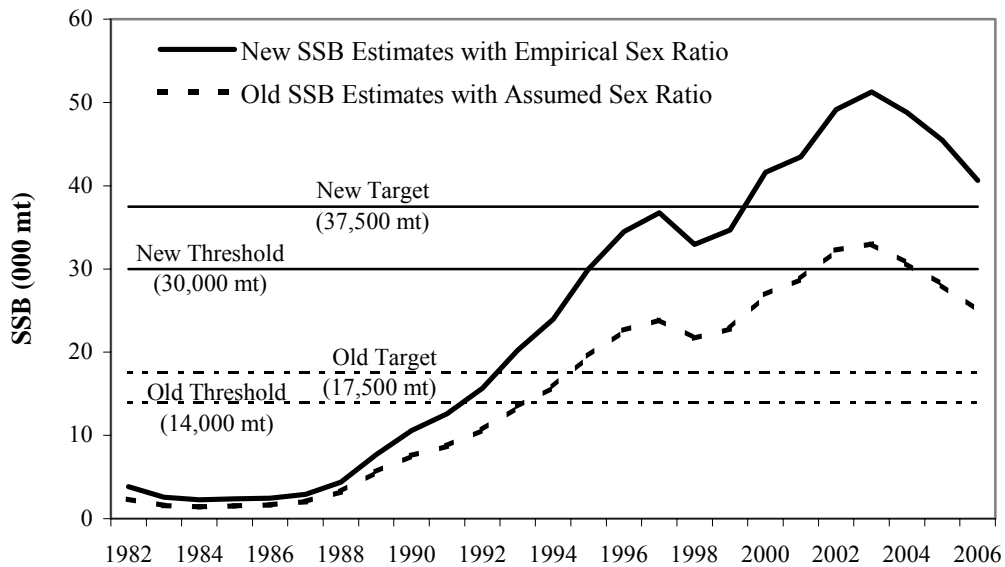
Cent Ref Doc. 08-01; 24 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026.

NEFSC. 2008b. 46th Northeast Regional Stock Assessment Workshop (46th SAW) Assessment Report. US Dept Commer, Northeast Fish Sci Cent Ref Doc. 08-03a; 252 p. Available from: National Marine Fisheries Service, 166 Water Street, Woods Hole, MA 02543-1026.

## X. Figures

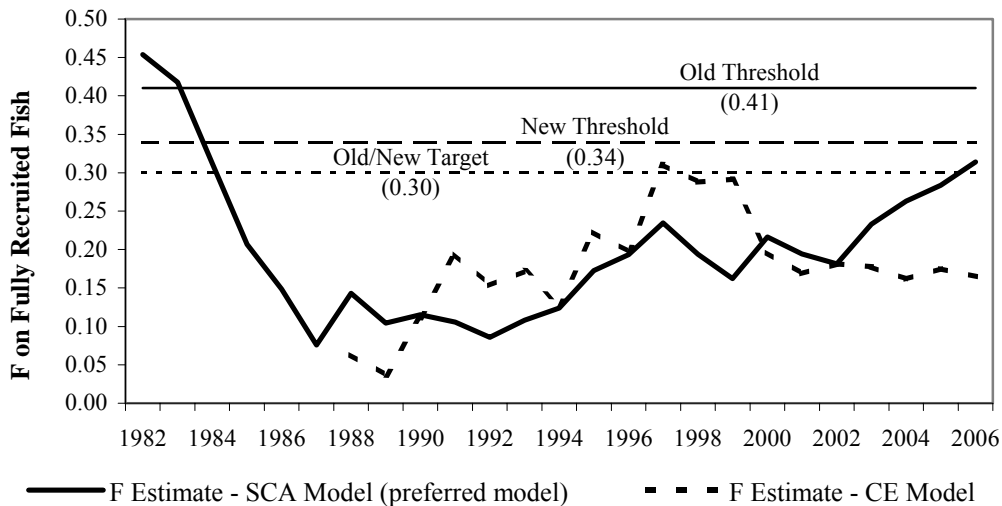
### Figure 1. Striped Bass Spawning Stock Biomass Estimates and Biological Reference Points

Amendment 6 defines the female SSB threshold as the 1995 level of female SSB, when the stock was declared restored, and the female SSB target as 125 percent of the female SSB threshold. The old threshold and target are based on data from the 2001 assessment, while the new threshold and target are based on data from the 2007 assessment, incorporating an empirical sex ratio. Both sets of female SSB estimates are from the 2007 SCA model; however, the new set incorporates the revised sex ratio.

