

**Revised DRAFT**  
**1989 Chesapeake Bay Striped Bass Fishery Management Plan and**  
**1998 Chesapeake Bay Striped Bass Fishery Management Plan Amendment #1**  
**Review 2013 - 2014**

## **Summary**

The Maryland DNR Fisheries Service (MDFS) staff reviewed the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (CBSB FMP) and the 1998 Amendment #1 to evaluate the management framework and determine if the framework is still appropriate for managing striped bass or if it needs to be amended or completely revised. The Striped Bass (*Morone saxatilis*) FMP implementation table, Ecosystem-based Fisheries Management for Chesapeake Bay: Striped Bass Species Team Background and Issues Briefs <sup>1</sup>, and Maryland's Fisheries Allocation Review<sup>2</sup> policy were used to guide the review. Additionally, formal requests for review of the striped bass harvest allocation were made by Maryland Saltwater Sportfishing Association (MSSA) <sup>3</sup> and a private citizen<sup>4</sup>.

The Fisheries Service Plan Review Team (FS PRT) determined that the CBSB FMP (including Amendment #1) addresses the Atlantic States Marine Fisheries Commission's (ASMFC) overall goal for striped bass management and that Chesapeake Bay jurisdictions are currently in compliance with all coastal requirements. However, Amendment #1 to the CBSB FMP specifically adopts ASMFC's Amendment 5 to the Interstate Fishery Management Plan for Atlantic Striped Bass (ISFMP) and lacks the flexibility needed to align with changing management needs as addressed by ASMFC's Amendment 6 and subsequent addenda. Specifically, the CBSB FMP and Amendment #1 do not accommodate changes to: the overfishing definition; targets and thresholds for fishing mortality and spawning stock biomass; the rebuilding program framework; implementation schedules; monitoring requirements; or, the current stock assessment and population dynamics. The FS PRT concluded that the use of coastal management indices (fishing mortality, spawning stock biomass, and juvenile abundance) are sufficient for decision making in the Chesapeake Bay. The FS PRT also agreed that mechanisms to incorporate ecosystem-based indices into the decision making process would be informative and should be explored. The FS PRT recommends developing a new striped bass amendment that reflects the management changes adopted since the CBSB FMP and Amendment #1 were developed and recommends utilizing ecosystem-based management specific to the Chesapeake Bay, when feasible.

The FS PRT determined that the factors evaluated to change the allocation structure for striped bass are insufficient to warrant a change at this time. The FS PRT believes that the stakeholder proposal to reduce Maryland's commercial allocation to 10% would create an excessive loss of fishing opportunities for commercial watermen and does not allocate in a "fair and equitable" fashion. Changes to the current harvest allocation structure would alter striped bass management requirements; there would be a need for additional recreational fishing data (increased Marine Recreational Information Program (MRIP) surveys); there would be more uncertainty associated with recreational data; a greater need for recreational accountability; and, could result in possible changes to population structure, predator-prey dynamics, and nutritional condition. The FS PRT does not recommend any changes to the current striped bass allocation for commercial, recreational, and charter boat fisheries.

## **FMP Development for Striped Bass in Chesapeake Bay**

Maryland, Virginia, and the Potomac River Fisheries Commission implemented the CBSB FMP in 1989. Amendment #1 to CBSB FMP was implemented in 1998 specifically to adopt ASMFC's Amendment 5 to the ISFMP as the management framework for the Bay and included habitat-specific information. In 2003, ASMFC approved Amendment 6 to the ISFMP to ensure that unanticipated over exploitation did not occur. ASMFC Amendment 6 was updated with Addendum I in 2007 to clarify mandatory data collection, mortality assessment, analysis, and reporting requirements and a recommended angler education program. ASMFC Addendum II (2010) modified the recruitment failure definition in Amendment 6. Addendum III was developed in 2012 in response to illegal harvest of striped bass in Chesapeake Bay. ASMFC Addendum III standardized commercial tagging programs among states and placed tighter controls on tag distribution, information, possession, and reporting. ASMFC's Amendment 6 and subsequent Addenda contain substantive changes from Amendment 5.

### **Striped Bass Chesapeake Bay FMP Review**

A FS PRT for striped bass was convened in 2013 to review the 1989 CBSB FMP and Amendment #1 (See Appendix 1 for more details about the process). The FS PRT was comprised of staff from the MD DNR Fisheries Service (Nancy Butowski, Harry Hornick, Alexei Sharov, and Marek Topolski) and University of Maryland (UMD) (Jorge Holzer, fisheries economist). The goals of the 1989 CBSB FMP and Amendment #1 are, respectively:

*“To enhance and perpetuate the striped bass stock in the Chesapeake Bay and its tributaries, and throughout its Atlantic coast range, so as to generate optimum long-term ecological, social and economic benefits.”*

And,

*“To perpetuate the stock of striped bass so as to allow a commercial and recreational harvest consistent with the long-term maintenance of a self-sustaining spawning stock and provide for the restoration and maintenance of essential habitat.”*

The FS PRT concluded that the management goals for striped bass are consistent with the management goal for the Atlantic Coast as stated by the ASMFC:

*“To perpetuate, through cooperative interstate fishery 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”<sup>5</sup>*

The objectives of the CBSB FMP and Amendment #1 are also consistent with the management objectives for coastal management. They are:

*1) Follow guidelines established by the Atlantic States Marine Fisheries Commission (ASMFC) for coastwide management of striped bass stocks and make Bay regulatory actions compatible where possible.*

- 2) *Promote protection of the resource by maintaining a clear distinction between conservation goals and allocation issues.*
- 3) *Restore and maintain an adequate spawning stock with a balanced age composition to minimize the possibility of recruitment failure.*
- 4) *Promote fair allocation of allowable harvest among various components of the fishery.*
- 5) *Establish programs to closely monitor the harvest and sale of striped bass.*
- 6) *Promulgate an effective enforcement strategy during an open fishery.*
- 7) *Promote research to improve our understanding of striped bass biology and population dynamics, and the socio economics of the fishery.*
- 8) *Adopt standards of environmental quality necessary for the maximum natural production of striped bass and for the utilization of allowable harvest.*

Chesapeake Bay jurisdictions are currently compliant with ASMFC management requirements. However, several issues were identified during the Maryland FS PRT review.

