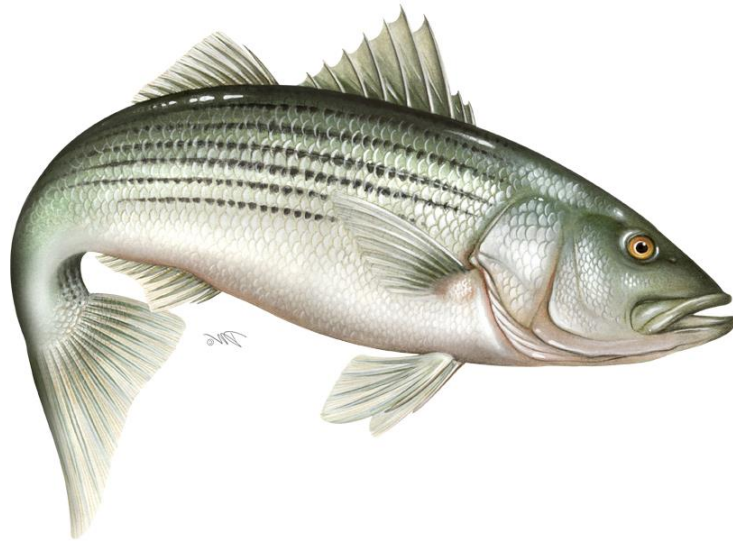


2013 REVIEW OF THE  
ATLANTIC STATES MARINE FISHERIES COMMISSION  
FISHERY MANAGEMENT PLAN FOR

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

2012 FISHING YEAR



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**Accepted February 4, 2014**

## **Executive Summary**

Atlantic striped bass from Maine through North Carolina are managed under Amendment 6 to the Interstate Fishery Management Plan, and Addendum I, II and III to Amendment 6.

Stock status was estimated in 2011. The stock was not overfished and overfishing was not occurring in 2010, although total striped bass population abundance declined 37 percent from 2004. A benchmark stock assessment was completed and peer reviewed by the 57<sup>th</sup> Stock Assessment Review Committee in July 2013, and will be considered for management use at the Management Board meeting in October 2013.

The review of the juvenile abundance indices did not trigger any recommendations for management action. Recruitment failure is defined as a value that is below 75% of all values in a fixed time series appropriate to each juvenile abundance index.

Total striped bass harvest in 2012 is estimated at 2.385 million fish or 25.8 million pounds, which is a 24.2% decrease by weight and a 24.6% decrease by number from 2011. Recreational anglers harvested 1.54 million fish (19.27 million pounds) in 2012, while commercial fishermen harvested 839,329 fish (6.51 million pounds). Dead discards from the recreational fishery are estimated at 467,270 fish.

All states have implemented management programs consistent with Amendment 6. Two states (MA and DE) exceeded their coastal commercial quotas in 2012, requiring reduced 2013 quotas. The Chesapeake Bay quota in 2012 was 8.9 million pounds and was not exceeded.

All states have implemented monitoring programs consistent with Amendment 6. Requirements vary by state, and may include monitoring commercial and/or recreational catch, effort, and catch composition, and performing juvenile abundance surveys, spawning stock surveys, and tagging programs.

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

<u>Date of FMP Approval:</u>	Original FMP ó 1981
<u>Amendments:</u>	Amendment 1 ó 1984 Amendment 2 ó 1984 Amendment 3 ó 1985 Amendment 4 ó 1989; Addendum I ó 1991, Addendum II ó 1992, Addendum III ó 1993, Addendum IV ó 1994 Amendment 5 ó 1995; Addendum I ó 1997, Addendum II ó 1997, Addendum III ó 1998, Addendum IV ó 1999, Addendum V ó 2000 Amendment 6 ó 2003; Addendum I ó 2007, Addendum II ó 2010, Addendum III ó 2012
<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

The Atlantic States Marine Fisheries Commission (Commission) developed a fisheries management plan (FMP) for Atlantic striped bass in 1981 in response to declining juvenile recruitment and landings. The FMP recommended increased restrictions on commercial and recreational fisheries, such as minimum size limits and harvest closures on spawning grounds. Two amendments were passed in 1984 recommending additional management measures to reduce fishing mortality. To strengthen the management response, the Atlantic Striped Bass Conservation Act (P.L. 98-613) was passed in late 1984, which mandated the implementation of striped bass regulations passed by the Commission.

The first enforceable plan, Amendment 3, was approved in 1985, and required size regulations to protect the 1982 year class, which was the first modest size cohort since the previous decade. The objective was to increase size limits to allow at least 95% of the females in the cohort to spawn at least once. Smaller size limits were permitted in producer areas than along the coast. Several states, beginning with Maryland in 1985, opted for a more conservative approach and imposed a total moratorium on striped bass landings for several years. The amendment contained a trigger mechanism to reopen the fisheries when the 3-year moving average of the Maryland juvenile abundance index (JAI) exceeded an arithmetic mean of 8.0. That level was attained with the recruitment of the 1989 year class.

Consequently, Amendment 4 was adopted to allow state fisheries to reopen in 1990 under a target fishing mortality (F) of 0.25, which was half the estimated F needed to achieve maximum

sustainable yield (MSY). The amendment allowed an increase in the target F once spawning stock biomass (SSB) was restored to levels estimated during the late 1960s and early 1970s. The dual size limit concept was maintained, and a recreational trip limit and commercial season implemented to reduce the harvest to 20% of that in the historic period of 1972-1979. The amendment and its four addenda aimed to rebuild the resource, rather than maximize yield.

In 1995, coastal striped bass were declared restored by the Commission, and Amendment 5 was adopted to increase the target F to 0.33, midway between the existing F target (0.25) and  $F_{MSY}$ , which was revised to 0.40. Regulations were developed to allow 70% of the historic harvest and achieve the target F, although states were allowed to submit proposals for alternative regulations that were conservationally equivalent. From 1997-2000, a series of five addenda were implemented to respond to the latest stock status information.

In 2003, Amendment 6 was adopted to address five limitations within the management program: 1) potential inability to prevent the Amendment 5 exploitation target from being exceeded; 2) perceived decrease in availability or abundance of large striped bass in the coastal migratory population; 3) a lack of management direction with respect to target and threshold biomass levels; 4) inequitable effects of regulations on the recreational and commercial fisheries, and coastal and producer area sectors; 5) and excessively frequent changes to the management program. Amendment 6 was fully implemented by January 1, 2004, and completely replaced all previous Commission plans for Atlantic striped bass.

The goal of Amendment 6 is to perpetuate, through cooperative interstate management, migratory stocks of striped bass; to allow commercial and recreational fisheries consistent with the long-term maintenance of a broad age structure, a self-sustaining spawning stock; and also to provide for the restoration and maintenance of their essential habitat. In support of this goal, the following objectives are included:

- Manage striped bass fisheries under a control rule designed to maintain stock size at or above the target female spawning stock biomass level and a level of fishing mortality at or below the target exploitation rate.
- Manage fishing mortality to maintain an age structure that provides adequate spawning potential to sustain long-term abundance of striped bass populations.
- Provide a management plan that strives, to the extent practical, to maintain coastwide consistency of implemented measures, while allowing the States defined flexibility to implement alternative strategies that accomplish the objectives of the FMP.
- Foster quality and economically viable recreational, for-hire, and commercial fisheries.
- Maximize cost effectiveness of current information gathering and prioritize state obligations in order to minimize costs of monitoring and management.
- Adopt a long-term management regime that minimizes or eliminates the need to make annual changes or modifications to management measures.
- Establish a fishing mortality target that will result in a net increase in the abundance (pounds) of age 15 and older striped bass in the population, relative to the 2000 estimate.

Amendment 6 modified the F targets and thresholds, and introduced a new set of biological reference points (BRPs) based on females spawning stock biomass (SSB), as well as a list of management triggers based on the BRPs. (The targets and thresholds were updated in 2008; see Sections II and IV for more information.) The coastal commercial quotas for striped bass were restored to 100% of the states' average landings during the 1972-1979 historical period, except for Delaware's coastal commercial quota, which remained at the level allocated in 2002. In the recreational fisheries, all states were required to implement a two fish bag limit with a minimum size limit of 28 inches, except for the Chesapeake Bay fisheries, Albemarle/Roanoke fisheries, and states with approved alternative regulations. The Chesapeake Bay and Albemarle/Roanoke regulatory programs are predicated on a more conservative F target than the coastal migratory stock, which allows these jurisdictions to implement separate seasons, harvest caps, and size and bag limits as long as they remain under that F target. No minimum size limit can be less than 18 inches. The same minimum size standards regulate the commercial fisheries as the recreational fisheries, except for a minimum 20 inch size limit in the Delaware Bay spring gillnet fishery.

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. A state may request a change only if it can demonstrate that the action is "conservationally equivalent" to the management standards or will not contribute to the overfishing of the resource. This practice has resulted in a variety of regulations among states (see Tables 1 and 2).

In 2007, Addendum I was implemented to establish a bycatch monitoring and research program to increase the accuracy of data on striped bass discards and also recommend development of a web-based angler education program. In 2010, Addendum II modified the definition of recruitment failure as a value that is below 75% of all values in a fixed time series appropriate to each juvenile abundance index. In 2012, Addendum III was approved by the Board. This addendum requires all states and jurisdictions with a commercial fishery to implement a commercial harvest tagging program. The addendum was initiated in response to significant poaching events in the Chesapeake Bay and aims to limit illegal harvest of striped bass.

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, National Marine Fisheries Service (NMFS) took steps in the rulemaking process to consider the proposal. In September 2006, NMFS concluded that it would be imprudent to open the EEZ to striped bass fishing and chose not to proceed further in its rulemaking. Specifically, NMFS concluded that: 1) it could not be certain, especially after taking into account the overwhelming public perception that large trophy sized fish congregate in the EEZ, that opening the EEZ would not increase effort and lead to an increase in mortality that would exceed the threshold, and 2) both the Commission's and NMFS's ability to immediately respond to an overfishing and/or overfished situation is a potential issue, particularly given the timeframe within which Amendment 6 was created, and given the lag time in which a given year's data is available to management (71 FR 54261-54262).

Additionally, in October 2007, President George W. Bush issued an executive order prohibiting the sale of striped bass (and red drum) caught within the EEZ. The Order also requires the Secretary of Commerce to encourage management for conservation of the resources, including State designation as gamefish where the State determines appropriate under applicable law, and to periodically review the status of the populations within US jurisdictional waters. The most recent report to Congress on the status of the striped bass population was submitted in 2012 (NOAA 2012).

## II. Status of the Stocks

The 2013 benchmark stock assessment was completed and peer reviewed by the 57<sup>th</sup> Stock Assessment Review Committee in July 2013. The 2013 assessment will be considered for management use by the Board at its October 2013 meeting. As a result the most recent status of the stock is based on results from the 2011 stock assessment update.