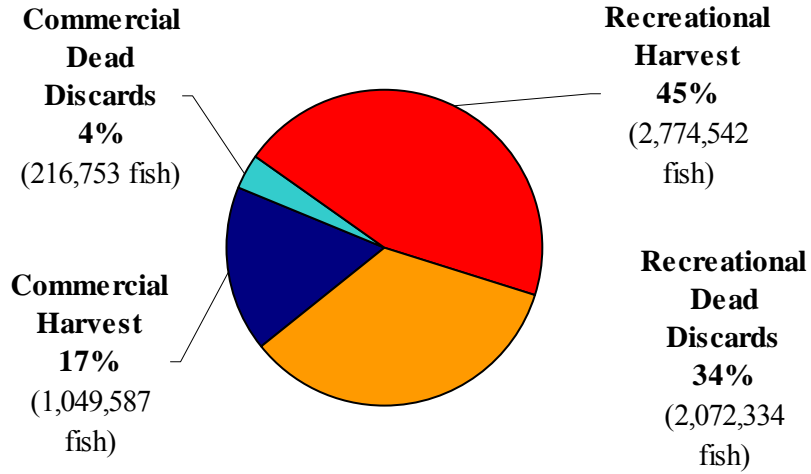


### Figure 2. Striped Bass Fishing Mortality Estimates and Biological Reference Points

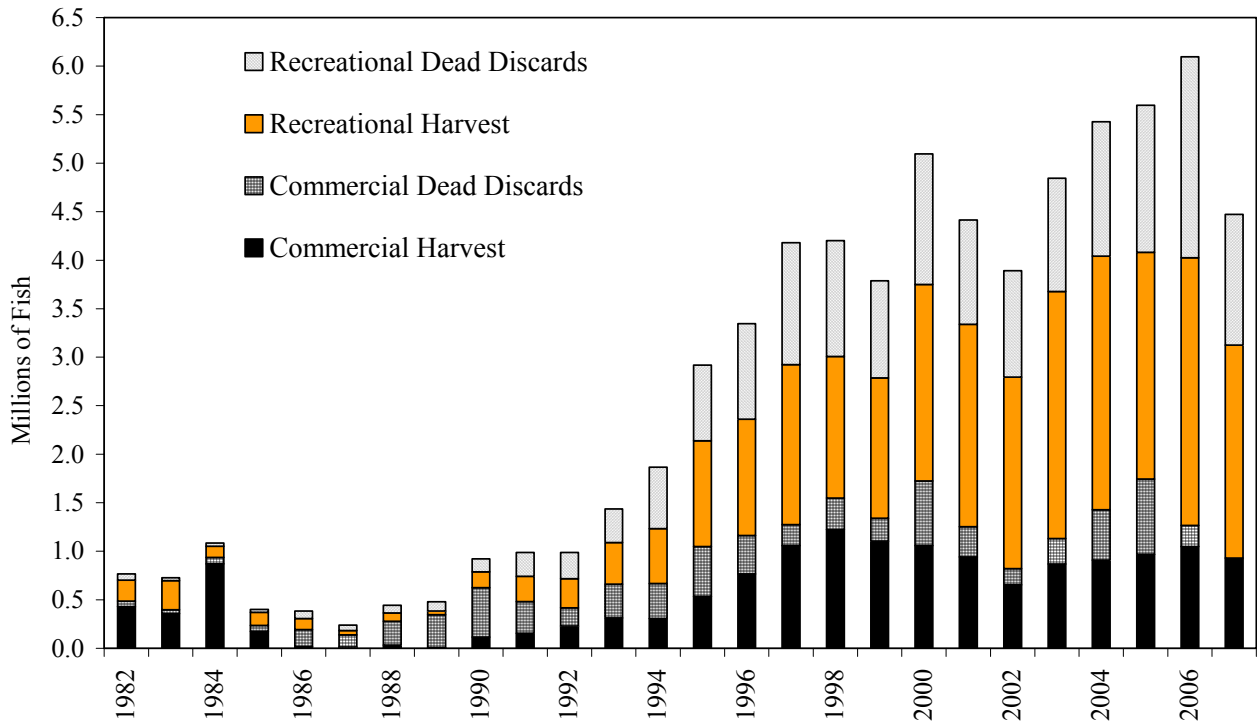
Amendment 6 defines the  $F$  threshold as  $F_{MSY}$ , and the  $F$  target based on management objectives. The old threshold is based on 2001 assessment data, while the new threshold is based on 2007 assessment data. The SARC preferred the SCA model estimates for comparison to biological reference points. Estimates from the tag-based catch equation (CE) model, as well as retrospective estimates of  $F$  from the SCA model, indicate that the 2006  $F$  estimate from the SCA model is likely overestimated and will decline below the  $F$  target with the addition of future years of data.



**Figure 3. 2006 Striped Bass Total Catch (>6.1 million fish)** (Source: 2007 Stock Assessment)



**Figure 4. Commercial and Recreational Harvest and Dead Discards, 1982-2007**  
Sources: NMFS Fisheries Statistics Division, State Reports, and 2007 Stock Assessment



Notes: No 2007 commercial dead discard estimate. 2007 data are preliminary.

## XI. Tables

**Table 1. Atlantic Striped Bass Commercial Fishery Regulations for 2007**

There are no commercial fisheries in Maine, New Hampshire, Connecticut, New Jersey, Pennsylvania, and the District of Columbia.