*Stock Management* - The CBSB FMP was amended in 1998 to specify that management actions align with ASMFC's Amendment 5 (1995). Chesapeake Bay Amendment #1 adopted the ASMFC Amendment 5 and a habitat section which defined striped bass habitat within the Chesapeake Bay. However, no strategies and actions were identified to protect suitable habitat. Amendment #1 did not address the importance of maintaining an adequate forage base. ASMFC's Amendment 6 and subsequent addenda expanded on striped bass management requirements including: specification of management units, overfishing definition, targets and thresholds for fishing mortality and spawning stock biomass, a rebuilding program framework, implementation schedules, monitoring requirements, jurisdiction compliance, and stock assessment and population dynamics. Amendment #1 to the CBSB FMP specifically adopts ASMFC's Amendment 5 and no longer accurately reflects management requirements specified by ASMFC and management needs specific to Chesapeake Bay jurisdictions. The ASMFC completed a 2013 benchmark stock assessment for striped bass in October 2013. The stock assessment results changed the biological reference points and ASMFC is currently working on drafting Addendum IV to officially adopt the reference points. Flexibility is needed in the CBSB FMP to address changing stock conditions and reference points.

*Chesapeake Bay Environmental, Ecological & Socioeconomic Issues* - The FS PRT concluded that the ASMFC control rules (fishing mortality, spawning stock biomass, and juvenile abundance) are sufficient for managing striped bass within Chesapeake Bay. However, there are additional environmental, ecological, and socioeconomic factors that are known to influence stock size and stock composition. These factors include the amount of quality spawning and nursery habitat, predator/prey interactions, and market forces. Mechanisms for managers to include these factors into the decision making process are lacking. Neither the CBSB FMP Amendment #1 nor ASMFC's Amendment 6 and subsequent addenda specify mechanisms for managing environmental, ecological, and socioeconomic conditions. The Chesapeake Bay Program sponsored a workgroup to develop ecosystem-based indices that could be integrated into the fisheries management process in addition to the striped bass juvenile abundance index (JAI), measures of spawning stock biomass (SSB), and fishing mortality (F). The FS PRT

concluded that a new amendment to the CBSB FMP should also include a framework for ecosystem-based fishery management. The FS PRT recommended the further exploration of several indices, specifically: age diversity, predator/prey interactions (striped bass/menhaden ratio and bioenergetics growth model), percent of diseased fish, spawning success, and habitat condition (land development, impervious surface, and water quality).

*Maryland Harvest Allocation* - The striped bass stock was declared recovered in 1995. Coastwide fisheries have been managed under a commercial quota system and recreational minimum size and creel limits. The ASMFC calculates an Atlantic coast commercial quota which is divided into state-by-state commercial quotas. A separate Chesapeake Bay quota is calculated and divided among Maryland, Virginia and the Potomac River, which is further divided among commercial and recreational fisheries. Maryland receives 52.35% of the total Chesapeake Bay quota. The CBSB FMP, incorporated in regulation by reference, further specifies quota allocations for the commercial (42.5%), recreational (42.5%) and charter (15%) fisheries. Striped bass quota allocations were developed by the Striped Bass White Paper Committee (1985-1989) comprised of representatives from commercial, recreational, charter, academia, and conservation sectors and supported by MDFS staff. Although historical harvest data indicated an almost equal distribution between the commercial and recreational fisheries, the White Paper Committee agreed to allocate 15% of the total allowable harvest to the charter industry because it is a combination of commercially licensed operators and anglers using recreational gear (S. Early, MDFS, pers. comm.). It also provided some management flexibility for the charter industry. Equal shares (7.5% each) were assessed from the recreational and commercial sectors to provide 15%. Maryland regulation specifies that the commercial striped bass fishery is allocated 42.5% of the State's quota (Code of Maryland Regulations [08.02.15.07](#)). In 1995, the recreational and charter quota allocations were combined (57.5%).

In 2012, MDNR adopted the Fisheries Allocation Review policy <sup>2</sup>. The policy reiterates State law (Natural Resources Article, §4-215, Annotated Code of Maryland) requiring that fishing privileges/allocation be “fair and equitable, reasonably calculated to promote conservation, and avoid excessive shares.” Nine factors are to be considered when reviewing and determining allocation. These factors can be generalized into four broad categories: resource management and conservation, environmental impacts, fishery existence, and fishery value – both economic and social.

Although the Fisheries Allocation Review is part of the FMP review process, formal requests to review and change the current striped bass harvest allocation were submitted by the Maryland Saltwater Sportfishing Association (MSSA) and a private citizen (Appendices 2 and 3). Both stakeholders provided input on a shift to a greater allocation for the recreational sector. One stakeholder specified an allocation to 90% recreational/charter (65%/25%, respectively) and 10% commercial. Justification for the allocation change was based on changes in social patterns and values (impacts); economic/market value and dynamics; and, fairness and equitability. The FS PRT focused on reviewing the current harvest allocations with special attention to stakeholder inputs.

### **Fisheries Allocation Policy**

The Department of Natural Resources Fisheries Allocation Policy went into effect in September 2012. The policy provides guidelines for reviewing allocation, provides the basis/background for allocation, and outlines procedures for review and stakeholder input. The

overarching factors in allocation decisions are linked to the FMP goals and objectives. The overarching factors include:

- Conservation;
- Management goal for the species;
- Social and cultural importance of maintaining fisheries and dependent industries;
- Environmental impact;
- Economic value of dependent fisheries;
- Economic viability of activity supported by the fisheries;
- Management resources;
- Historical trends and values; and
- Potential for new fisheries to develop.

Among the Allocation Policy procedures are triggers for allocation review. In accordance with policy, a pre-assessment of triggers for striped bass has been conducted internally by DNR FS. Triggers listed by the policy and the pre-assessment summary are as follows:

- Initial development or revision of a FMP;

Pre-assessment: The 1989 Chesapeake Bay Striped Bass Management Plan and the 1998 Amendment #1 were reviewed during 2013. The FS PRT concluded that the coastal management framework has changed sufficiently to warrant amending both the management plan and the amendment.

- Significant shift in fisheries harvest;

Pre-assessment: Commercial harvest is managed under an annual quota and harvest data is obtained through a striped bass permitting system. Recreational harvest is estimated through the Marine Recreational Information Program (MRIP). Based on an evaluation of the quota system and the MRIP recreational estimates, there has not been a significant shift in fisheries harvest (Table 1).