In 2011 a stock assessment was conducted by the Striped Bass Technical Committee, Stock Assessment Subcommittee, and Tagging Subcommittee which included data through 2010 (ASMFC 2011). Two models were included to assess stock status: an age-based statistical catch-at-age (SCA) model, and a tag-based catch equation (CE) model. Based on the results of both models and comparison to the biological reference points, below, Atlantic striped bass are not overfished and are not experiencing overfishing.

	<i>Female Spawning Stock Biomass</i>	<i>Fully-Recruited Fishing Mortality</i>
<b>Threshold</b>	SSB <sub>1995</sub> = 30,000 metric tons	F <sub>msy</sub> = 0.34
<b>Target</b>	SSB <sub>threshold</sub> X 1.25 = 37,500 metric tons	0.30 (0.27 in Chesapeake Bay and Albemarle/Roanoke)

The SCA model estimated that the resource remains at a high level with female spawning stock biomass (SSB) at 50,548 metric tons (mt), or 168% of the threshold and 134% of the target (Figure 1). The 2010 estimate of SSB was a decrease from the 2008 estimate of 55,500 mt and SSB estimates continue to be less than the time series maximum of 63,588 mt in 2004. Recruitment estimated in the SCA model as age-1 abundance averaged 13.5 million fish from 1994-2004 (Figure 2). The 2003 cohort (age 1 in 2004) remains the second largest year-class since 1982 at 20.8 million fish. The 2009 and 2010 estimates (7.1 million and 9.1 million, respectively) were near the average recruitment observed during 2005-2010 (8.1 million fish), but well below the 1994-2004 average. The SCA model estimated the 2010 fishing mortality rate (F) on age 8–11 fish to be F=0.23, which is well below the fishing mortality threshold and target (Figure 3).

Overall, the conclusion is that stock abundance has declined since the assessment time series high of 2004. The decrease in abundance is reflected in a decline in coastwide catch in 2009 and 2010, particularly in recreational discards comprised of smaller fish. The decline is more prevalent in areas largely dependent on contributions from the Chesapeake stocks (such as Maine) than areas such as New York that are dominated by the Hudson stock (Waldman et al 1990). Despite the decline in abundance, the spawning stock in 2010 remained relatively high

due to the growth and maturation of the 2003 year class and the accumulation of spawning stock biomass from year classes prior to 1996.

Because Amendment 6 implemented distinct management programs for the Chesapeake Bay and Albemarle/Roanoke area with a fishing mortality target of 0.27, separate estimates of fishing mortality for the areas are required. The 2011 stock assessment includes the estimates for the Chesapeake Bay. Based on application of Maryland and Virginia tagging data to the CE model, Chesapeake Bay F estimates for fish 18 to 28 inches ranged from 0.01 to 0.15 throughout the time series (1987-2010), and was estimated at 0.16 for 2010.

In March 2010, the North Carolina Division of Marine Fisheries used the Age Structured Assessment Program (NOAA Fisheries Toolbox <http://nft.nefsc.noaa.gov/>) to determine stock status (data through 2008). Currently, the stock is not experiencing overfishing. Fishing mortality on ages 4-6 striped bass has declined steadily since 2004 and was estimated at 0.10 in 2008. The JAI continues to fluctuate around the average observed since the stock was declared recovered in 1997. The age structure of the stock continues to expand, with an overall increase in abundance of age 9+ fish in the population. The current maximum age observed on the spawning grounds is 17 (captured during the 2008 sampling season). Estimated abundance of age 4-6 striped bass in the stock increased steadily and peaked in 2000 at about 550,000 fish. Age 4-6 abundance declined slightly and varied without trend at about 470,000 fish through 2006, and has since fallen to an estimated 336,000 fish in 2008. The low abundance of age 4-6 fish in 2008 is due to poor recruitment from the 2003 and 2004 year classes.

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

Total striped bass commercial and recreational harvest in 2012 (excluding Albemarle Sound/Roanoke River Management Area) is estimated at 25.8 million pounds or 2.385 million fish (Figures 4 and 5; Tables 3 - 6). This is a 24.2% decrease by weight and a 24.6% decrease by number from 2011. The commercial and recreational fisheries harvested 25 and 75 percent, respectively.

The commercial fishery (coastal and Chesapeake Bay combined) landed 6.51 million pounds in 2012, slightly lower than landings in 2011 (6.78 million pounds). The Chesapeake Bay jurisdictions dominated the 2012 commercial landings; by pounds, Maryland landed 30%, Virginia landed 23%, and PRFC landed 11%. Additional landings came from Massachusetts (19%), New York (10%), Rhode Island (4%), Delaware (3%), and North Carolina (<1%).

The total coastal commercial harvest in 2012 was 2.596 million pounds, which was a 10% decrease from the 2011 coastal landings of 2.874 million pounds. The total Chesapeake Bay commercial harvest in 2012 was 3.924 million pounds, which represents a fractional decrease from the 2011 landings of 3.925 million pounds.

In 2012, the recreational fishery (coastal and Chesapeake Bay combined) landed an estimated 1.54 million fish (19.27 million pounds). This was a 31% decrease from 2011 landings by number (2.23 million fish) and a 29% decrease by weight from 2011 (27.23 million pounds). The coastal recreational harvest was 16.87 million pounds. The recreational Bay-wide harvest was 2.40 million pounds and represents an 18% decrease in Chesapeake harvest from 2011.



Recreational releases decreased for the sixth consecutive year to 5.192 million fish; releases peaked in 2006 at 23.343 million fish (Figure 6; Table 7). The 2012 recreational catch estimate of 6.737 million fish is the lowest on record since 1994, and represents a 74% decline from the peak in 2006. Anglers are keeping more of the fish they catch in recent years or catching fewer sub-legal fish. The proportion of catch that is released was 77% in 2012. Using a 9% release mortality rate, recreational dead discards are estimated to be 467,270 fish in 2012. Total recreational removals (harvest and dead discards combined) in 2012 was 2.01 million fish, a decrease from the previous year. New York landed the largest percent of the coastwide recreational harvest in number of fish (27.5%), followed by Massachusetts (24.5%), Maryland (17%), New Jersey (10%), and Virginia (8.7%). The remaining states each landed less than 5% of the 2012 recreational landings by number of fish.

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

The 2011 Atlantic striped bass stock assessment is an update to the 2007 benchmark stock assessment (NEFSC 2008a, NEFSC 2008b). The benchmark assessment was favorably peer reviewed at the 46<sup>th</sup> Stock Assessment Workshop (SAW). The Stock Assessment Review Committee (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). The SARC found that the SCA model best estimated parameters that could be judged against the current biological benchmarks.

The SARC also advised the assessment team to re-estimate the F threshold ( $F_{msy}$ ) based on data and stock estimates from the SCA model, and 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 BRPs (see Section II).

A benchmark assessment was completed in July 2013 at the 57<sup>th</sup> SAW. The Board will be considering acceptance of the 2013 stock assessment for management use at its October 2013 meeting.

#### **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 or substantial recreational fisheries are required to define the catch composition of these fisheries. Jurisdictions with substantial commercial fisheries and those agencies monitoring recreational fisheries are required to gather representative catch and effort data for these fisheries.

The management plan also 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 and Addendum I to Amendment 6 set the regulatory measures in 2009. Management requirements include size limits, bag limits, coastal commercial quotas, and regulatory measures in the Chesapeake Bay and Albemarle Sound/Roanoke River set to not exceed target fishing mortality rates.

In May 2009, the Management Board initiated the development of an addendum to consider options to roll over unused coastal commercial quota up to fifty percent, and approved sending the draft addendum out for public comment in August 2009. In November 2009, the Board voted for status quo management in regards to unused quota rollover.

In February 2010, the Management Board initiated the development of an addendum to consider options to increase the coastal commercial quota. The Board approved the draft addendum for public comment in May 2010, with the addition of an option to consider adopting a Technical Committee recommendation to revise the JAI management trigger. Adopting the Technical Committee recommendation would modify the definition of recruitment failure, such that each index would have a fixed numerical value indicating failure, rather than one that changes from year to year. The Board approved the revised JAI management triggers. The new definition of recruitment failure is a value that is below 75% of all values in a fixed time series appropriate to each juvenile abundance index.

In 2012, Addendum III was approved by the Board. This addendum requires all states and jurisdictions with a commercial fishery to implement a commercial harvest tagging program. The addendum was initiated in response to significant poaching events in the Chesapeake Bay and aims to limit illegal harvest of striped bass.

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

In 2012, four states had coastal commercial quotas lower than their Amendment 6 allocation due to quota overages in 2011 and/or conservation equivalencies related to minimum size limits: Massachusetts (overage), Rhode Island (size limit), New York (overage and size limit), and Maryland (size limit) (Table 8). In 2012, two states exceeded their coastal commercial quotas and should have their 2013 quotas reduced accordingly. Massachusetts exceeded its adjusted coastal commercial quota by 161,882 pounds, resulting in an adjusted 2013 quota of 997,868 pounds. Delaware exceeded its coastal commercial quota by 877 pounds, for an adjusted 2013 quota of 192,570 pounds.

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

Amendment 6 includes 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  $F=0.27$ , Maryland, Virginia, and the Potomac River Fisheries Commission (PRFC) annually establish a bay-wide quota for resident fish using the Harvest Control Model (Table 9). In 2012, the bay-wide quota was 8,825,510 pounds. Shares are allocated to Maryland, the PRFC, and Virginia based on historical harvest, and each jurisdiction then allocates portions of the quota to its recreational and commercial fisheries. In 2012, the bay-wide harvest was 6,327,071 pounds and within the 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. From 1993 to 2007 the fishery operated under a quota. Beginning in 2008, the Board approved non-quota management until stock assessment indicates that corrective action is necessary to reduce  $F$  on the coastal stock. After several years of varying size limits in Maryland and the Potomac River to account for quota overages, a 28 inch size limit has been in place since 2008; Virginia's trophy fish size limit has been higher at 32 inches. The trophy season in Virginia is also shorter.

In 2012, the estimate of migrant fish harvested during the trophy season is 16,874 fish (16,769 fish in Maryland and 105 fish in Virginia [state compliance reports 2013]) and represents a 52% decrease from 2011. In weight of fish, the estimate is 275,301 pounds total (273,733 pounds in Maryland and 1,568 pounds in Virginia). Harvest of migrant striped bass in the spring fishery in 2012 was below the 2007-2011 average (43,700 fish). In Maryland, the break down between private angler and charter boat harvest is 9,315 fish and 7,454 fish, respectively.