STATE	SIZE LIMITS	SEASONAL QUOTA	OPEN SEASON
Massachusetts	34" min.	998,063 lb.	Hook and Line Only 7.12 – 8.15 plus 8.29 & 8.30; 5 fish on Sun, 30 fish/day Tues-Thurs
Rhode Island	Trap: 26" min. General category: 34" min.	Total: 239,963 lbs	<b>Trap:</b> 1.1–8.26 100% of quota–10,000 lb. set-aside; 8.27–12.31 10,000 lb. <b>General:</b> 6.10-8.31 or 75% quota, 5 fish; 9.1–12.31 or 25% quota, 5 fish
New York	24" –36"	828,293 lb.	Ocean Only: 7.1 – 12.15
Delaware	28" minimum except 20" min for spring gill net season in DE Bay/River & Nanticoke River (5.5" maximum mesh size and 0.28 mm maximum twine size)	193,447 lb. (183,775 lbs gill net)	<b>Gill Net:</b> 2.15– 5.31 (3.1 – 3.31 Nanticoke River) & 11.15 – 12.31 (No fixed nets in DE River or anywhere from 2.15-2.28 & 5.1-5.31) <b>Hook and Line:</b> 4.1 – 12.31 <b>Spawning Grounds:</b> 1.1 – 3.31 & 6.1 – 12.31
Maryland	<b>Bay and Rivers</b> 18"–36"  <b>Ocean</b> 24"	<b>Bay and Rivers</b> 2,134,116 lb. (PN/HS: 533,529 lb. H&L: 640,236 lb. DGN: 960,352 lb.) <b>Ocean</b> 126,396 lb.	<b>Bay Pound Net:</b> 6.1 – 11.30, Mon-Sat <b>Haul Seine:</b> 6.1 – 11.30, Mon-Fri <b>Bay Hook&amp;Line:</b> 6.14 – 11.30, Mon-Thurs <b>Bay Drift Gill Net:</b> 1.2 – 2.28, 12.3 – 12.31, Mon-Fri <b>Ocean (Drift Gill Net/Otter Trawl)</b> 1.1 – 4.30, 11.1 – 12.31
Potomac River Fisheries Commission	18" min all year 36" max 1.1–3.25	791,195 lb.	<b>Hook &amp; Line:</b> 2.15 – 3.25, 6.1 – 12.31 <b>Pound Net:</b> 2.15 – 3.25, 6.1 – 12.15 <b>Gill Net:</b> 1.1 – 3.25, 11.15 – 12.31 <b>Other:</b> 2.15 – 3.25, 6.1 – 12.15
Virginia	<b>Bay and Rivers</b> 18" min all year & 28" max 3.26–6.15 (complementary mesh) <b>Ocean</b> 28" minimum	<b>Bay and Rivers</b> 1,554,302 lb.  <b>Ocean</b> 174,772 lb.	<b>Bay and Rivers</b> 2.1 – 12.31 (No mesh >9" stretch 2.1-3.31 & 11.1-12.31 in all VA waters.) <b>Ocean</b> 2.1 – 12.31
North Carolina	<b>Albemarle Sound</b> 18"  <b>Atlantic Ocean</b> 28"	<b>Albemarle Sound</b> 275,000 lb.  <b>Atlantic Ocean</b> 480,480 lb.	<b>Albemarle Sound</b> 1.5 – 4.30 (5 fish 1.5-3.1 & 4.15-4.30, 10 fish 3.1-4.14) & 10.1-12.15 (10 fish) <b>Atlantic Ocean</b> Beach Seine: 3 days @ 50 fish/day Gill Net: 8 days @ 10 fish/day Trawl: 16 days @ 50 fish/day; 30 days @ 100 fish/day



**Table 2. Summary of Atlantic Striped Bass Recreational Regulations for 2007**

STATE	SIZE LIMITS	DAILY BAG LIMIT	SEASONAL QUOTA	OPEN SEASON
Maine	1 fish 20 – 26” OR 1 fish >40”	1 fish	None (Hook & line only)	All year except spawning areas: 5.1 – 6.30 catch & release (single hook artificial lures only); 7.1 – 11.30 open
New Hampshire	1 fish 28” – 40” & 1 fish 28” minimum	2 fish	None (No gaffing, no netting except hand held dip net)	All year
Massachusetts	28” minimum	2 fish	None (Hook & line only)	All year
Rhode Island	28” minimum	2 fish	None	All year
Connecticut	28” minimum	2 fish	None	All year
New York	<b>Hudson River</b> 18” minimum <b>Ocean</b> 1 fish 28” – 40” & 1 fish > 40” <b>Charter/Del. River</b> 28” minimum	<b>Hudson River</b> 1 fish <b>Ocean</b> 2 fish <b>Charter/ Del. River</b> 2 fish	None	<b>Hudson River</b> 3.16 – 11.30 <b>Ocean</b> 4.15 – 12.15 <b>Charter/Delaware River</b> All year
New Jersey	28” minimum <b>Bonus Program</b> 28” minimum	2 fish <b>Bonus Program</b> 1 fish/day additional	None <b>Bonus program</b> from commercial cap: 321,750 lb.	All year except DE River spawning area: 3.1 – 3.31 & 6.1 – 12.31 (non-offset circle hooks required if using natural bait from 4.1 – 5.31) Other Rivers: 3.1 – 12.31
Pennsylvania	28” minimum	2 fish	None	All year except tidal DE River: 3.1–3.31, 6.1–12.31
Delaware	28” minimum  (Non-tidal: 15” minimum)	2 fish	None (Hook & line, spear for divers)	All year except spawning grounds: 3.1 – 3.31 & 6.1 – 12.31 (circle hooks required if using natural bait from 4.1 - 5.31)
Maryland	<b>Susquehanna Flats</b> Catch and Release <b>Chesapeake Bay</b> Trophy: 28-35”, ≥41” Spring-Fall: 18” min., 28” max for 1 fish <b>Ocean</b> 28” minimum	<b>Susquehanna Flats</b> Catch and Release <b>Chesapeake Bay</b> Trophy: 1 fish  Spring-Fall: 2 fish <b>Ocean</b> 2 fish	<b>Susquehanna Flats</b> 0 <b>Chesapeake Bay</b> Trophy: Part of 30,000 fish target Spring-Fall: 2,798,185 lb. <b>Ocean</b> None	<b>Susquehanna Flats</b> 3.1-5.10 <b>Chesapeake Bay</b> Trophy: 4.21 – 5.15 (tributaries closed, no eels) Spring-Fall: 5.16 – 12.15 (most tributaries closed until 6.1) <b>Ocean</b> All year