- Population shifts of target or non-target species;

Pre-assessment: The ASMFC 2013 stock assessment indicates that striped bass are not overfished and overfishing is not occurring. The ASMFC Stock Assessment Subcommittee calculated the 2010 Atlantic Coast estimate of female spawning stock biomass (SSB) at 50,548 mt. The estimate was above both the threshold (30,000 mt) and the target (37,500 mt). Although the 2010 SSB estimate was a decrease from the 2008 estimate (55,500 mt), the coastal striped bass stock was considered at a high level of abundance<sup>6</sup>. The 2013 ASMFC benchmark stock assessment was presented to the ASMFC Striped Bass Management Board for approval at their meeting in October 2013. The 2013 stock assessment indicates a continued decline in SSB through 2012, the last year of data used in the assessment. The female SSB estimate is 58,050 mt, just above the threshold (57,606 mt) and below the target (72,121 mt). Results from the Maryland portion of the Chesapeake Bay spring spawning stock survey (includes Potomac, Upper Bay and Choptank River) indicate that striped bass relative abundance was 265 fish per 1000 square yards of gill net per hour during 2012. The relative abundance was below the average but within the range of values from 1985-2012<sup>7</sup>. Maryland DNR will continue to monitor relative abundance. The Bay jurisdictions will continue to maintain a conservative fishing rate consistent with ASMFC Amendment 6. Based on the 2013 stock assessment, ASMFC may require reductions in fishing mortality in 2015.

Species associated with striped bass fisheries are primarily spot and to a lesser degree American eel. The stock status of spot is unknown and biological reference points for managing the stock have not been determined. Maryland is considering regulation of spot pots (a type of fish pot). American eel used as striped bass bait is less common. The use of eels as bait is banned from December 16 – May 15 in Maryland’s portion of the Chesapeake Bay because larger striped bass engulf American eel and swallow the fishing hook. This situation greatly increases the likelihood of mortality after release. American eel stock status is depleted in U.S. coastal waters. While not documented, sublegal white perch (< 8”) are a common discard species from commercial pound and fyke nets. The extent of white perch bycatch is unknown. Population shifts in these species associated with striped bass do not appear to be an issue.

- Threatened and endangered species issues;

Shortnose sturgeon and Atlantic sturgeon are listed as endangered under the Endangered Species Act. Both species utilize Chesapeake Bay habitat that spatially overlaps with that of striped bass. However, sturgeons are demersal species feeding on benthic invertebrates such as worms, crustaceans, and bivalves. Their eggs are adhesive and distributed on hard rocky substrates. In contrast, striped bass occupy all portions of the water column, are opportunistic predators of finfish and invertebrates, and are broadcast spawners. There is no direct interaction between striped bass and either sturgeon species. Sturgeons have been occasionally caught in passive commercial fishing gear such as pound nets.

Atlantic menhaden are a primary prey species for striped bass. Maryland designated Atlantic menhaden as a species in need of conservation. The purpose of the designation was to establish regulations for Atlantic menhaden including a quota, season, license requirements, a bycatch allowance landing permit, a declaration period for the fishery, catch limits, and reporting requirements. The in need of conservation designation allows for the modification of catch limits, quotas, and seasons by public notice. These actions address the compliance requirements by ASMFC to reduce fishing mortality and should promote the protection of an important prey species for striped bass.

- Changing social patterns & values (impacts);

One stakeholder group (MSSA) requested a change in striped bass allocation from the current 42.5% commercial and 57.5% recreational/charter to 10% and 90%, commercial and recreational/charter (65%/25%), respectively. The stakeholder group used the MRIP data, formerly Marine Recreational Fisheries Statistics Survey (MRFSS) data on recreational effort and participation (number of angler trips and number of anglers) to justify their position that social patterns and values (impacts) have changed, i.e., there has been an increase in effort and participation in the recreational sector and a decrease in the effort and participation in the commercial sector. The stakeholder group believes that the number of angler trips (effort) has increased from 1.74 million (1989) to 2.78 million (2011). Upon examining the MRIP time series data query (Table 2), effort has ranged between 1.67 million angler trips (1992) and 3.78 million angler trips (2000) with an average of 2.68 million trips. The 2012 estimate for Maryland was 2.16 million trips, slightly below the average. In general, changes in effort cannot be used to imply changes in the number of participants. Effort, as used by NMFS, is based on the number of fishing trips regardless of who made the trip. In other words, one trip for three individuals is the same as one individual making three trips. Participation data (number of anglers) for Maryland indicates that the number of participants has ranged between 506,962 (1989) and 1.46 million (2007) with an average of 852,000 (Table 3, MRIP data). The estimated number of anglers fishing in Maryland for 2012 was 672,343. Annual recreational tidal fishing license sales in Maryland declined from the late-1990s to 2005 but have been stable since then (Figure 1). While

the number of angler trips and anglers in Maryland state waters has varied over time, the FS PRT concluded that the variation does not represent a fundamental change.

The commercial striped bass fishery has been constrained by a quota since the moratorium was lifted in 1990. Harvest data from 2000 – 2012 indicate that 94%-105% of the quota has been caught annually (Table 4). The FS PRT examined the number of striped bass permit holders (participants) from 1990 – 2012. There are 1231 permits annually available and permit holders must declare their intent to fish. The number of active permits has averaged 713 (Table 5). Striped bass permit holders were allowed to consolidate their permits beginning in 2009 but many did not fully take part in this option until 2010. Consolidation of permits in 2010 resulted in the apparent loss of approximately 200 participants between 2009 and 2010. Currently, between 80 and 90 people hold more than one permit. Since 2003, the number of people participating in the commercial striped bass fishery has varied annually without a trend. Developing an allocation percentage that uses the number of recreational licenses in relationship to the number of commercial permits does not take into account the different objectives of both sectors and the number of non-fishing community members that benefit from the commercial fishery.

Recreational stakeholders also advanced the idea that recreational fisheries provide more economic advantages than commercial fisheries. This was based on the assumption of economic viability among sectors and the recovery of resource management costs. The FS PRT did not agree with the use of input-output economic models to comparatively assess commercial and recreational economic value and viability. Input-output is a pertinent method when the objective is to measure economic factors such as gross domestic product (GDP), growth or jobs associated with an industry. Input-output analyses do not measure economic efficiency or value.