### ***Wave-1 Recreational Harvest Estimates***

Evidence suggests that North Carolina, Virginia, and possibly other states have had sizeable wave-1 (January/February) recreational striped bass fisheries beginning in 1996 (NEFSC 2008b). The Marine Recreational Fisheries Statistics Survey (MRFSS) has sampled for striped bass in North Carolina during wave-1 since 2004. Other states are not currently covered during wave-1.

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

Amendment 6 requires the following states to conduct striped bass young-of-year juvenile abundance index (JAI) surveys on an annual basis: Maine for the Kennebec River; New York for the Hudson River; New Jersey for the Delaware River; Maryland for the Maryland Chesapeake Bay tributaries; Virginia for the Virginia Chesapeake Bay tributaries; and North Carolina for the Albemarle Sound/Roanoke River stock. Refer to Figure 5 for the results of the juvenile abundance surveys.

The Striped Bass Technical Committee (TC) annually reviews trends in all required JAIs. Under Amendment 6, recruitment failure was defined as a value that was lower than 75 percent of all the other values in the dataset for three consecutive years. This methodology created a constantly moving value with each additional year of data. Under the new definition of recruitment failure, per Addendum II to Amendment 6, recruitment failure is defined as a value that is below 75% (the first quartile, or  $Q1$ ) of all values in a fixed time series appropriate to each JAI. If any

surveys JAI falls below their respective Q1 for three consecutive years, then appropriate action should be recommended by the TC to the Management Board. The Management Board is the final arbiter in all management decisions.

For the 2013 review of the JAIs, the trigger analysis evaluated the 2010, 2011, and 2012 JAI values (Figure 5). Three consecutive years of recruitment failure did not occur in any of the surveyed areas, thus no action is triggered. The New York - Hudson River index has experienced two years of recruitment failure in a row, in 2011 and 2012, while the New Jersey - Delaware River, Maryland ó Chesapeake Bay, and Virginia ó Chesapeake Bay indices all fell below the recruitment failure definition in 2012. The Maine value for 2012 was slightly above average while the North Carolina - Albemarle/Roanoke value was below average (Figure 5). A more thorough description below outlines state specific effects on JAI surveys from hurricanes and tropical storms in 2011 and 2012.

**New Jersey:** Despite a decent index in 2011, it is likely that production would have been higher. The index and overall catch dropped considerably after Hurricane Irene made landfall in NJ on August 28 and Tropical Storm Lee in PA on September 8, causing major flooding of streams and rivers. The high water levels and debris led to a period of three weeks where sampling was not possible. As a result, sampling was not completed in Region 2 for August when striped bass catches are typically high. Environmental conditions in the spring of 2012 were not conducive to good spawning. Unusually high temperatures and dry conditions likely contributed to the low index.

**New York:** During August 14 through September 9, 2011 three large storms deposited more than 20 inches of rain over the Hudson Valley. Two of the storms were Tropical Storms Irene and Lee. They left unprecedented flooding and damage throughout this entire region. The salinity of the Hudson River estuary south of Manhattan was near zero soon after TS Irene. The area briefly returned to brackish conditions, when a similar phenomenon occurred after TS Lee a week later. The storms produced a 70 yr flood event at Troy (RM 152), and an estimated 1.75 million tons of sediment was deposited and remained trapped in the Hudson.

NYSDEC suspended Hudson River sampling from Aug 28<sup>th</sup> until Sept 11<sup>th</sup> 2011 due to high flood waters and debris caused by the storms. When sampling resumed, beach seine survey catches were noticeably altered. Observed numbers of fish were decreased, and estuarine fish, including striped bass, were literally swept out of lower portions of the Hudson.

To evaluate potential size of the 2011 striped bass year class, we ranked catch per unit effort data from the first three weeks of the surveys for their entire 28 year history. The results indicated an average, or slightly less than average, year class was shaping up prior to the 2011 storms. Catch data obtained from the five remaining sample weeks of 2011 were decreased, due to the sheer volume of water, debris, and fish washing out of the Hudson. It is not known if the fish washed out to sea survived.

The 2012 index for NY was very low, similar to what occurred in what appears to be a coast-wide event. Sediment deposited in the previous year's storms remained in the Hudson estuary and covered the substrate in many shallow water areas. There was also a complete lack of submerged aquatic vegetation, perhaps a consequence of the sediment or storms of the previous

year. We do not know if either of these environmental changes due to 2011 storms affected sampling efficiency or survival of young in 2012.

### ***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 2004 FMP, which updated the 1994 FMP, set a target fishing mortality rate equal to 0.22 and threshold spawning stock biomass equal to 400,000 pounds for the A/R System. The annual total allowable catch (TAC) of 550,000 pounds 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.

Total 2012 harvest in the A/R System was estimated at 275,667 pounds, an increase from the 248,635 pounds harvested in 2011, but still 274,333 pounds below the 2012 TAC. Each sector harvested within its quota allocation. The commercial harvest in the ASMA was estimated at 115,940 pounds. Recreational harvest in the ASMA was estimated at 71,456 pounds and in the RRMA at 88,271 pounds.

To assess the A/R stock specific reference points, a peer-reviewed statistical catch at age stock assessment model was completed in 2010, at which time a Plan Development Team and Advisory Committee were convened to update the NC Estuarine Striped Bass FMP. Amendment 1 to the North Carolina Estuarine Striped Bass FMP was approved by the North Carolina Division of Marine Fisheries and the North Carolina Wildlife Resources Commission in the summer of 2013.

A peer-reviewed statistical catch at age stock assessment model was completed in 2010 (see Section II for more results), at which time a Plan Development Team and Advisory Committee were convened to review the 2004 NC Estuarine Striped Bass FMP. An updated draft Amendment I NC Estuarine Striped Bass FMP was developed and approved to go out for public comment by the NC Marine Fisheries Commission in September 2011.

### ***Law Enforcement Reporting***

The following section describes law enforcement cases that were included in the 2013 compliance reports and does not necessarily cover all striped bass law enforcement violations in 2012.

- Pennsylvania conservation officers cited recreational anglers for violations that would have represented a maximum detected illegal harvest of 111 striped bass in 2012. Additionally, officers found 43 illegally taken fish that had been discarded by anglers; therefore, the maximum detected illegal harvest was 154 striped bass in 2012.

- The Virginia Marine Police confiscated 621 pounds in 2012, compared to 1,281 pounds in 2011 and 1,476 pounds in 2010. Using a traditional average weight (4.7 pounds), the 2012 confiscations amounted to 132 striped bass.
- In 2012 North Carolina Marine Patrol confiscated 59 pounds of striped bass

## **VII. Annual State Compliance**

Based on the annual state compliance reports, the Plan Review Team determines that each state/jurisdiction implemented a management program for 2012 that was approved by the Striped Bass Management Board and was consistent with the requirements of Amendment 6. Refer to Tables 1 and 2 for state-by-state regulations.

The following regulatory changes were documented in the compliance reports for 2013:

- In Maine, it is unlawful to use treble hooks when using bait as a method of harvest (effective January 1, 2013).
- Massachusetts commercial season will not open until July 14, 2013.
- In Rhode Island, there will be slight changes to the management of the general category within the striped bass commercial fisheries in 2013. The start date of the first sub-period for this category will remain June 6<sup>th</sup> (RIMF Reg. Part 12.3 2013b). The start date of the second sub-period for this category will be September 8<sup>th</sup> (RIMF Reg. Part 12.3 2013b). The possession limit during both sub-periods for the general category will be five fish per vessel per calendar day. Allocation of the general category quota between the sub-periods will be 70/30. During both sub-periods, the fishery will be closed each calendar week from 12:00 AM Friday until 11:59 PM Saturday and commercial possession and sale of striped bass on these days will be prohibited.
- Effective June 8, 2012, the NJDEP Division of Fish and Wildlife is indefinitely suspended the Party/Charter Boat facet of the Striped Bass Bonus Program. This did not impact the individual angler facet of the SBBP nor did it affect the recreational fisheries regulations for striped bass. Recreational anglers without a SBBP permit, including those fishing on for-hire vessels, can still harvest two striped bass per day at 28 inches or larger. Party/Charter Boat anglers can still harvest a 'bonus' bass if they obtain a SBBP permit from the Division's website prior to their fishing trip and have the permit in possession while fishing on the for-hire vessel.
- Maryland's 2013 Chesapeake Bay quota was reduced by 14% from 2012 in response to decreased estimates of overall stock abundance. In addition, the 2013 Chesapeake Bay commercial quota was reduced 2.5% to account for management uncertainty in harvest reporting. The effective 2013 commercial quota is 1,646,742 pounds.
- The Virginia commercial and recreational striped bass quotas were established as 1,230,110 pounds each for 2013 (compared to 1,430,361 pounds in 2012). In addition, the commercial season opening date was changed from February 1 to January 16. The commercial season closing date remains as December 31. Commercial striped bass quota shares may not be transferred in any quantity less than 500 pounds (compared to 200 pounds in 2012). Transfers of commercial striped bass quota will be prohibited from October 1 through November 30, and December 16 through January 31. Temporary

transfers of commercial striped bass quota will be permitted between December 1 and December 16.

Following the first full year of implementation of an alternative management program approved by the Management Board, the PRT is responsible for evaluating the effects of the program. The Management Board approved a conservation equivalency proposal from New Jersey in May 2010 that would permit anglers to take 1 fish at 24 inches or greater and 1 fish at 32 inches or greater (rather than 2 fish at 28 inches or greater). The state has not implemented this proposal to date. The Management Board requested that the Technical Committee re-evaluate the conservation equivalency of the alternative measure three years post-implementation.

Amendment 6 includes compliance requirements for monitoring programs (summarized in *Section V*). Compliance with these requirements is summarized in Table 10. The PRT found that all states carried out the required monitoring programs in the 2012 fishing year.

No monitoring program changes were documented in the compliance reports or provided via personal communication.

## **VIII. Recommendations**

### **Management Recommendations**

If the management Board approves the recommended reference points from the 2013 benchmark stock assessment through the addendum process, the Management Board needs to consider any changes in stock status and the management triggers of Amendment 6. Amendment 6 contains a number of management triggers that invoke Board action to ensure the viability of the striped bass resource, and the sustainability of its fishery. These triggers are intended to prevent an overfished and/or overfishing condition, and recruitment failure.

### **Research Recommendations**

#### ***Fishery-Dependent Priorities***

##### ***High***

- Continue collection of paired scale and otolith samples, particularly from larger striped bass, to facilitate development of otolith-based age-length keys and scale-otolith conversion matrices.

##### ***Moderate***

- Develop studies to provide information on gear specific discard mortality rates and to determine the magnitude of bycatch mortality.<sup>1</sup>
- Improve estimates of striped bass harvest removals in coastal areas during wave 1 and in inland waters of all jurisdictions year round.
- Evaluate the percentage of fishermen using circle hooks.<sup>2</sup>

#### ***Fishery-Independent Priorities***

##### ***Moderate***

- Develop a refined and cost-efficient, fisheries-independent coastal population index for striped bass stocks.