(Continued on next page)

**Table 2 continued. Summary of Atlantic Striped Bass Recreational Regulations for 2007**

<b>STATE</b>	<b>SIZE LIMITS</b>	<b>DAILY BAG LIMIT</b>	<b>SEASONAL QUOTA</b>	<b>OPEN SEASON</b>
Potomac River Fisheries Commission	<b>Spring Trophy</b> 28"-35" OR 41"+  <b>Summer/Fall</b> 1 fish 18" min. & 1 fish 18-28"	<b>Spring Trophy</b> 1 fish  <b>Summer/Fall</b> 2 fish	<b>Spring Trophy</b> Part of 30,000 fish target  <b>Summer/Fall</b> Rec: 575,414 lb. Charter: 71, 927 lb.	<b>Spring</b> 4.21 – 5.15 (no live eel, no more than 2 hooks)  <b>Summer/Fall</b> 5.16 – 12.31 (Barbless hooks required during closed season)
District of Columbia	18" – 36"	2 fish	None	5.1 – 11.19
Virginia	<b>Chesapeake Bay Trophy:</b> 32" min. Spring: 18–28"; 1 fish >32" allowed Fall: 18–28"; 1 fish >34" allowed <b>Potomac Tribs</b> Spring: 28" Fall: 18–28"; 1 fish >34" allowed <b>Ocean</b> 28" Trophy: 32"	<b>Chesapeake Bay Trophy:</b> 1 fish  Spring: 2 fish Fall: 1-2 fish  <b>Potomac Tribs</b> Spring: 1 fish Fall: 2 fish  <b>Ocean</b> 2 fish Trophy: 1 fish	<b>Chesapeake Bay Trophy:</b> Part of 30,000 fish target Spring-Fall: 1,554,302 lb.  <b>Potomac Tribs</b> None  <b>Ocean</b> None	<b>Chesapeake Bay Trophy:</b> 5.1 – 6.15 (except in spawning areas) Spring: 5.16 – 6.15 Fall: 10.4 – 12.9 (2 fish) 12.10 – 12.31 (1 fish) <b>Potomac Tribs</b> Spring: 4.15-5.15 Fall: 5.16-12.31  <b>Ocean</b> 1.1 – 3.31, 5.16 – 12.31 Trophy: 5.1 – 5.15
North Carolina	<b>Roanoke River</b> 18–22" & >27"; only 1 fish >27" allowed <b>Albemarle Sound</b> 18" minimum  <b>Atlantic Ocean</b> 28" minimum	<b>Roanoke Rivers</b> 2 fish  <b>Albemarle Sound</b> 3 fish  <b>Atlantic Ocean</b> 2 fish	<b>Roanoke River</b> 137,500 lb.  <b>Albemarle Sound</b> 137,500 lb.  <b>Atlantic Ocean</b> None	<b>Roanoke River</b> 3.1 – 5.6 (upper Roanoke 4.1- 6.30, single barbless hook only) <b>Albemarle Sound</b> Spring: 1.1 – 5.6 Fall: 10.1-12.31 <b>Atlantic Ocean</b> All year

**Table 3. Commercial harvest (pounds) of migratory striped bass by state, 1982-2007**

Sources: 1982-2006 data from NMFS Fisheries Statistics Division (Query date: 6.5.08); 2007 preliminary data from 2008 state compliance reports.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	Total
1982			643,400	270,300	6,000	470,900	10,400	25,700	479,130	136,053	49,917	92,462	2,184,262
1983			223,600	196,400	2,200	309,500	19,600	6,800	380,905	164,245	51,950	52,796	1,407,996
1984			107,200	54,500	2,000	595,300	8,900	37,000	815,611	783,140	17,849	14,501	2,436,001
1985	1,400		118,800	61,200	5,500	469,040	12,100		1,385	222,196	60,327		951,948
1986			97,300	11,100		1,100	10,000		0	29,370	2,067		150,937
1987			78,600	500			400		25,867	57,945	1,988		165,300
1988			79,553						19,661	115,251	70,565		285,030
1989			119,900			300	200		0		0		120,400
1990		37	159,729	3,951		81,584			0	169,060	277,769	9,797	701,927
1991			235,238	31,263		105,262		15,100	26,057	216,755	140,982	6,186	776,843
1992			237,059	36,788		226,613		25,200	495,196	127,398	217,080	27,702	1,393,036
1993			266,573	52,435		109,362		15,600	789,973	142,742	212,431	36,463	1,625,579
1994			200,000	44,633		169,811		33,900	911,989	149,891	198,983	92,605	1,801,812
1995			751,477	113,461	1,838	500,980	179	38,100	1,225,606	198,478	552,823	343,707	3,726,649
1996			695,935	122,562		500,697			1,434,790	346,834	1,421,466	55,771	4,578,055
1997			784,892	96,519		460,451		165,998	2,185,719	731,114	1,142,550	458,524	6,025,767
1998			810,112	94,663		484,513		163,176	2,549,011	726,179	1,463,225	308,068	6,598,947
1999		33	766,237	119,679		489,720		176,307	2,151,664	653,266	1,484,804	389,454	6,231,164
2000			796,159	111,812		543,216		145,111	2,417,315	666,001	1,830,814	162,736	6,673,164
2001			815,384	129,654	943	633,093		198,618	1,778,235	658,676	1,661,867	350,280	6,226,750
2002			924,885	129,172		518,573		146,157	1,865,027	521,048	1,539,786	299,508	5,944,156
2003			1,055,496	190,220		784,602		191,194	1,829,272	676,574	1,791,290	482,123	7,000,771
2004	308	203	1,214,209	232,283		746,580		176,454	1,490,574	772,333	1,761,427	604,824	6,999,195
2005			1,102,233	215,628		710,785		173,968	2,095,521	533,456	2,194,058	588,601	7,614,250
2006			1,318,879	221,122		688,448		184,214	2,160,099	673,508	1,082,176	63,458	6,391,904
2007			1,040,328	240,627		729,743		188,668	2,336,886	599,261	1,532,244	380,380	7,048,137