Commercial and recreational fishing sectors are structured quite differently. By the very nature of being a business, commercial fishing operations seek to minimize costs and maximize profit, which in turn reduces both direct economic impacts as well as indirect economic impacts which consist of ripple effects on other businesses such as bait suppliers. Conversely, recreational anglers seek to maximize a pleasure experience which requires an expenditure of money. Such disparate sectors are thus better compared using cost-benefit analysis. It is the comparison of the marginal willingness to pay (WTP) that should be used when making quota allocation decisions<sup>8</sup>. The FS PRT recognized the need for additional cost-benefit analysis before any conclusions and specific recommendations can be made about striped bass commercial and recreational economic value.

- Ecosystem needs;

Striped bass have minimum water quality requirements throughout their life history. The management strategies and actions in the Chesapeake Bay striped bass FMP remain appropriate to attain/maintain necessary water quality. A Chesapeake Bay total maximum daily load has been implemented to improve success at meeting water quality standards. Successful spawning and larval development requires adequate water flow rates and cooler temperatures in tidal fresh and low salinity waters during the months of April – June. Sufficient water flow is needed, in part, to keep the eggs suspended in the water column. Average annual surface temperature of Chesapeake Bay water has increased by approximately 3.6°F since the 1940s. The effect of increasing temperatures on striped bass will depend on the season, location, and life history stage. Hypoxic water (< 2 mg/L dissolved oxygen) is of particular concern for juvenile and adult striped bass. Striped bass are not tolerant of hypoxic conditions resulting in a loss of habitat. The majority of prey species are also intolerant of hypoxia further exacerbating the effect on striped

bass. The prevalence of hypoxic waters in Chesapeake Bay has increased since the 1950s. Abundance and availability of forage species, such as Atlantic menhaden, must be adequate for the energetic needs of the striped bass population. Sufficient abundance of Atlantic menhaden, the preferred prey of striped bass, to support both the striped bass stock and the reduction fishery is currently uncertain. Evidence exists that striped bass are increasingly feeding on species other than their principle prey, menhaden. Concurrently, disease prevalence has increased along with poor nutritional condition and natural mortality. Overall health of striped bass can be monitored with a relatively simple measure of lipid depletion in muscle tissue based on its water content. Poor nutrition results in tissue lipid being metabolized and replaced with water. Nutrition based referenced points have been proposed for striped bass.

- Market dynamics;

Fisheries Service marketing staff promote the use of Chesapeake Bay striped bass in restaurants and seafood markets. One component of market development has been linking watermen with chefs and restaurant owners. The commercial striped bass fishery will implement an individual transferable quota (catch share) option in 2014. Watermen will have the option to have their own individual quota allocated to them or fish from the common group quota. The market effect of the quota option coupled with demand for striped bass will be evaluated as the season progresses.

Recreational stakeholders submitted a request to change the current striped bass allocation based on the belief that the commercial fishery is not economically viable and not providing products for local seafood consumers. Allocation decisions regarding how to allocate fisheries resources across commercial and recreational fishing sectors are best made by using cost-benefit-analysis. Within cost-benefit analysis, the appropriate metric to characterize economic benefits is willingness-to-pay. The recreational stakeholders detail economic impacts in support of their position, but have not provided information on willingness to pay which could be used to inform fisheries allocation decisions. The FS PRT did not support changing the allocation based on market dynamics.

- Management resources;

Fisheries Service dedicates a significant amount of resources towards implementing a management framework for striped bass including an extensive monitoring program and a fishery statistics program. Striped bass is one of the top three species of focus and interest in the Chesapeake Bay. Fisheries Services' management resources for the recreational and commercial striped bass fisheries are comparable with the exception of the additional monitoring cost for the commercial fishery. There is a management cost for obtaining recreational harvest estimates, however, these costs are incurred by NMFS via the MRIP.

- New data:

Several additional factors were considered by the FS PRT during the review process. A shift to a greater allocation for the recreational fishery would increase the reliance on MRIP data collection. MRIP estimates have greater variability and error and are less timely compared to commercial fisheries statistics. Such a shift in data collection would increase stock assessment uncertainty and the need for precautionary management.

Ecologically, there is the potential for an increased predator/prey ratio. Some recent analyses suggest that there is insufficient quality forage (menhaden) for the existing striped bass population in Chesapeake Bay. The recreational sector has harvested, on average, 73% of their annual quota since 2000. Even if there was liberalization of current recreational harvest



restrictions, there is uncertainty in whether or not the recreational sector could harvest their increased allocation. If not, the unused portion of the recreational allocation would contribute to increasing the population of striped bass in Chesapeake Bay. A likely result would be an overabundance of striped bass relative to quality forage base which would contribute to poor nutritional condition of premigratory and resident striped bass.

## Conclusion

The FS PRT concluded that the current striped bass allocation for commercial (42.5%) and recreational and charter boat combined (57.5%) remains appropriate for managing striped bass in Maryland. Insufficient evidence exists to demonstrate that changing social patterns and values have diminished for commercial fishing or increased for recreational angling. The FS PRT recommends the use of cost-benefit (WTP) models instead of input-output economic models when analyzing reallocation recommendations driven by economic efficiency. Commercial fishery and recreational fishery economic value analyses, however, are not available at this time. In addition, the FS PRT was concerned about the equitability of the stakeholder proposed reallocation. The reduction of commercial sector allocation from 42.5% down to 10% does not maximize overall benefits.

## Literature

<sup>1</sup> Maryland Sea-Grant. 2009. Ecosystem-based fisheries management for Chesapeake Bay: striped bass species team background and issues briefs. College Park, MD. pp. 122.

<sup>2</sup> Maryland Department of Natural Resources Policy Fisheries Allocation Review, 12:01 (2012).

<sup>3</sup> Smith, D. 2013, March 19. [Letter to Steve Early]. See Appendix 2.

<sup>4</sup> Hastings, K. 2013, March 32. [Letter to Tom O'Connell]. See Appendix 3.

<sup>5</sup> ASMFC. 2003. Amendment 6 to the Interstate Fishery Management Plan for Atlantic Striped Bass. Atlantic States Marine Fisheries Commission. Washington, DC.

<sup>6</sup> Atlantic Striped Bass Plan Review Team. 2012 Review of the ASMFC Fishery Management Plan for Atlantic Striped Bass (*Morone saxatilis*) 2011 Fishing Year.

<sup>7</sup> Durell, E., J. Horne, and A. Giuliano. 2013. Maryland Striped Bass (*Morone saxatilis*) Compliance Report to the Atlantic States Marine Fisheries Commission, 2012. Maryland Department of Natural Resources, Fisheries Service, 37 p.