### ***Modeling / Quantitative Priorities***

#### ***High***

- Develop a method to integrate catch-at-age and tagging models to produce a single estimate of F and stock status.<sup>3</sup>
- Develop a spatially and temporally explicit catch-at-age model incorporating tag based movement information.<sup>4</sup>
- Review model averaging approach to estimate annual fishing mortality with tag based models. Review validity and sensitivity to year groupings.<sup>5</sup>
- 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.<sup>6</sup>
- Develop field or modeling studies to aid in estimation of natural mortality or other factors affecting the tag return rate.

#### ***Moderate***

- Develop maturity ogives applicable to coastal migratory stocks.
- Examine methods to estimate annual variation in natural mortality.<sup>7</sup>
- Develop reliable estimates of poaching loss from striped bass fisheries.
- Improve methods for determining population sex ratio for use in estimates of SSB and biological reference points.
- Evaluate truncated matrices and covariate based tagging models.

#### ***Low***

- Examine issues with time saturated tagging models for the 18 inch length group.
- Develop tag based reference points.

### ***Life History, Biological, and Habitat Priorities***

#### ***High***

- Continue in-depth analysis of migrations, stock compositions, etc. using mark-recapture data.<sup>8</sup>
- Continue evaluation of striped bass dietary needs and relation to health condition.<sup>9</sup>
- Continue analysis to determine linkages between the mycobacteriosis outbreak in Chesapeake Bay and sex ratio of Chesapeake spawning stock, Chesapeake juvenile production, and recruitment success into coastal fisheries.

#### ***Moderate***

- Examine causes of different tag based survival estimates among programs estimating similar segments of the population.
- Continue to conduct research to determine limiting factors affecting recruitment and possible density implications.
- 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***

- 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.

### ***Management, Law Enforcement, and Socioeconomic Priorities***

#### ***Moderate***

- Examine the potential public health trade-offs between the continued reliance on the use of high minimum size limits (28 inches) on coastal recreational anglers and its long-term effects on enhanced PCB contamination among recreational stakeholders.<sup>10, 12</sup>
- Evaluate striped bass angler preferences for size of harvested fish and trade-offs with bag limits.

#### Habitat Recommendations

- Passage facilities should be designed specifically for passing striped bass for optimum efficiency at passing this species.
- Conduct studies to determine whether passing migrating adults upstream earlier in the year in some rivers would increase striped bass production and larval survival, and opening downstream bypass facilities sooner would reduce mortality of early emigrants (both adult and early-hatched juveniles).
- All state and federal agencies responsible for reviewing impact statements and permit applications for projects or facilities proposed for striped bass spawning and nursery areas shall ensure that those projects will have no or only minimal impact on local stocks, especially natal rivers of stocks considered depressed or undergoing restoration.<sup>10</sup>
- Federal and state fishery management agencies should take steps to limit the introduction of compounds which are known to be accumulated in striped bass tissues and which pose a threat to human health or striped bass health.
- Every effort should be made to eliminate existing contaminants from striped bass habitats where a documented adverse impact occurs.
- Water quality criteria for striped bass spawning and nursery areas should be established, or existing criteria should be upgraded to levels that are sufficient to ensure successful striped bass reproduction.
- Each state should implement protection for the striped bass habitat within its jurisdiction to ensure the sustainability of that portion of the migratory stock. Such a program should include: inventory of historical habitats, identification of habitats presently used, specification of areas targeted for restoration, and imposition or encouragement of measures to retain or increase the quantity and quality of striped bass essential habitats.
- States in which striped bass spawning occurs should make every effort to declare striped bass spawning and nursery areas to be in need of special protection; such declaration should be accompanied by requirements of non-degradation of habitat quality, including minimization of non-point source runoff, prevention of significant increases in contaminant loadings, and prevention of the introduction of any new categories of contaminants into the area. For those agencies without water quality regulatory authority, protocols and schedules for providing

input on water quality regulations to the responsible agency should be identified or created, to ensure that water quality needs of striped bass stocks are met.<sup>11</sup>

- ASMFC should designate important habitats for striped bass spawning and nursery areas as HAPC.
- Each state should survey existing literature and data to determine the historical extent of striped bass occurrence and use within its jurisdiction. An assessment should be conducted of those areas not presently used for which restoration is feasible.

#### Footnotes

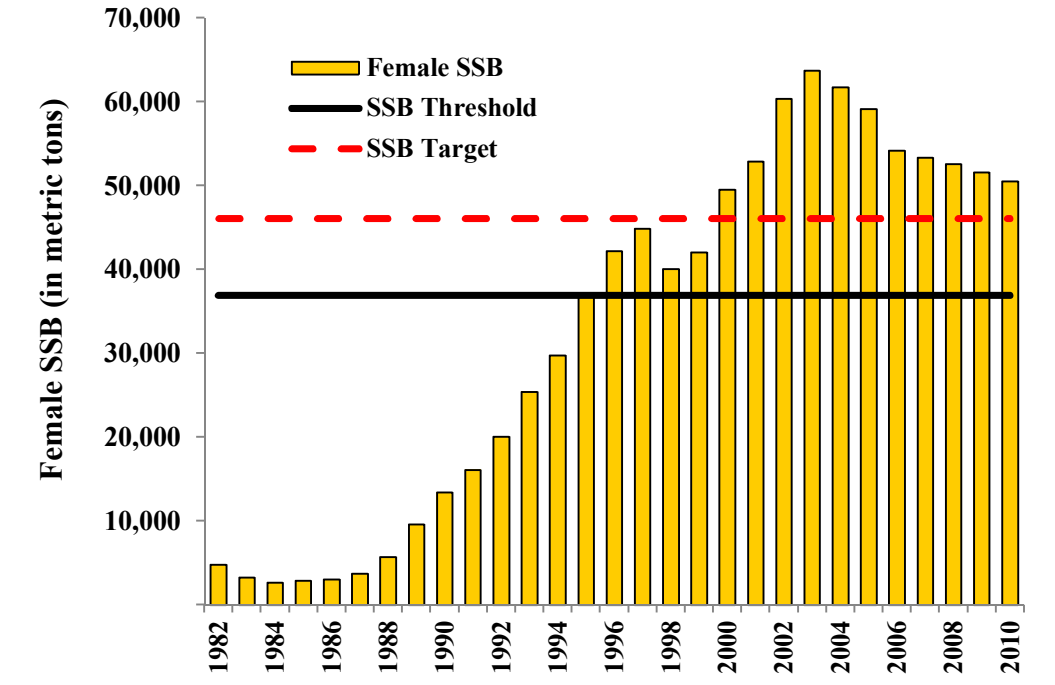
- <sup>1</sup> Literature search and some modeling work completed.
- <sup>2</sup> Work ongoing in New York through the Hudson River Angler Diary, Striped Bass Cooperative Angler Program, and ACCSP e-logbook.
- <sup>3</sup> Model developed, but the tagging data overwhelms the model. Issues remain with proper weighting.
- <sup>4</sup> Model developed with Chesapeake Bay and the rest of the coast as two fleets. However, no tagging data has been used in the model.
- <sup>5</sup> Work ongoing by Striped Bass Tagging Subcommittee to evaluate the best years to use for the IRCR and the periods to use for the MARK models.
- <sup>6</sup> Gear specific survival being examined in Hudson River.
- <sup>7</sup> Ongoing work by the Striped Bass Tagging Subcommittee
- <sup>8</sup> Ongoing through Cooperative Winter Tagging Cruise and striped bass charter boat tagging trips. See Cooperative Winter Tagging Cruise 20 Year Report.
- <sup>9</sup> Plans for a stomach content collection program in the Chesapeake Bay by the Chesapeake Bay Ecological Foundation.
- <sup>10</sup> Ongoing in New York.
- <sup>11</sup> Significant habitat designations completed in the Hudson River and New York Marine Districts.
- <sup>12</sup> Samples collected from two size groups ( $\geq 28$  inches and 20-26 inches) in Pennsylvania and processed by the Department of Environmental Protection to compare contamination of the two size groups.

## IX. References

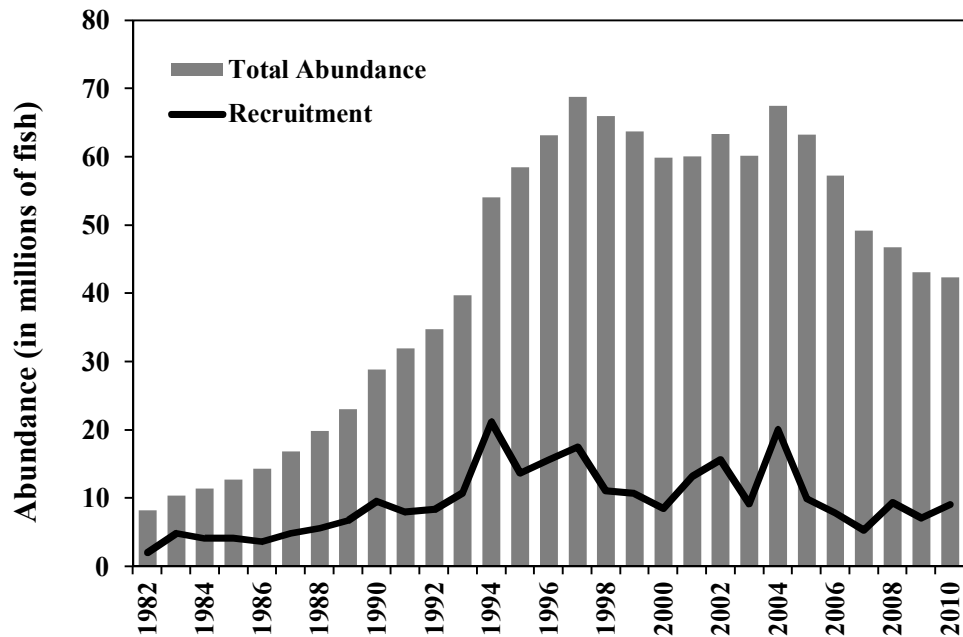
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## X. Figures