Notes: Maryland and Virginia harvests include Chesapeake Bay harvest. Maryland and Virginia harvests (except 2007) are NMFS-reported minus the PRFC estimate of fish caught in the Potomac River and landed in Maryland or Virginia. All harvests are based on the calendar year.

**Table 4. Commercial harvest (numbers of fish) of migratory striped bass by state, 1982-2007, and annual dead discard estimates**

Sources: 1982-2006 data and dead discard estimates from the 2007 Stock Assessment (NEFSC 2008b); 2007 preliminary data from 2008 state compliance reports.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	Total	Dead Discards
1982			26,183	52,896	207	74,935		12,794	189,089	54,421	14,905	3,200	428,630	57,624
1983			9,528	48,173	83	66,334		5,806	147,079	63,171	15,962	1,405	357,541	40,127
1984			5,838	8,878	192	70,472		12,832	392,696	372,924	6,507	532	870,871	65,639
1985	90		7,601	7,173	350	52,048		1,359		82,550	23,450		174,621	62,734
1986			3,797	2,668						10,965	251		17,681	174,024
1987			3,284	23						9,884	361		13,552	125,066
1988			3,388							19,334	10,588		33,310	245,552
1989			7,402										7,402	338,827
1990			5,927	784		11,784		698	534	38,884	56,222	803	115,636	510,011
1991			9,901	3,596		15,426		3,091	31,880	44,521	44,970	413	153,798	327,167
1992			11,532	9,095		20,150		2,703	119,286	23,291	42,912	1,745	230,714	186,601
1993			13,099	6,294		11,181		4,273	211,089	24,451	39,059	3,414	312,860	347,839
1994			11,066	4,512		15,212		4,886	208,914	25,196	32,382	5,275	307,443	359,518
1995			44,965	19,722		43,704		5,565	280,051	29,308	88,274	23,325	534,914	515,454
1996			38,354	18,570		39,707		20,660	415,272	46,309	184,495	3,151	766,518	394,824
1997			44,841	7,061		37,852		33,223	656,416	87,643	165,583	25,562	1,058,181	216,743
1998			43,315	8,835		45,149		31,386	780,893	93,299	204,911	16,040	1,223,828	326,031
1999			40,838	11,559		49,795		34,841	650,022	90,575	205,143	21,010	1,103,783	236,620
2000			40,256	9,418		54,894		25,188	627,777	91,471	202,227	6,480	1,057,711	666,996
2001			40,248	10,917		58,296		34,373	538,808	87,809	148,346	22,936	941,733	310,900
2002			44,897	11,653		47,142		30,440	296,635	80,300	127,211	15,784	654,062	168,201
2003			55,433	15,497		68,354		31,530	439,482	83,090	161,778	13,823	868,987	262,078
2004			60,632	16,040		70,367		28,406	461,064	91,980	147,998	31,014	907,501	518,847
2005			59,966	14,949		70,560		26,336	569,964	80,615	119,244	26,572	968,206	776,951
2006			69,986	15,429		73,528		30,212	655,951	92,288	109,395	2,798	1,049,587	216,753
2007			54,266	13,934		78,287		31,090	598,495	86,608	140,602	16,838	1,020,120	NA

Note: All harvests are based on the calendar year.

**Table 5. Recreational harvest (pounds) of migratory striped bass by state, 1982-2007**

Source: NMFS Fisheries Statistics Division (Query Date: 6.5.08), see notes below\*