<sup>8</sup> Plummer, M.L., W. Morrison, and E. Steiner. 2012. Allocation of fishery harvests under the Magnuson-Stevens Fishery Conservation and Management Act: Principles and practice. U.S. Dept. Commer., NOAA Tech. Memo. NMFS-NWFSC-115, 84 p.

Table 1. Time series of Maryland Chesapeake Bay commercial and recreation striped bass landings in numbers and pounds. Recreational landings from MRFSS 1982-3003; MRIP 2004 to present; Type A+B1, inland waters. (from Durell et al. 2013)<sup>6</sup>

Year	Commercial		Recreational	
	Number*	Pounds	Number	Pounds
1991	31,880	191,066	77,873	456,954
1992	119,286	552,451	99,354	613,174
1993	211,089	916,764	104,682	794,853
1994	208,914	884,970	199,378	1,096,409
1995	280,051	856,568	355,237	2,057,450
1996	415,272	1,523,293	337,415	1,560,389
1997	656,416	2,030,061	334,068	1,962,947
1998	780,893	2,368,393	391,824	1,908,344
1999	650,022	2,377,393	263,191	1,137,940
2000	627,777	2,411,554	506,462	2,100,854
2001	538,808	1,774,758	382,557	2,072,943
2002	296,635	1,852,634	282,429	1,423,515
2003	587,438	1,813,676	530,488	2,975,437
2004	461,064	1,899,539	363,983	2,313,359
2005	563,859	2,008,687	531,412	4,578,687
2006	645,078	2,116,257	668,798	3,866,227
2007	586,934	2,240,585	765,169	3,504,041
2008	580,651	2,208,018	415,403	2,728,048
2009	605,576	2,267,293	498,614	4,234,461
2010	595,015	2,104,487	452,439	2,583,008
2011	488,897	1,955,072	444,915	2,637,719
2012	465,644	1,851,431	199,583	1,060,611

\*Number of fish was calculated by dividing pounds reported by monthly mean weights measured during Maryland's biological surveys.

Table 2. Number of angler trips (effort) in Maryland state tidal/marine waters (MRIP data) by year.

Estimate Status	Year	Angler Trips	PSE*
Final	1981	1,874,005	9.8
Final	1982	2,974,296	11.8
Final	1983	2,991,807	8.3
Final	1984	2,198,844	13.4
Final	1985	2,139,346	12.1
Final	1986	2,512,809	11.5
Final	1987	2,087,939	9.2
Final	1988	2,547,730	9.4
Final	1989	1,740,564	8.7
Final	1990	1,953,832	7.4
Final	1991	2,097,260	7.8
Final	1992	1,668,390	7.9
Final	1993	2,900,082	7.3
Final	1994	2,721,467	7.0
Final	1995	2,701,375	7.4
Final	1996	2,770,284	7.5
Final	1997	2,773,789	6.8
Final	1998	2,682,114	6.5
Final	1999	2,816,790	6.9
Final	2000	3,775,527	5.8
Final	2001	3,667,015	5.1
Final	2002	2,697,788	4.4
Final	2003	3,199,530	5.1
Final	2004	2,519,337	6.0
Final	2005	3,088,992	6.1
Final	2006	3,161,364	4.4
Final	2007	3,625,865	5.3
Final	2008	3,314,999	5.7
Final	2009	2,817,471	6.0
Final	2010	2,874,144	6.2
Final	2011	2,777,124	7.1
Final	2012	2,155,951	7.8

\*The percent standard error or PSE is the measure of how precise an estimate is. The lower the PSE, the greater the precision. (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division June 27, 2013 ).

Table 3. Number of tidal/marine anglers (participation) by resident type for Maryland (MRIP data) by year.

Estimate Status	Year	Coastal	PSE	Non-Coastal	PSE	Out-of-State	PSE	Total	PSE
Final	1981	521,062	10.3	20,372	80.3	302,383	26.5	843,818	11.6
Final	1982	511,312	13.9	29,100	104.3	325,929	36.5	866,341	16.4
Final	1983	574,297	8.6	37,598	57.2	359,520	21.9	971,415	9.8
Final	1984	366,615	14.8	22,755	126.3	231,975	35.8	621,345	16.6
Final	1985	447,493	12.3	26,535	88.0	272,241	33.3	746,269	14.6
Final	1986	440,302	12.0	27,117	82.1	348,673	31.5	816,092	15.2
Final	1987	334,877	10.2	28,516	56.5	319,100	21.6	682,492	11.5
Final	1988	272,232	13.0	28,137	54.1	336,745	23.5	637,114	13.8
Final	1989	302,649	10.1	18,717	57.4	185,596	23.9	506,962	10.8
Final	1990	338,192	8.1	14,146	59.5	270,180	19.0	622,518	9.4
Final	1991	377,433	8.4	28,031	48.8	238,679	21.4	644,144	9.6
Final	1992	320,523	8.3	11,148	72.5	202,169	22.3	533,840	9.9
Final	1993	540,178	7.8	31,843	54.1	267,582	21.8	839,603	8.8
Final	1994	488,859	7.6	43,256	43.2	279,183	19.6	811,298	8.5
Final	1995	491,357	8.2	32,336	18.9	362,766	10.3	886,459	6.2
Final	1996	492,742	8.7	28,694	20.7	334,370	11.0	855,806	6.6
Final	1997	426,794	7.4	29,198	15.8	262,943	9.4	718,934	5.6
Final	1998	423,162	7.3	29,324	16.0	306,886	9.2	759,371	5.5
Final	1999	382,764	7.8	40,728	14.6	349,032	10.9	772,525	6.3
Final	2000	461,347	6.6	51,307	13.3	480,957	7.6	993,611	4.8
Final	2001	565,001	5.8	49,802	13.2	425,714	7.2	1,040,517	4.4
Final	2002	430,316	5.2	40,780	10.9	330,051	6.6	801,147	3.9
Final	2003	526,354	5.8	52,777	12.3	418,291	7.4	997,421	4.4
Final	2004	442,064	6.9	39,409	13.6	333,189	8.7	814,661	5.2
Final	2005	619,942	6.9	49,252	17.8	425,360	9.9	1,094,554	5.6
Final	2006	733,373	5.2	83,735	13.7	447,005	8.2	1,264,112	4.3
Final	2007	849,881	6.3	78,439	15.7	527,837	8.8	1,456,157	5.0
Final	2008	643,434	6.2	49,802	16.1	506,927	8.9	1,200,163	5.1
Final	2009	513,661	6.2	43,450	15.7	327,261	8.9	884,372	5.0
Final	2010	552,369	6.7	54,454	15.4	461,671	9.2	1,068,495	5.3
Final	2011	415,470	8.1	48,771	15.1	371,751	10.4	835,992	6.2
Final	2012	374,616	8.6	39,605	17.9	258,122	10.3	672,343	6.3

Coastal refers to residences in counties within 25 miles of the coast during November – April or within 50 miles of the coast from May – October. Coastal does not mean where anglers fished. The percent standard error or PSE is the measure of how precise an estimate is. The lower the PSE, the greater the precision. (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division June 27, 2013 ).