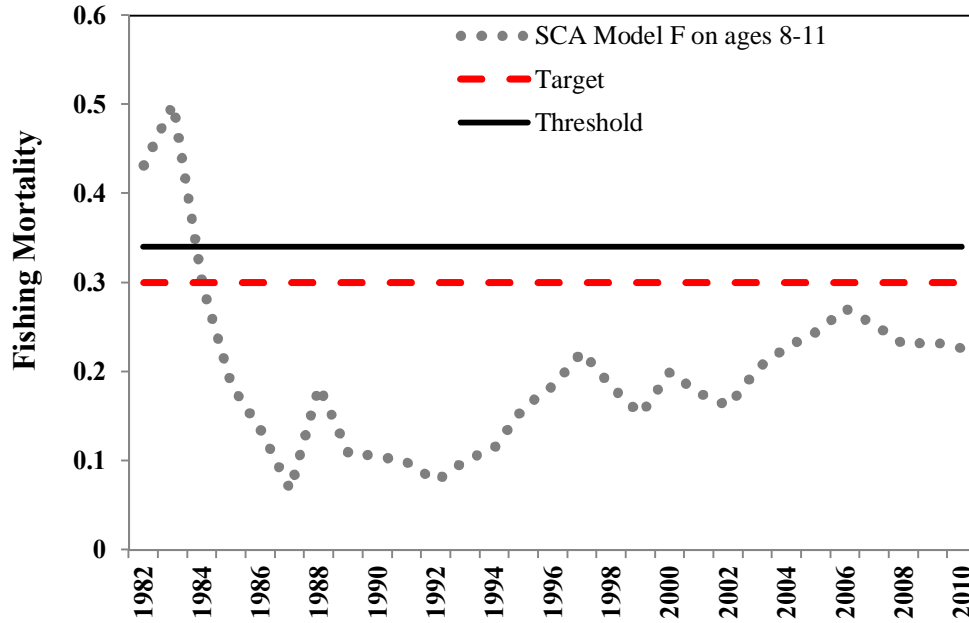
**Figure 1. Striped bass spawning stock biomass (SSB) estimates and biological reference points**  
Source: ASMFC 2011



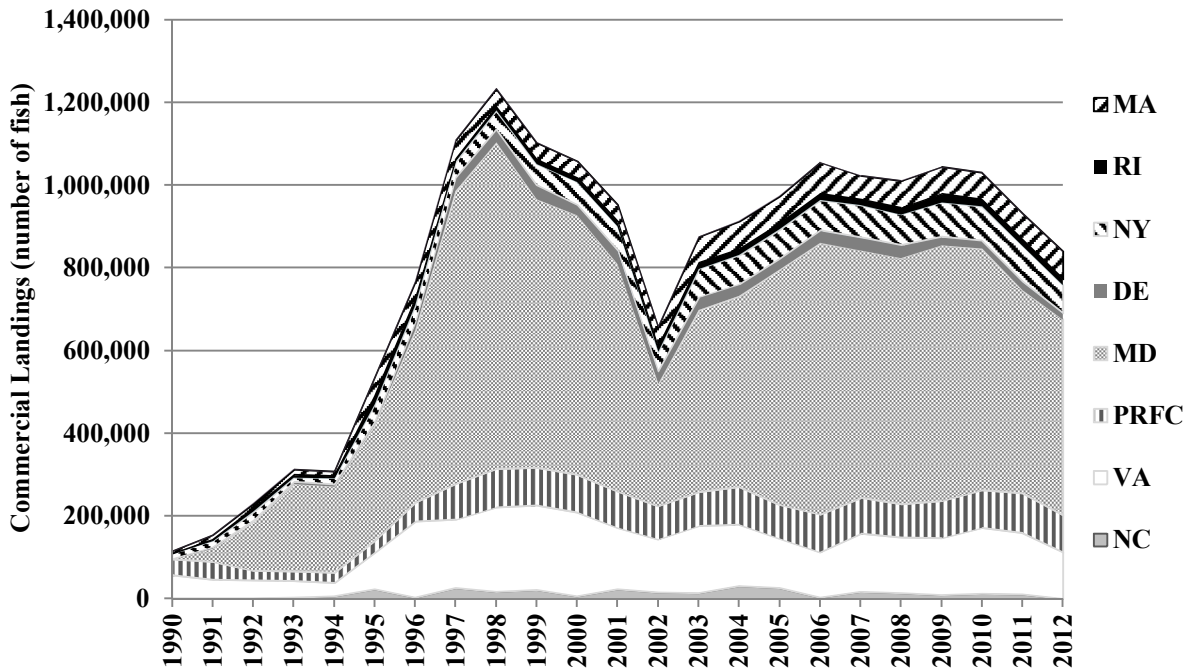
**Figure 2. Striped bass abundance and recruitment estimates.** Source: ASMFC 2011



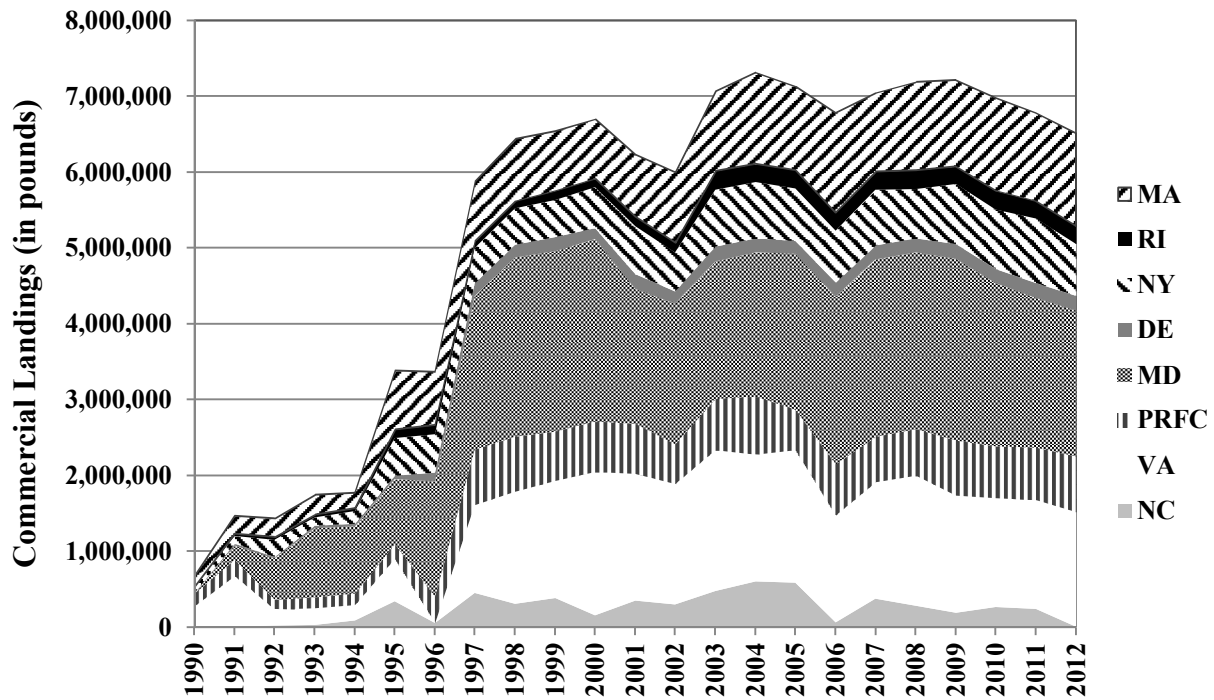
**Figure 3. Striped bass fishing mortality (F) estimates from the statistical-catch-at-age (SCA) model and biological reference points.** Source: ASMFC 2011



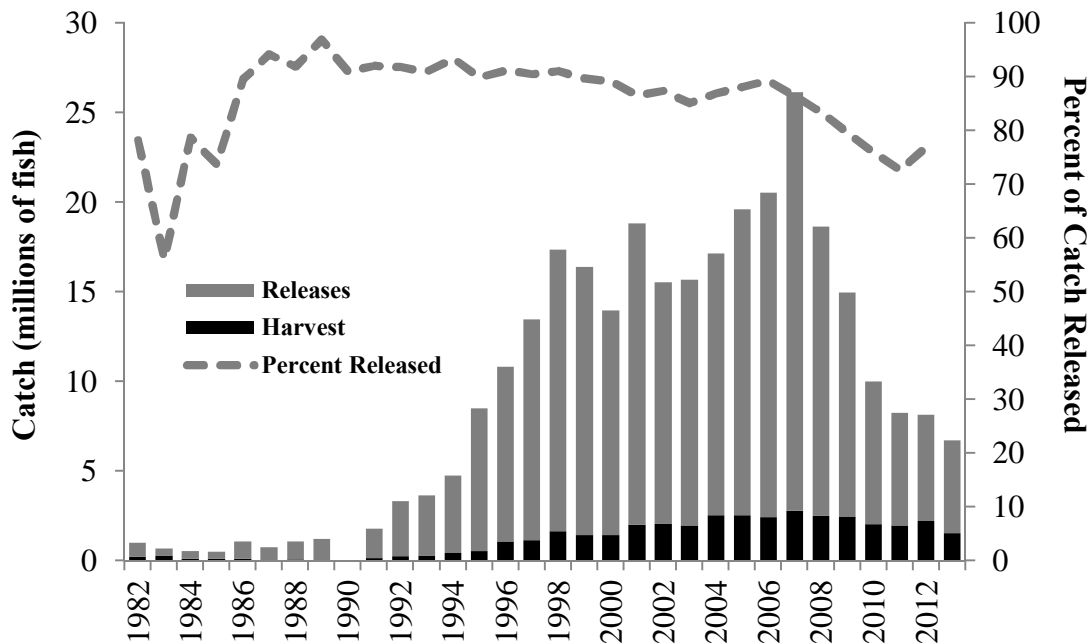
**Figure 4. Commercial landings, in numbers, of migratory striped bass, by state, 1990 – 2012.** Note: All harvests are based on the calendar year. MD and VA harvests include Chesapeake Bay harvest. NC is Atlantic Ocean only. Source: ASMFC 2013 Compliance Reports.



**Figure 5. Commercial landings, in pounds, of migratory striped bass, by state, 1990 – 2012.**  
 Note: All harvests are based on the calendar year. MD and VA harvests include Chesapeake Bay harvest. NC is Atlantic Ocean only. Source: ASMFC 2012 Compliance Reports.



**Figure 6. Recreational catch and the proportion of fish released, 1982-2012**  
 Source: personal communication with NMFS Fisheries Statistics Division, Silver Spring, MD



**Figure 5. Juvenile abundance indices from Maine, New York, Jew Jersey, Maryland, Virginia, and North Carolina.** Source: 2013 State Compliance Reports. Q1 = first quartile, which is the value that is below 75% of all values in a specified time series.