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1982	2,663		2,003,948	16,012	110,964	61,438	327,024					2,522,049
1983	13,031	7,061	248,917	16,340	310,798	275,033	1,662,403	29	149,351			2,682,963
1984			33,697	12,879	91,705	896,770	58,616	139,626	44,262			1,277,555
1985	140,951		224,788		41,144	210,815	190,555		8,825	3,585		820,663
1986			298,816	97,961	21,537	33,115	644,394		3,104	5,362		1,104,289
1987		2,987	269,459	69,793	13,307	278,578	159,556		40,818	19,976		854,474
1988		13,549	421,317	108,182	47,536	348,920	136,374		1,058	178,626	972	1,256,534
1989	15,221		295,227	59,346	100,688	236,730	25,520					732,732
1990	60,483	11,363	319,092	73,349	193,011	505,440	588,974	18,115	12,967	443,751		2,226,545
1991	58,177	6,731	440,605	496,723	125,309	1,053,589	643,571	25,501	456,954	333,743	3,882	3,644,785
1992	107,693	44,612	972,116	203,108	196,278	921,201	746,343	25,677	613,174	187,852	16,197	4,034,251
1993	11,953	28,115	1,113,446	292,429	400,067	1,575,938	874,296	52,540	794,853	505,742	3,029	5,652,408
1994	66,451	66,017	1,686,049	109,818	355,829	1,974,759	438,080	63,832	1,096,409	870,140	71,195	6,798,579
1995	45,933	67,992	1,504,390	436,061	671,647	3,296,025	3,141,222	175,347	2,057,450	955,822	158,096	12,509,985
1996	44,802	102,271	1,291,706	950,978	915,418	4,809,381	1,736,508	281,481	1,560,389	1,340,414	199,675	13,233,023
1997	185,178	206,904	2,891,970	927,921	920,465	4,449,564	821,784	232,186	1,962,947	2,813,471	607,978	16,020,368
1998	178,584	114,342	2,973,456	671,847	989,923	2,318,291	1,333,329	236,926	1,908,344	1,581,560	415,585	12,722,187
1999	98,623	84,255	1,822,818	886,668	824,031	3,171,344	3,342,372	100,541	1,137,940	1,741,857	556,922	13,767,371
2000	269,325	71,370	2,618,216	1,160,305	515,962	4,050,569	4,286,040	369,030	2,100,854	2,005,721	187,276	17,634,668
2001	290,233	223,072	3,644,561	1,138,978	628,044	2,996,805	5,341,867	382,498	2,072,943	2,140,713	608,617	19,468,331
2002	383,270	152,342	4,304,883	1,192,296	600,482	2,813,596	4,133,678	266,920	1,423,515	2,648,115	602,586	18,521,683
2003	253,910	281,549	4,889,036	1,502,455	1,251,538	3,409,573	4,258,557	292,167	2,808,923	2,789,745	848,416	22,585,869
2004	171,741	121,566	5,466,059	1,169,587	921,737	2,388,825	5,458,534	311,025	2,333,042	3,101,870	5,574,787	27,018,773
2005	322,996	291,662	5,093,748	1,590,072	1,643,946	3,936,227	3,793,471	254,018	3,533,652	2,655,119	2,195,043	25,309,954
2006	385,598	212,012	4,907,270	873,965	1,388,296	4,820,089	6,623,538	206,432	3,541,582	4,133,292	2,153,231	29,245,305
2007	316,331	73,283	4,784,948	1,407,549	1,718,924	5,767,505	2,441,469	112,071	3,178,237	1,891,833	1,048,581	22,740,731

\* Values for North Carolina (1996-2003) and Virginia (1996-2006) do not include Technical Committee estimates of wave 1 harvest (estimates in pounds unavailable). MRFSS Virginia 2007 estimate is considered preliminary.

**Table 6. Recreational harvest (numbers of fish) of migratory striped bass by state, 1982- 2007**

Source: NMFS Fisheries Statistics Division (Query Date: 6.5.08), see notes below\*

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1982	929		83,933	1,757	50,081	21,278	58,294		984			217,256
1983	7,212	4,576	39,316	1,990	42,826	43,731	127,912	135	31,746			299,444
1984			3,481	1,230	5,678	57,089	13,625	16,571	16,789			114,463
1985	11,862		66,019	670	15,350	23,107	13,145		2,965	404		133,522
1986			29,434	3,291	1,760	27,477	36,999		14,077	1,585		114,623
1987		90	10,807	2,399	522	14,191	9,279		4,025	2,442		43,755
1988		647	21,050	5,226	2,672	20,230	12,141		133	24,259	347	86,705
1989	738		13,044	4,303	5,777	12,388	1,312					37,562
1990	2,912	617	20,515	4,677	6,082	24,799	44,878	2,009	736	56,017		163,242
1991	3,265	274	20,799	17,193	4,907	54,502	38,300	2,741	77,873	42,224	391	262,469
1992	6,357	2,213	57,084	14,945	9,154	45,162	41,426	2,400	99,354	21,118	967	300,180
1993	612	1,540	58,511	17,826	19,253	78,560	64,935	4,055	104,682	78,481	264	428,719
1994	3,771	3,023	74,538	5,915	16,929	87,225	34,877	4,140	199,378	127,945	7,426	565,167
1995	2,189	3,902	73,806	29,997	38,261	155,821	254,055	15,361	355,237	149,103	11,450	1,089,182
1996	1,893	6,461	68,300	60,074	62,840	225,428	127,952	22,867	337,415	250,731	35,996	1,199,957
1997	35,259	13,546	199,373	62,162	64,639	236,902	67,800	19,706	334,068	518,483	96,189	1,648,127
1998	38,094	5,929	207,952	44,890	64,215	166,868	88,973	18,758	391,824	383,786	45,768	1,457,057
1999	21,102	4,641	126,755	56,320	55,805	195,261	237,010	8,772	263,191	411,873	65,658	1,446,388
2000	62,186	4,262	181,295	95,496	53,191	270,798	402,302	39,543	506,462	389,126	20,452	2,025,113
2001	59,947	15,291	288,032	80,125	54,165	189,714	560,208	41,195	382,557	355,020	58,876	2,085,130
2002	71,907	12,857	308,749	78,190	51,060	202,075	416,455	29,149	282,429	411,248	109,052	1,973,171
2003	57,765	24,878	407,100	115,471	95,983	313,761	391,842	29,522	525,191	455,812	127,727	2,545,052
2004	36,886	10,359	400,252	84,814	75,244	242,623	448,524	25,178	380,461	633,018	278,270	2,615,629
2005	68,638	26,026	368,422	112,918	114,965	298,387	327,016	19,955	490,275	403,792	104,997	2,335,391
2006	72,827	14,748	345,105	73,650	83,390	313,464	489,319	19,076	648,644	607,344	90,820	2,758,387
2007	71,443	7,070	347,102	102,112	109,856	370,722	206,275	10,095	679,024	244,567	45,502	2,193,768

\*Values for North Carolina (1996-2003) and Virginia (1996-2006) include Technical Committee estimates of wave 1 harvest; a Virginia 2007 wave 1 estimate is not yet available. MRFSS began wave 1 sampling in North Carolina in 2004. MRFSS Virginia 2007 estimate is considered preliminary.