Table 4. Annual percentage of the commercial quota attained by the Maryland commercial striped bass fishery (MDNR data).

Year	MD Commercial Bay Harvest Quota	MD Commercial Bay Harvest	% Harvest of Quota
2000	2,348,550	2,411,554	102.7
2001	1,761,000	1,774,758	100.8
2002	1,760,000	1,852,634	105.3
2003	1,925,000	1,813,676	93.7
2004	1,873,000	1,899,539	101.4
2005	2,066,322	2,008,687	97.2
2006	2,124,116	2,116,257	99.2
2007	2,134,116	2,240,586	105.0
2008	2,254,831	2,208,018	97.9
2009	2,254,831	2,267,293	100.6
2010	2,111,690	2,105,776	99.7
2011	1,963,873	1,955,072	99.6
2012	1,963,873	1,846,482	94

Table 5. The number of active striped bass commercial permit holders from 1990 – 2012 (MDNR data).

Year	Permit Holders
1990	108
1991	missing
1992	770
1993	836
1994	913
1995	844
1996	921
1997	989
1998	1001
1999	871
2000	828
2001	693
2002	710
2003	629
2004	656
2005	513
2006	559
2007	624
2008	657
2009	759
2010	595
2011	622
2012	590

Table 6. Average monthly market prices, in Maryland, are for striped bass by size category and product type. There is no commercial harvest in Maryland during the month of May. All May data are for imported striped bass.

Ex-vessel price per pound - whole fish				
Month	striped bass 18 - 23"	striped bass 23 - 30"	striped bass 30+"	
Jan	\$2.26	\$2.90	\$3.60	
Feb	\$2.12	\$2.58	\$2.92	
Mar	\$2.03	\$2.26	\$2.33	
Apr	\$3.17	\$3.39	\$3.98	
May	\$3.37	\$3.90	\$4.39	
Jun	\$2.56	\$3.15	\$3.91	
Jul	\$2.66	\$3.13	\$3.44	
Aug	\$2.53	\$2.91	\$3.51	
Sept	\$2.66	\$3.10	\$4.09	
Oct	\$2.26	\$2.95	\$3.57	
Nov	\$2.03	\$2.68	\$3.16	
Dec	\$2.03	\$2.54	\$2.84	

Wholesale price per pound - whole fish *				
Month	striped bass 18 - 23"	striped bass 23 - 30"	striped bass 30+"	
Jan	\$5.37	\$6.91	\$8.58	
Feb	\$5.05	\$6.13	\$6.96	
Mar	\$4.83	\$5.37	\$5.55	
Apr	\$7.55	\$8.06	\$9.47	
May	\$8.01	\$9.27	\$10.45	
Jun	\$6.10	\$7.50	\$9.30	
Jul	\$6.34	\$7.46	\$8.20	
Aug	\$6.02	\$6.93	\$8.35	
Sept	\$6.32	\$7.37	\$9.74	
Oct	\$5.37	\$7.01	\$8.49	
Nov	\$4.83	\$6.39	\$7.52	
Dec	\$4.83	\$6.05	\$6.77	

Restaurant menu price – fillet **				
Month	striped bass 18 - 23"	striped bass 23 - 30"	striped bass 30+"	
Jan	\$6.72	\$8.64	\$10.73	
Feb	\$6.31	\$7.67	\$8.69	
Mar	\$6.04	\$6.72	\$6.94	
Apr	\$9.44	\$10.07	\$11.84	
May	\$10.02	\$11.59	\$13.06	
Jun	\$7.62	\$9.38	\$11.62	
Jul	\$7.93	\$9.33	\$10.25	
Aug	\$7.52	\$8.66	\$10.43	
Sept	\$7.90	\$9.22	\$12.18	
Oct	\$6.72	\$8.77	\$10.61	