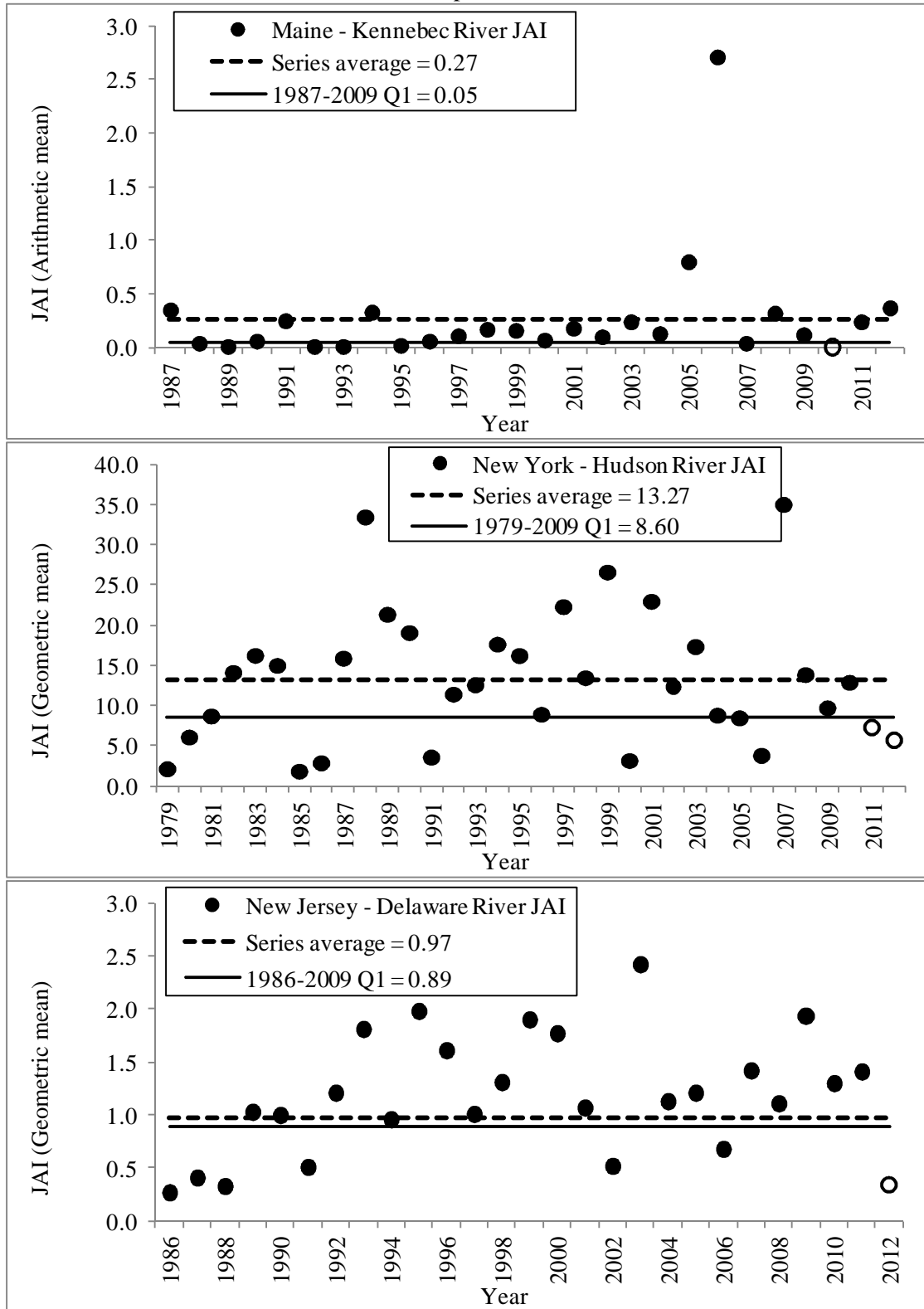
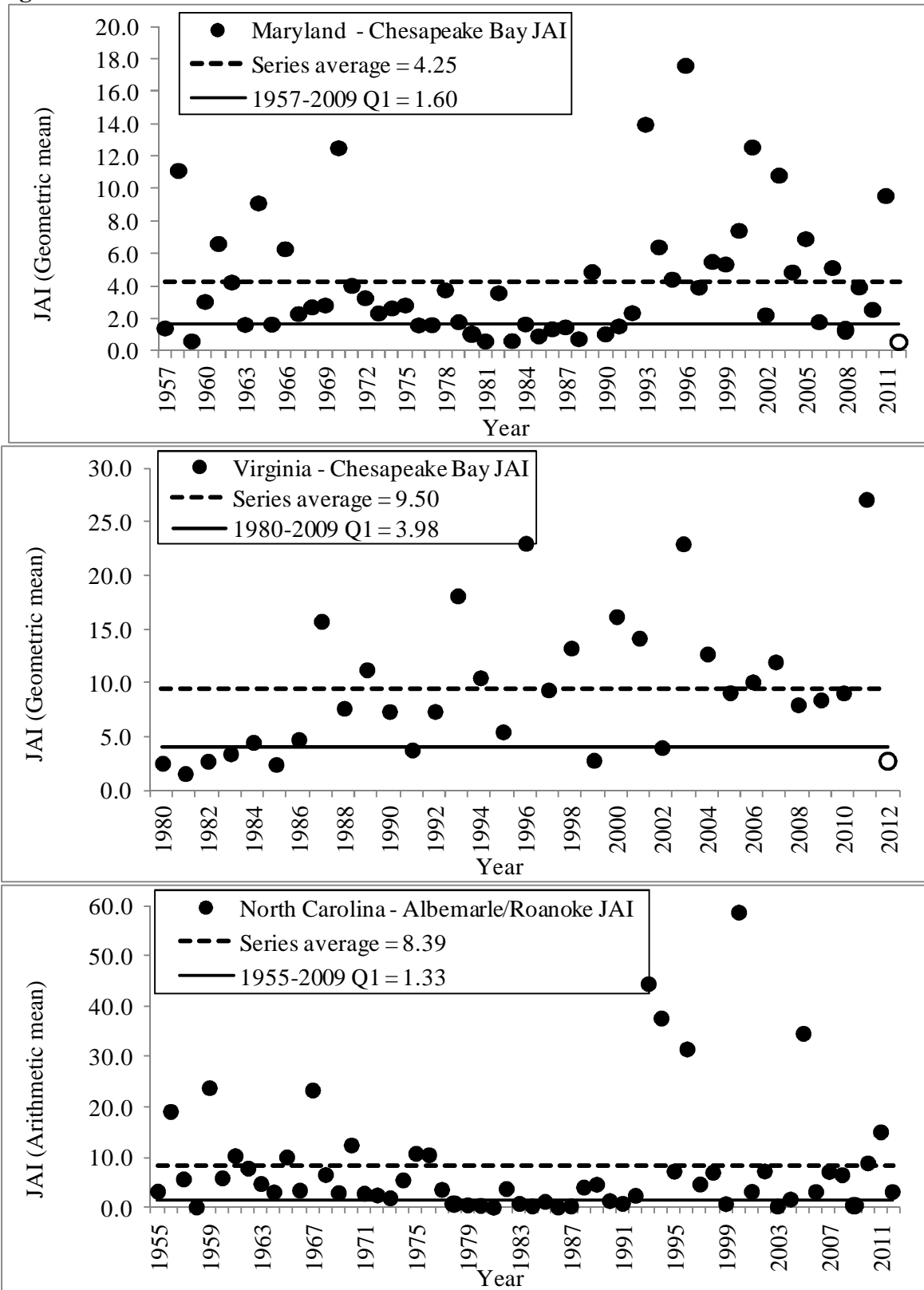


Figure 5. continued.





## XI. Tables

**Table 1. Summary of Atlantic Striped Bass Commercial Regulations in 2012**

STATE	SIZE LIMITS	SEASONAL QUOTA	OPEN SEASON
ME	Commercial fishing prohibited		
NH	Commercial fishing prohibited		
MA	34ö min.	1,159,750 lb. (minus any overage from previous year) Hook & line only	7.12 until quota reached; 5 fish/day on Sun; 30 fish/day Tues-Thurs
RI	Floating fish trap: 26ö min.  General category (mostly rod & reel): 34ö min.	Total: 239,963 lb. (minus any overage from previous year) Split 39:61 between trap and general category. Gill netting prohibited.	Trap: 1.1 until quota reached; if 80% quota harvested before 8.26, a 500 lb/trap/day limit is imposed; from 8.27ö12.31, 10,000 lb. quota set-aside available. General Category: 6.1-8.31 or 75% quota; 9.13-12.31 or 100% quota; 5 fish/day Sun-Thu.
CT	Commercial fishing prohibited		
NY	24ö36ö Ocean only (Hudson River closed to commercial harvest)	828,293 lb. (minus any overage from previous year). Pound nets, gill nets (6-8östretched mesh), hook & line.	7.1 ö 12.15 Gill nets <6 or >8ö, 7 fish/trip; trawls 21 fish/trip. Gill nets prohibited in Great South, South Oyster, and Hempstead Bays.
NJ	Commercial fishing prohibited		
PA	Commercial fishing prohibited		
DE	28ö minimum except 20ö spring gillnet in DE Bay/River & Nanticoke River (5.5ö max mesh & 0.28mm max twine)	193,447 lb. (minus any overage from previous year)	Gillnet: 2.15-5.31 (3.1-31 for Nanticoke) & 11.15-12.31; drift nets only 2.15-28 & 5.1-31; no fixed nets in DE River Hook and Line: 4.1ö12.31 Except 4.1-5.31 closed spawning areas
MD	Bay and Rivers: 18ö 36ö  Ocean: 24ö	Bay and River: 1,963,873 lbs (part of Baywide quota) Gear specific quotas and landing limits  Ocean: 126,396 lb. (minus any overage from previous year)	Bay Pound Net: 6.1-11.30, Mon-Sat Bay Haul Seine: 6.7-11.30, Mon-Fri Bay Hook & Line: 6.7-11.30, Mon-Thu Bay Drift Gill Net: 1.1-2.28, 12.1-12.31, Mon-Fri Ocean Drift Gill Net & Trawl: 1.1-4.30, 11.1-12.31, Mon-Fri

(Table 1 continued ó Summary of commercial regulations in 2012)

STATE	SIZE LIMITS	SEASONAL QUOTA	OPEN SEASON
PRFC	18ö min all year 36ö max 2.1563.25	739,097 lbs (part of Baywide quota)	Hook & line: 2.15-3.25, 6.1-12.31 Pound Net & Other: 2.15-3.25, 6.1-12.15 Gill Net: 1.1-3.25
DC	Commercial fishing prohibited		
VA	Bay and Rivers: 18ö min, 28ö max & complimentary gill net mesh size limit 3.2666.15 Ocean: 28ö minimum	Bay and Rivers: 1,430,361 lbs in 2012 (part of Baywide quota)  Ocean: 184,853 lb. (minus any overage from previous year)	Bay and Rivers: 2.1-12.31  Ocean: 2.1-12.31
NC	Albemarle Sound: 18ö  Ocean: 28ö	Albemarle Sound: 275,000 lb Ocean: 480,480 lb. (minus any overage from previous year) split 160,160 lbs each to beach seine, gill net & trawl	Albemarle Sound: 1.1-4.30, 10.1-12.31; daily trip limit ranging from 5 to 15 fish; striped bass cannot exceed 50% by weight of total finfish harvest; season and daily trip limits set by proclamation. Ocean: gear requirements; open days and trip limits for beach seine, gill net, and trawl set via proclamation