**Table 7. Recreational releases (numbers of fish) of striped bass by state, 1982-2007, and annual estimates of dead discards**

Source: NMFS Fisheries Statistics Division (Query Date: 6.5.08), see notes below\*

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total	Dead Discards <sup>^</sup>
1982	687		6,441	2,551	643,187	12,297	87,648		30,376			783,187	62,655
1983			34,018	5,444		1,469	117,807		213,487	11,997		384,222	30,738
1984	1,887		98,405	85,135	31,176	40,469	52,930		104,095	8,775		422,872	33,830
1985	81,153	93	12,360	40,567	26,946	57,540	5,524	702	147,103	2,598		374,586	29,967
1986	4,379		442,298	2,014	10,494	123,842			390,063	7,528		980,618	78,449
1987	18,106	435	93,660	63,849	78,434	253,986	56,697	16,988	118,395	7,611		708,161	56,653
1988	4,528	6,699	209,632	23,347	25,532	92,611	486,306	2,455	132,250	5,631		988,991	79,119
1989	16,028	4,822	193,067	38,007	125,370	365,712	265,958	4,807	114,269	72,766		1,200,806	96,064
1990	12,542	15,518	339,511	67,509	89,490	265,099	254,384	14,411	420,084	175,046		1,653,594	132,288
1991	67,490	6,559	448,735	30,975	301,476	756,663	166,198	38,334	1,036,011	208,350	256	3,061,047	244,884
1992	31,177	27,613	779,814	120,410	292,259	799,149	413,506	36,932	749,959	115,899	679	3,367,397	269,392
1993	373,064	14,979	833,566	100,993	271,318	694,107	308,253	89,543	1,556,848	100,374	1,524	4,344,569	347,566
1994	363,703	43,501	2,102,514	138,989	489,967	1,132,707	568,047	103,992	2,785,392	197,022	5,005	7,930,839	634,467
1995	505,758	285,486	3,280,882	356,324	507,124	1,209,585	694,889	115,363	2,401,277	370,949	16,225	9,743,862	779,509
1996	1,626,705	292,820	3,269,746	314,336	1,051,612	1,436,091	776,165	99,372	2,545,238	759,916	116,667	12,288,668	983,093
1997	1,417,976	279,298	5,417,751	606,746	722,708	1,018,892	736,734	130,073	4,019,987	1,232,323	135,853	15,718,341	1,257,467
1998	691,378	243,301	7,184,358	613,421	1,026,192	884,626	488,319	185,016	2,641,680	796,372	173,704	14,928,367	1,194,269
1999	649,816	145,730	4,576,208	360,121	704,025	1,228,628	1,152,682	105,696	2,387,615	940,755	263,445	12,514,721	1,001,178
2000	942,593	209,606	7,382,031	541,516	926,367	1,373,069	885,289	151,838	3,244,731	1,022,040	129,729	16,808,809	1,344,705
2001	870,522	164,336	5,410,899	377,474	1,107,707	824,278	965,650	162,677	2,890,054	620,947	49,953	13,444,497	1,075,560
2002	1,392,200	238,003	5,718,984	530,402	696,976	588,155	715,099	114,650	2,928,589	706,729	63,269	13,693,056	1,095,444
2003	846,708	260,167	4,361,710	448,707	843,037	1,083,808	925,885	169,012	4,652,800	970,554	48,945	14,611,333	1,168,907
2004	748,388	196,806	5,891,661	669,975	1,079,304	1,492,703	1,323,535	151,179	3,738,523	1,767,596	230,356	17,290,026	1,383,202
2005	3,024,291	512,771	4,839,752	741,022	1,713,541	1,348,377	1,197,440	224,841	3,753,328	1,484,540	109,535	18,949,438	1,515,955
2006	4,062,579	567,892	8,657,473	1,356,245	1,682,372	1,578,167	2,101,816	245,682	3,895,798	1,689,642	37,713	25,875,379	2,070,030
2007	1,105,347	288,985	5,772,100	740,941	1,831,899	1,456,055	1,494,572	251,074	2,998,085	913,800	16,195	16,869,053	1,349,524

\* No wave 1 release estimates for North Carolina (1996-2003) and Virginia (1996-2007) are available. MRFSS Virginia 2007 estimate is considered preliminary.

<sup>^</sup> Dead discards are estimated by multiplying the number of released fish by a mortality rate of 8%.