Nov	\$6.04	\$7.98	\$9.41
Dec	\$6.04	\$7.57	\$8.47

---

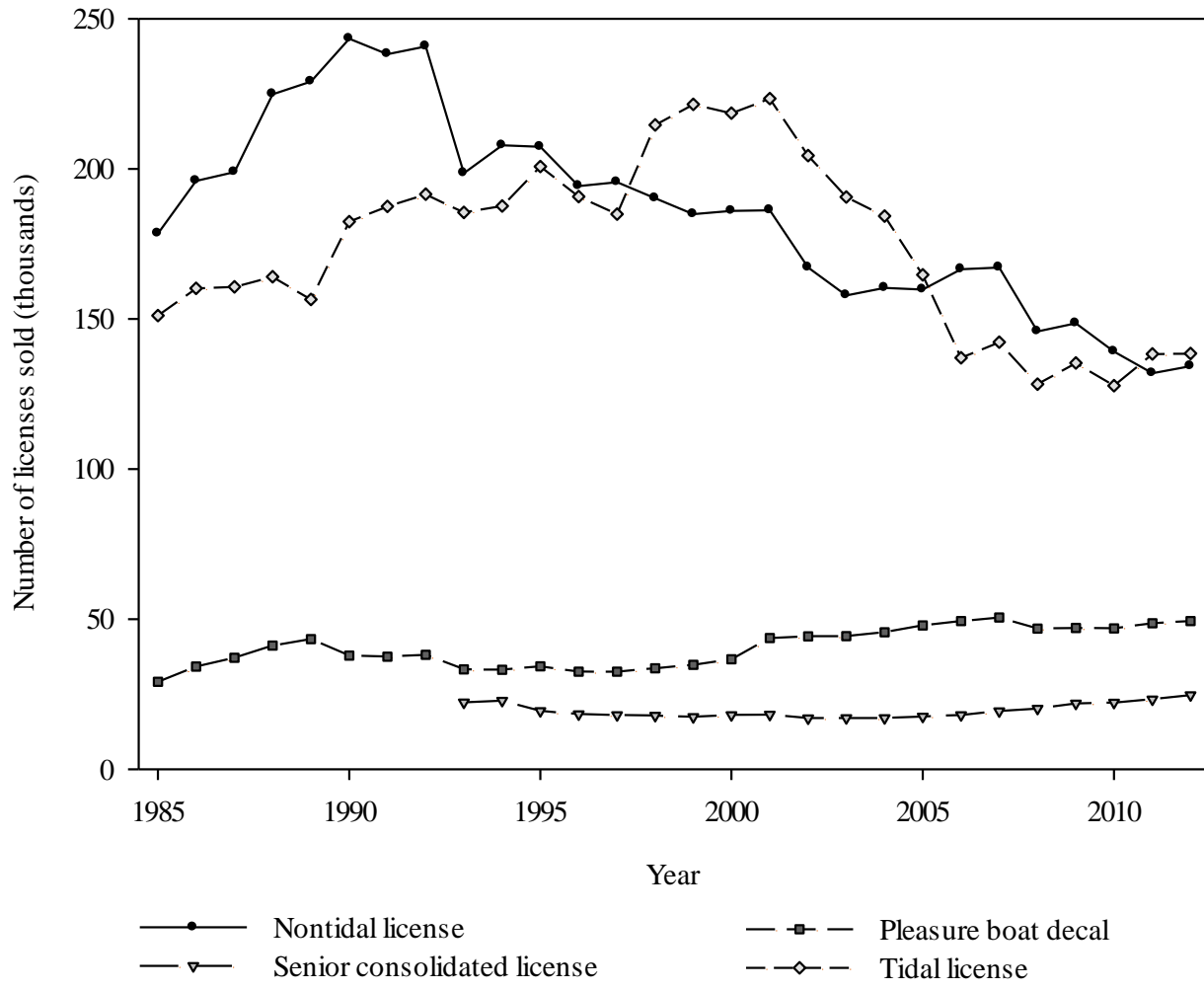
\* The wholesale price is based on a whole fish to fillet yield of 42%.

\*\* The restaurant price is based on a multiplier of 1.25.

Data and price conversions were provided by Steve Vilnit (MDFS, pers. comm.).



Figure 1. Number of fishing license sales in Maryland from 1985 – 2012 (MDNR data).



Appendix A. Strategy and action implementation table for the 1989 Chesapeake Bay Striped Bass Fishery Management.

1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)			
Strategy	Action	Date	Comments
<p>1 - Overharvesting, Reduced Spawning Stock and Poor Recruitment: Controlling fishing mortality will be the primary method of maintaining adequate striped bass stocks. Optimum yield per fish will be more closely approached by establishing minimum sizes greater than historic limits. Long term fishery maintenance must be based on a management objective commensurate with reproductive success. The number of eggs per striped bass is directly related to fish size and age. Females will be protected so that more can reach their spawning potential. As reproductive potential is protected and spawning stock increases, more young striped bass should enter the fishery.</p> <p>Two types of fisheries have been defined by the ASMFC: 1) A conservative transitional fishery, which would go into effect after the Maryland striped bass juvenile index has reached a 3-year-average of 8.0; and (2) A more robust recovered fishery, to be considered when a certain percentage of the female spawning stock is composed of striped bass females equal to or greater than age VIII. The percentage will be determined by the ASMFC.</p>		Completed	Target is 1990 for a transition fishery.
		1995	The stock was deemed recovered in 1995.
		1995 On-going	Juvenile abundance data is used by ASMFC to estimate coastal SSB and SCA of coastal stock.
		2003	Amendment VI changed the JAI recruitment failure definition from 90% to 75% of the index for three consecutive years.
		2010	Addendum 2 to Amendment 6 established a fixed recruitment failure value of 1.60.
		Continue	Strong recruitment of 1993, 1996, 2001, 2003, and 2011 year classes.  Overharvesting is not an issue at this time.
<p>1.1 Fishing mortality will be controlled by several means to protect striped bass stocks. Harvest restrictions will be set to provide a fishing mortality rate of 0.25 (equivalent to about 18% of the legal sized fish being harvested) during a <u>transition</u> fishery and a rate of 0.5 (equivalent to about 32% of the legal sized fish being harvested) during a <u>recovered</u> fishery, in accordance with ASMFC guidelines (these percentages may change slightly as additional calculations are made by the ASMFC). Adult stock levels, stock composition, and the Maryland striped bass young-of-the-year index (or other juvenile indices as approved by ASMFC) will</p>	<p>1.1.1 The District of Columbia, Maryland, Virginia, and the Potomac River Fisheries Commission will utilize a combination of harvest restrictions to meet target fishing mortality rates. Controls may include seasonal quotas, daily bag limits, minimum size limits, seasons, time restrictions, gear restrictions, license requirements, and other actions. Maryland's annual quota will be presented as total sport and commercial landings.</p>	2000 Continue	All CB jurisdictions have implemented regulations to prevent exceeding $F_{target}$ .
		February 2003 Continue	CBP jurisdictions have option to implement stricter regulations than required under ASMFC Amendment VI.
		2009	The overfishing definition is $F_{msy}=0.34$ . If coastwide estimated mortality rates exceed the target rate for 2 consecutive years, the ASMFC will develop management measures.
		On-going	

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

<b>Strategy</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
be used in determining needed restrictions.			Bay jurisdictions are in compliance with ASMFC guidelines. CB F remains below the target of 0.27.  See Strategy 1.2 comments for size limits and Strategy 2.4.1 comments for seasons and time restrictions.
	1.1.2 Maryland, the Potomac River Fisheries Commission and Virginia will cap commercial harvest during the transitional fishery with a quota not to exceed 20% of the average annual commercial harvest as reported for the period 1972-1979. No commercial fishing is permitted in the District of Columbia.	1990	Implemented.
		1995	The stock was deemed recovered in 1995.
1.2 Size limits and fishing mortality rates will be set to allow sufficient recruitment to the spawning stock.	1.2.1 The District of Columbia, Maryland, Virginia and the Potomac River Fisheries Commission will establish a minimum size limit of 18 inches total length in the Chesapeake Bay and tributaries during the transition fishery. Maryland may establish a larger minimum legal size during a May trophy fishery beginning in 1991.	On-going	ASMFC requires that the recreational minimum size limit for striped bass in Chesapeake Bay is 18” except for the spring trophy season. The minimum size limit for striped bass during the spring trophy season in MD is 28”.
	1.2.2 Maryland, Virginia and the Potomac River Fisheries Commission will prohibit the keeping and sale of sublegal (fish smaller than the minimum size) striped bass by-catch.	On-going	ASMFC prohibits the sale of sub-legal striped bass (<28”). All striped bass are individually weighed, measured, and tagged at certified check-in stations.  2012 Harvest tag criteria were standardized, coastwide, with Addendum III to Amendment 6.
	1.2.3 As a conservation measure, the District of Columbia, Maryland, Virginia and the Potomac River Fisheries Commission will establish a consistent maximum legal size for	On-going	DC, MD, PRFC, and VA recreational fisheries are managed with a combination of the 18” – 28” slot limit and a 28” minimum size limit: 2 fish 18” - 28”, or 1 fish 18” - 28” and 1 fish ≥28”.