**Table 2. Summary of Atlantic Striped Bass Recreational Regulations in 2012**

STATE	SIZE LIMITS	BAG LIMIT	OTHER	OPEN SEASON
ME	20 ó 26ö OR ×40ö	1 fish	Hook & line only	All year, except spawning areas are closed 12.1 ó 4.30 and catch and release only 5.1 ó 6.30
NH	1 fish 28ó40ö & 1 fish >28ö	2 fish	No netting; no gaffing; must be landed with head and tail intact; no culling	All year
MA	28ö min	2 fish	Hook & line only	All year
RI	28ö min	2 fish		All year
CT	28ö min, except Connecticut River Bonus Program: 22-28ö	2 fish, except CR Bonus: 1 fish	CR Bonus Quota: 4,025 fish	All year, except CR Bonus 5.4-6.30 (limited to I-95 bridge to MA border)
NY	Ocean Private: 1 fish 28-40ö & 1 fish > 40ö Ocean Charter: 28ö min Hudson River: 18ö min DE River: 28ö min	Ocean: 2 fish  Hudson R.: 1 fish DE River: 2 fish	Angling or spearing only	Ocean: 4.15 ó 12.15  Hudson River: 3.16 ó 11.30 Delaware River: All year
NJ	28ö min	2 fish, plus 1 additional through Bonus Program	Bonus program quota: 321,750 lb. No netting. Non-offset circle hooks required 4.1-5.31 in DE River if using natural bait.	All year except 1.1-2.28 in intra-coastal waters plus 4.1-5.31 in lower DE River
PA	Non-tidal DE River: 28ö min; Delaware Estuary: 28ö min. except 20-26ö from 4.1-5.31	2 fish		Year round
DE	28ö min. except 20-26ö from 7.1-8.31 in Del. River, Bay & tributaries	2 fish	Hook & line, spear (for divers) only. Circle hooks required in spawning season.	All year except 4.1-5.31 in spawning grounds (catch & release allowed)

(Table 2 continued ó Summary of recreational regulations in 2012)

STATE	SIZE LIMITS	BAG LIMIT	OTHER	OPEN SEASON
MD	Susquehanna Flats (SF): 18-26ö  Chesapeake Bay Trophy: 28ö min Chesapeake Bay Regular: 18ö min with 1 fish > 28ö Ocean: 28ö min	SF: 1 fish  Chesapeake Bay Trophy: 1 fish Chesapeake Bay Regular: 2 fish  Ocean: 2 fish	SF: non-off set circle hook if baited hooks & gap>0.5ö  Chesapeake Bay Quota: 2,657,102 lbs (part of Baywide quota; includes Susquehanna Flats harvest, excludes trophy harvest)	SF: 3.1-5.31; catch & release only 3.1-5.3  Chesapeake Bay Trophy: 4.18-5.15 (most tribs closed) Chesapeake Bay Regular: 5.16-12.15 (most tribs closed until 6.1)  Ocean: All year
PRFC	Trophy: 28ö Regular: 18ö min with 1 fish > 28ö	Trophy: 1 fish Regular: 2 fish	Quota: 604,716 lbs. (part of Baywide quota; excludes trophy harvest)	Trophy: 4.18 -5.15 Regular: 5.16-12.31
DC	18ö min with 1 fish > 28ö	2 fish	Hook & line only	5.16-12.31
VA	Bay/Coastal Trophy: 32ö min (28ö Potomac tribs) CB Spring: 18-28ö; 1 fish >32ö CB Fall: 18ö-28ö; 1 fish >34ö Potomac Tribs: 18-28ö; 1 fish >28ö Ocean: 28ö	Bay/Coastal Trophy: 1 fish  CB Spring: 2 fish  CB Fall: 2 fish Potomac Tribs: 2 fish Ocean: 2 fish	Hook & line, rod & reel, hand line only  Chesapeake Bay Quota: 1,430,361lbs in 2012 (part of Baywide quota; excludes trophy harvest)	Bay Trophy: 5.1-6.15 (open 4.18 Potomac tribs) Coastal Trophy: 5.1-5.15 CB Spring: 5.16-6.15 (no fish >32ö in spawning areas) CB Fall: 10.4-12.31 Potomac Tribs: 5.16-12.31 Ocean: 1.1-3.31, 5.16-12.31
NC	Roanoke River: 2 fish 18- 22ö OR 1 fish 18-22ö and 1 fish >27ö Albemarle Sound: 18ö min.  Ocean: 28ö min	Roanoke River: 2 fish Albemarle Sound: 3 fish Ocean: 2 fish	Roanoke River quota: 137,500 lb.  Albemarle Sound quota: 137,500 lb.	Roanoke River: 3.1 ó 4.30 (single barbless hook required 3.1-6.30 from Roanoke Rapids dam downstream to US 258 bridge) Albemarle Sound: Spring 1.1 ó 4.30; Fall 10.1-12.31 Ocean: All year

**Table 3. Commercial harvest (pounds) of migratory striped bass by state, 1990-2012.**

Source: personal communication with NMFS. Note: All harvests based on the calendar year. MD and VA harvests include Chesapeake Bay. NC is Atlantic Ocean only.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	Total
1990		37	148,000	4,000		81,870		6,509	2,887	169,060	267,735	9,797	689,895
1991			235,000	28,000		105,163		21,079	191,066	216,755	668,454	6,186	1,471,703
1992			239,200	39,000		226,611		17,795	552,451	127,398	204,338	27,702	1,434,495
1993			262,600	40,000		109,362		28,032	916,764	142,742	213,665	36,463	1,749,628
1994			199,600	39,810		171,279		33,897	884,970	149,891	204,124	92,605	1,776,176
1995			782,000	113,461		500,784		38,198	856,568	198,478	557,741	343,707	3,390,937
1996			696,815	122,562		504,350		117,560	1,523,293	346,834		55,771	3,367,185
1997			785,942	96,519		460,762		165,978	2,030,061	731,114	1,153,743	458,524	5,882,643
1998			822,000	94,663		484,900		163,169	2,368,393	726,179	1,476,502	308,068	6,443,874
1999		33	788,171	119,679		491,790		187,096	2,377,393	653,266	1,538,220	389,454	6,545,102
2000			779,736	111,812		542,659		140,634	2,411,554	666,001	1,883,856	162,736	6,698,988
2001			815,054	129,654		633,095		198,802	1,774,758	658,676	1,675,469	350,280	6,235,788
2002			924,870	129,172		518,573		160,560	1,852,634	521,048	1,592,910	299,508	5,999,275
2003			1,055,439	246,312		753,261		188,419	1,813,727	676,574	1,856,831	482,123	7,072,686
2004		203	1,206,305	245,204		741,668		181,974	1,899,539	772,333	1,668,307	604,824	7,320,357
2005			1,104,737	242,303		689,821		173,815	2,055,558	533,456	1,746,247	588,601	7,134,538
2006			1,312,168	238,797		688,446		185,987	2,207,350	673,508	1,413,914	63,458	6,783,628
2007			1,040,328	240,627		729,743		188,668	2,336,886	599,261	1,534,799	380,380	7,050,692
2008			1,160,122	245,988		653,100		188,719	2,326,023	611,789	1,714,564	288,410	7,188,715
2009			1,138,291	234,368		789,891		192,311	2,394,620	727,197	1,549,145	189,995	7,215,818
2010			1,224,356	249,520		782,402		185,410	2,150,577	680,496	1,434,219	272,632	6,979,612
2011			1,163,865	228,163		854,731		188,620	1,976,473	694,151	1,434,636	242,600	6,783,239
2012			1,219,665	239,913		681,399		194,324	1,928,982	733,789	1,509,940	6,226	6,514,238

**Table 4. Commercial harvest (numbers) of migratory striped bass by state, 1990-2012.**

Source: personal communication with NMFS. Note: All harvests based on the calendar year. MD and VA harvests include Chesapeake Bay. NC is Atlantic Ocean only.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	PRFC	VA	NC	Total	<i>Dead Discards</i>
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	706,847	87,643	165,583	25,562	1,108,612	216,745
1998			43,315	8,835		45,149		31,386	790,154	93,299	204,911	16,040	1,233,089	326,032
1999			40,838	11,559		49,795		34,841	650,022	90,575	205,143	21,040	1,103,812	236,619
2000			40,256	9,418		54,894		25,188	627,777	91,471	202,227	6,480	1,057,712	666,997
2001			40,248	10,917		58,296		34,373	549,896	87,809	148,346	22,936	952,820	310,900
2002			48,926	11,653		47,142		30,440	296,635	80,300	127,211	15,784	658,091	168,201
2003			61,262	15,497		68,354		31,531	439,482	83,091	161,777	13,823	874,817	261,974
2004			66,556	15,867		70,367		28,406	461,064	91,888	147,998	31,014	913,160	465,642
2005			65,332	14,949		70,560		26,336	569,964	80,615	119,244	26,573	973,572	798,544
2006			75,062	15,429		73,528		30,212	655,951	92,288	109,396	2,799	1,054,664	194,524
2007			57,634	13,934		78,287		31,090	598,495	86,695	140,602	16,621	1,023,358	608,279
2008			65,330	16,616		73,263		31,866	594,655	81,720	134,603	12,903	1,010,955	308,715
2009			63,875	20,725		82,574		21,590	618,076	89,693	138,303	8,675	1,043,512	611,944
2010			65,277	17,256		81,896		19,830	584,554	90,258	159,197	12,670	1,030,938	254,841
2011			63,309	14,344		87,349		20,517	490,969	96,126	148,063	10,814	931,490	634,421
2012			66,394	14,953		66,897		15,738	472,517	90,616	111,891	323	839,329	818,579