**Table 8. Coastal Commercial Quotas and Harvests (pounds, based on compliance reports)**

	Am 6 Quota	2003 Quota	2003 Harvest	2003 Overage	2004 Quota	2004 Harvest	2004 Overage	2005 Quota	2005 Harvest
<b>MA</b>	1,159,750	1,036,880*	1,055,439	18,559	1,141,191	1,206,305	65,114	1,094,636*	1,113,905
<b>RI</b>	243,625	242,159*	238,025	0	243,625	245,204	1,579	242,046*	242,303
<b>NY</b>	1,061,060	828,293^	753,261	0	828,293^	741,668	0	828,293^	689,821
<b>NJ+</b>	321,750	321,750	121,410	0	321,750	81,870	0	321,750	29,797
<b>DE</b>	193,447	193,447	188,419	0	193,447	181,974	0	193,447	173,815
<b>MD</b>	131,560	126,936^	98,149	0	126,936^	115,453	0	126,936^	46,871
<b>VA</b>	184,853	184,853	159,786	0	184,853	160,301	0	184,853	184,734
<b>NC~</b>	480,480	480,480	482,123	1,643	478,837	424,184	0	480,480	440,889

	2005 Overage	2006 Quota	2006 Harvest	2006 Overage	2007 Quota	2007 Harvest	2007 Overage	2008 Quota
<b>MA</b>	19,269	1,140,481*	1,312,168	171,687	988,063*	1,040,328	52,265	1,107,485*
<b>RI</b>	257	243,368*	221,122	0	239,963^	240,627	664	239,299^*
<b>NY</b>	0	828,293^	688,448	0	828,293^	729,743	0	828,293^
<b>NJ+</b>	0	321,750	23,656	0	321,750	13,615	0	321,750
<b>DE</b>	0	193,447	184,214	0	193,447	188,668	0	193,447
<b>MD</b>	0	126,396^	91,093	0	126,396^	96,301	0	126,396^
<b>VA</b>	0	184,853	194,934	10,081	174,772*	165,587	0	184,853
<b>NC~</b>	0	480,480	348,227	0	480,480	380,380	0	480,480

^ Quota reduced due to conservation equivalency

\* Quota reduced due to overage in the previous year

+ NJ quota applied to recreational bonus fish program

~ NC harvest year is December 1 to November 30

**Table 9. Chesapeake Bay Quotas and Harvests (pounds), 2007**

Year: 2007	Jurisdiction	Quota	Harvest
<b>Commercial Fisheries</b>	Maryland	2,134,116	2,240,585
	PRFC	791,195	599,261
	Virginia	1,554,302	1,366,657
	<b>Subtotal</b>	<b>4,479,613</b>	<b>4,206,503</b>
<b>Recreational Fisheries</b>	Maryland	2,798,185	2674549
	PRFC	647,341	*
	Virginia	1,554,302	1,554,428
	<b>Subtotal</b>	<b>4,999,828</b>	<b>4,228,977</b>
<b>Chesapeake Bay Total</b>		<b>9,479,441</b>	<b>8,435,480</b>

\* Recreational harvest in the Potomac River is included in Maryland and Virginia harvest estimates



**Table 10. Chesapeake Bay Spring Trophy Fishery Quotas and Harvests (numbers of fish)**

	2003	2004	2005	2006	2007
<b>Baseline quota</b>	30,000	40,624	40,624 <sup>^</sup>	55,208	50,030
<b>Previous year overage</b>	0	13,900	4,680	13,720*	26,283
<b>Adjusted quota</b>	30,000	26,724	35,944	41,488	30,000 <sup>∇</sup>
<b>Harvest</b>	43,900	31,404	65,664	67,771	36,328
<b>Overage</b>	13,900	4,680	29,720	26,283	6,328

<sup>^</sup> The Board approved the same baseline quota for 2005 as used in 2004.

\* The 2005 overage of 29,720 fish was adjusted to a direct payback of 13,720 fish under an increased minimum size limit and future additional Maryland effort controls.

<sup>∇</sup> The Board approved a target for the 2007 season of the VPA calculated quota minus the 2006 overage, to be no less than 30,000 fish.

**Table 11. Status of compliance with monitoring and reporting requirements, 2007**

(JAI = juvenile abundance index survey, SSB = spawning stock biomass survey, tag = participation in coastwide tagging program, Y = compliance standards met, N = compliance standards not met, N/A = not applicable)

Jurisdiction	Fishery-independent monitoring		Fishery-dependent monitoring		Annual reporting
	Requirement(s)	Status	Requirement(s)	Status	Status
ME	JAI	Y	x	N/A	Y
NH	x	N/A	x	N/A	Y
MA	tag	Y	composition, catch & effort (C&R)	Y	Y
RI	x	N/A	composition (C&R), catch & effort (R)	Y	N*
CT	x	N/A	composition, catch & effort (R)	Y	Y
NY	JAI, SSB, tag	Y	composition, catch & effort (C&R)	Y	N*
NJ	JAI, tag	Y	composition, catch & effort (R)	Y	Y
PA	SSB	Y	x	N/A	Y
DE	SSB, tag	Y	composition, catch & effort (C)	Y	Y
MD	JAI, SSB, tag	Y	composition, catch & effort (C&R)	Y	Y
PRFC	x	N/A	composition, catch & effort (C&R)	Y	Y
DC	x	N/A	x	N/A	Y
VA	JAI, SSB, tag	Y	composition, catch & effort (C&R)	Y	Y
NC	JAI, SSB, tag	Y	composition (C)	Y	Y

\* Rhode Island and New York's reports were complete, but submitted late. The due date for striped bass compliance report submission is June 15. Rhode Island's report was late because it relies on recreational age data in New York's report.