**Table 5. Recreational harvest (pounds) of migratory striped bass by state, 1990-2012**

Source: personal communication with NMFS. Note: All harvests based on the calendar year. Estimates are for March to December, except for North Carolina. Maryland and Virginia harvests include Chesapeake Bay. North Carolina is Atlantic Ocean only.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total
1990	60,483	11,363	319,092	73,349	193,011	505,440	588,974	18,115	12,967	443,751	0	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	3,091	3,643,994
1992	107,693	44,612	972,116	203,109	196,278	921,201	746,343	25,677	613,174	187,852	8,602	4,026,657
1993	11,953	28,115	1,113,446	292,428	400,067	1,575,938	874,296	52,540	794,853	505,742	1,701	5,651,079
1994	66,451	66,017	1,686,049	109,817	355,829	1,974,759	438,080	63,832	1,096,409	870,140	50,503	6,777,886
1995	45,933	67,992	1,504,390	436,058	671,647	3,296,025	3,141,222	175,347	2,057,450	955,822	73,663	12,425,549
1996	44,802	102,271	1,291,706	950,973	915,418	4,809,381	1,736,508	281,481	1,560,389	1,340,414	89,989	13,123,332
1997	185,178	206,904	2,891,970	927,919	920,465	4,449,564	821,784	232,186	1,962,947	2,813,471	301,683	15,714,071
1998	178,584	114,342	2,973,456	671,841	989,923	2,318,291	1,333,329	236,926	1,908,344	1,581,560	150,626	12,457,222
1999	98,623	84,255	1,822,818	886,666	824,031	3,171,344	3,342,372	100,541	1,137,940	1,741,857	268,026	13,478,473
2000	269,325	71,370	2,618,216	1,160,304	515,962	4,050,569	4,286,040	346,905	2,100,854	2,005,721	72,946	17,498,212
2001	290,233	223,072	3,644,561	1,138,974	628,044	2,996,805	5,341,867	382,498	2,072,943	2,140,713	284,449	19,144,159
2002	383,270	152,342	4,304,883	1,192,295	600,482	2,813,596	4,133,678	299,561	1,423,515	2,648,115	267,406	18,219,143
2003	253,910	281,549	5,120,554	1,502,455	1,537,899	4,687,685	4,545,515	303,909	2,975,437	2,789,745	772,981	24,771,639
2004	226,200	98,995	6,112,746	1,386,138	1,617,561	3,727,105	5,548,167	330,623	2,347,752	2,956,310	4,833,112	29,184,709
2005	381,058	281,114	5,097,821	1,732,581	2,173,638	5,537,432	5,958,454	286,777	4,612,417	1,996,840	2,164,859	30,222,991
2006	323,355	179,181	4,832,355	999,300	2,030,878	6,028,409	7,067,533	260,134	3,868,944	3,694,529	1,759,796	31,044,414
2007	232,328	68,142	5,136,580	1,584,354	1,468,499	7,913,817	3,718,451	99,800	3,504,041	2,392,258	876,707	26,994,977
2008	271,768	73,807	5,763,763	751,507	1,868,335	10,925,408	4,696,090	333,149	2,728,048	2,657,976	525,891	30,595,742
2009	329,064	113,705	4,786,895	1,123,434	835,970	5,004,604	4,238,319	275,410	4,278,145	1,791,058	160,922	22,937,526
2010	104,117	67,409	4,270,401	1,096,369	1,259,008	6,997,089	5,382,743	251,853	2,630,802	481,147	453,844	22,994,782
2011	91,705	370,798	3,504,522	1,257,302	758,216	8,969,762	6,197,026	241,149	2,640,309	1,160,914	2,042,981	27,234,684
2012	57,509	163,804	5,489,928	851,460	814,310	6,540,024	2,376,866	360,106	1,260,490	1,353,351	0	19,267,848

**Table 6. Recreational harvest (numbers) of migratory striped bass by state, 1982- 2012**

Source: personal communication with NMFS. Note: All harvests based on the calendar year. Estimates are for March to December except for North Carolina. Maryland and Virginia harvests include Chesapeake Bay. North Carolina is Atlantic Ocean only. The table includes wave 1 estimates of harvest (January-February) if MRIP estimated weight for wave 1.

<b>Year</b>	<b>ME</b>	<b>NH</b>	<b>MA</b>	<b>RI</b>	<b>CT</b>	<b>NY</b>	<b>NJ</b>	<b>DE</b>	<b>MD</b>	<b>VA</b>	<b>NC</b>	<b>Total</b>
<b>1990</b>	2,912	617	20,515	4,677	6,082	24,799	44,878	2,009	736	56,017	0	163,242
<b>1991</b>	3,265	274	20,799	17,193	4,907	54,502	38,300	2,741	77,873	42,224	391	262,469
<b>1992</b>	6,357	2,213	57,084	14,945	9,154	45,162	41,426	2,400	99,354	21,118	967	300,180
<b>1993</b>	612	1,540	58,511	17,826	19,253	78,560	64,935	4,055	104,682	78,481	264	428,719
<b>1994</b>	3,771	3,023	74,538	5,915	16,929	87,225	34,877	4,140	199,378	127,945	7,426	565,167
<b>1995</b>	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
<b>1996</b>	1,893	6,461	68,300	60,074	62,840	225,428	127,952	22,867	337,415	244,746	17,136	1,175,112
<b>1997</b>	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
<b>1998</b>	38,094	5,929	207,952	44,890	64,215	166,868	88,973	18,758	391,824	383,786	45,773	1,457,062
<b>1999</b>	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
<b>2000</b>	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
<b>2001</b>	59,947	15,291	288,032	80,125	54,165	189,714	560,208	41,195	382,557	355,020	58,873	2,085,127
<b>2002</b>	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
<b>2003</b>	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
<b>2004</b>	48,816	8,386	445,745	83,990	102,844	263,096	424,208	25,429	368,682	548,768	230,783	2,550,747
<b>2005</b>	83,617	24,940	340,743	110,490	141,290	376,894	411,532	20,438	533,929	293,161	104,904	2,441,938
<b>2006</b>	75,347	13,521	314,987	75,811	115,214	367,835	509,606	20,159	669,140	547,482	79,023	2,788,125
<b>2007</b>	53,694	6,348	315,409	101,400	118,549	474,062	289,656	8,465	765,169	353,372	37,376	2,523,500
<b>2008</b>	59,152	5,308	377,959	51,191	108,166	685,589	309,411	26,934	415,403	401,155	25,750	2,466,018
<b>2009</b>	62,153	8,587	344,401	71,427	60,876	356,311	283,024	19,539	501,845	326,867	5,650	2,040,680
<b>2010</b>	17,396	5,948	341,045	70,108	92,806	538,374	320,413	16,244	457,898	102,405	23,778	1,986,415
<b>2011</b>	18,105	32,704	255,507	88,635	63,288	674,844	393,194	18,023	445,171	146,603	94,182	2,230,256
<b>2012</b>	11,624	14,498	377,931	61,537	64,573	424,522	168,629	25,399	262,143	134,758	0	1,545,614



**Table 7. Recreational releases (numbers) of migratory striped bass by state, 1982-2012, and annual dead discard estimates**

Source: personal communication with NMFS. Note: All harvests based on the calendar year. MD and VA harvests include Chesapeake Bay. NC is Atlantic Ocean only.

Year	ME	NH	MA	RI	CT	NY	NJ	DE	MD	VA	NC	Total	Dead Discards <sup>^</sup>
1990	12,542	15,518	339,511	67,509	89,490	265,099	254,384	14,411	420,084	175,046	0	1,653,594	148,823
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	275,494
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	303,066
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	391,011
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	713,776
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	876,948
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	1,105,980
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	1,414,651
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	1,343,553
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	1,126,325
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	1,512,793
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	1,210,005
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	1,232,375
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	1,315,020
2004	693,400	225,777	4,979,075	525,936	826,724	2,709,246	1,502,694	155,655	3,479,634	1,732,890	222,302	17,053,333	1,534,800
2005	2,985,203	572,633	3,988,679	633,871	1,761,628	1,412,191	1,218,893	251,049	3,855,552	1,295,768	103,432	18,078,899	1,627,101
2006	4,000,309	460,615	7,809,777	834,953	986,700	1,722,386	1,890,294	247,653	3,711,343	1,655,007	24,262	23,343,299	2,100,897
2007	1,115,068	257,372	5,331,470	677,851	984,638	1,677,717	1,789,294	248,689	3,064,928	949,158	13,838	16,110,023	1,449,902
2008	465,003	77,237	3,649,415	416,373	3,104,779	1,346,385	1,309,453	260,677	1,338,728	532,161	10,776	12,510,987	1,125,989
2009	263,512	57,443	2,282,601	398,686	1,161,278	1,073,467	800,510	145,586	1,423,332	358,991	5,407	7,970,813	717,373
2010	193,743	51,833	1,671,437	183,112	670,534	1,068,672	690,340	65,048	1,508,647	134,350	20,365	6,258,081	563,227
2011	142,505	98,693	973,192	214,302	612,367	1,506,080	884,013	110,085	1,127,511	153,582	110,150	5,932,480	533,923
2012	214,185	64,226	989,509	247,075	264,927	586,044	406,096	109,960	2,206,518	101,736	1,615	5,191,891	467,270

<sup>^</sup> Dead discards are estimated by multiplying the number of released fish by a mortality rate of 9%.

**Table 8. Coastal commercial quotas and harvests (in pounds).**

	<b>Amendment 6 Allocation</b>	<b>2012 Quota</b>	<b>2012 Harvest</b>	<b>Overage</b>	<b>2013 Quota</b>
<b>MA</b>	1,159,750	1,057,783	1,219,665	161,882	997,868
<b>RI*</b>	243,625	239,963	239,913		239,963
<b>NY^</b>	1,061,060	801,855	681,399		828,293
<b>NJ+</b>	321,750	321,750	6,285		321,750
<b>DE</b>	193,447	193,447	194,324	877	192,570
<b>MD^</b>	131,560	126,396	77,551		126,396
<b>VA</b>	184,853	184,853	170,788		184,853
<b>NC~</b>	480,480	480,480	6,226		480,480

^ Beginning in 2003, NY and MD quotas reduced due to conservation equivalency; MA and RI quotas reduced in 2003 due to quota overages in previous year.

\* Beginning in 2007, RI quota reduced due to conservation equivalency.

+ NJ quota applied to recreational bonus fish program

~ NC harvests and quotas are for the December 1 to November 30 fishing year

**Table 9. Chesapeake Bay Quotas and Harvests (pounds), 2012**

<b>2012</b>	<b>Jurisdiction</b>	<b>Quota</b>	<b>Harvest</b>
<b>Commercial Fisheries</b>	Maryland	1,963,873	1,851,431
	PRFC	739,097	733,789
	Virginia	1,430,361	1,339,152
	<b>Subtotal</b>	<b>4,133,331</b>	<b>3,924,372</b>
<b>Recreational Fisheries</b>	Maryland	2,657,102	1,060,611
	PRFC	604,716	*
	Virginia	1,430,361	1,342,088
	<b>Subtotal</b>	<b>4,624,988</b>	<b>2,402,699</b>
<b>Chesapeake Bay Total</b>		<b>8,758,319</b>	<b>6,327,071</b>

Notes: Recreational harvest in the Potomac River is included in Maryland and Virginia harvest estimates. Estimates of recreational harvest in Maryland do not include migratory fish harvested in the spring season. These fish are not counted against Maryland's portion of the Chesapeake Bay recreational quota. The 2012 migratory harvest is estimated at 16,769 fish and 273,733 pounds. The PRFC recreational quota includes the charter boat quota of 67,191 pounds.

**Table 10. Status of compliance with monitoring and reporting requirements, 2012**

(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, na = not applicable)

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