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	striped bass in the Chesapeake Bay and its tributaries.		<p>Spring trophy season size limits for MD and PRFC are 1 fish <math>\geq 28''</math> and VA allows 1 fish <math>\geq 32''</math>. There is not a spring trophy season in DC.</p> <p>Commercial fishery size limits: MD is 18'' – 36'' for all gear and seasons; PRFC is 18'' – 36'' from February 15 – March 25 and <math>\geq 18''</math> from June 1 – December 15, and for gill net <math>\geq 18''</math> from November 12 – February 14; VA minimum size is 18'' all season with a 28'' maximum from March 26 – June 15. Commercial fishing is prohibited in DC.</p>
1.3 Fishing mortality rates will be set to ensure a viable female spawning stock of age VIII and older females, and stocks will continue to be enhanced with hatchery production.	1.3.1 During a transition fishery, mortality will be controlled to protect age VIII or older females until they comprise at least a certain percentage (as determined by the ASMFC) of the female spawning population.	2011	<p>Female fish ages 8+ have increased in abundance.</p> <p>Minimum percent of age 8+ females in the stock has not been specified by ASMFC.</p>
	1.3.2 A fishery on a recovered stock will be controlled so that females age VIII or older continue to comprise at least a certain percentage (as determined by the ASMFC) of the female spawning stock.	Discontinued  Ongoing - Adjusted during stock assessment	<p>ASMFC uses a VPA to estimate SSB.</p> <p>A statistical catch at age (SCA) model is used to estimate SSB. Since 2008, <math>SSB_{\text{threshold}} = 66.2</math> million lbs and <math>SSB_{\text{target}} = 82.7</math> million lbs.</p> <p>Minimum percent of age 8+ females has not been specified by ASMFC.</p>
	1.3.3 Maryland and Virginia will continue hatchery production to enhance striped bass spawning stocks in areas that are still depleted. The District of Columbia will work with the Maryland and Virginia hatchery programs to enhance striped bass spawning stocks.	Discontinued	VA (1993) and MD (1995) discontinued stocking striped bass.
	1.3.4 Hybrid striped bass stocking and the introduction of non-native stocks	Discontinued	MD, PA, and USFWS discontinued stocking hybrid striped bass. Magothy –

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	will be restricted in the Chesapeake Bay and its tributaries in accordance with ASMFC guidelines. The Maryland Department of Natural Resources, the Pennsylvania Fish and Boat Commission and the U.S. Fish & Wildlife Service will discuss stocking issues regarding the Susquehanna River.		1982, Patuxent – 1984, and Pennsylvania – 1990.
<p>2 - Regulatory and Enforcement Issues: In order to control fishing effort and fishing mortality rates, harvest and sale regulations will be developed and implemented. Guidelines will be set for monitoring the resource and harvest restrictions. The individual jurisdictions will comply with ASMFC goals and criteria for the striped bass fishery and, where possible, have compatible fishing regulations. Areas of harvest pressure and times when harvesting pressure will be heaviest will be defined in order to facilitate adequate enforcement.</p> <p>2.1 The striped bass harvest will be equitably allocated among user groups on a yearly basis.</p>	<p>2.1.1 The Maryland quota will be allocated as follows – 42.5% commercial; 42.5% recreational; 15% charter. Virginia and the Potomac River Fisheries Commission will use various restrictions in fishing seasons and bag limits to equitably allocate and restrict harvest among the commercial, recreational and charter boat fisheries.</p>	<p>On-going</p> <p>2013</p>	<p>FMP quota is incorporated into regulation by reference. Quota allocation is periodically reviewed. Recreational and charter allocations have since been combined to be 57.5%.</p> <p>Quota allocation was reviewed in 2013 by an FMP plan review team (FSPRT). Recommendation from DNR Fisheries Service is pending.</p>
	<p>2.1.2 Maryland will terminate the fishing season for each of its three component fisheries when their individual quota is reached, regardless of time during the season. Virginia will terminate its commercial fishing component when its harvest quota is reached, regardless of time during the season. The Potomac River Fisheries Commission will terminate its fishing seasons when the allowable harvest under ASMFC’s Striped Bass Plan is reached, regardless of the time during that season.</p>	<p>On-going</p>	<p>MD Department of Natural Resources, VA Marine Resources Commission, and PRFC have authority to close their fisheries when quotas are projected to be reached.</p>
<p>2.2 Maryland, Potomac River Fisheries Commission and Virginia will establish commercial gear restrictions to limit fishing effort and sublegal by-catch, and to facilitate enforcement.</p>	<p>2.2.1 Maryland, the Potomac River Fisheries Commission and Virginia will establish a minimum gill net mesh size designed to reduce sublegal by-catch mortality to negligible levels.</p>	<p>On-going</p>	<p>CB jurisdictions are in compliance.</p>
	<p>2.2.2 Maryland and Virginia will require</p>	<p>On-going</p>	<p>CB jurisdictions are in compliance.</p>

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	that gill nets be marked, tended, and recovered (except for Virginia's stake nets) daily. The Potomac River Fisheries Commission will continue a fixed location for each gill net licensed in the Potomac.		
	2.2.4 Maryland and Virginia will establish annual quotas for their commercial fisheries.	On-going	State quotas are determined by ASMFC. CB FMP includes provisions for how jurisdictions allocate among sectors. Jurisdictions are in compliance.
2.3 Selling and buying procedures and timely reporting requirements will be established to monitor and regulate harvest.	2.3.1 A) Maryland will establish check-in stations for the commercial sale of striped bass.	On-going	CB jurisdictions are in compliance.
	2.3.1 B) Virginia dealers and commercial watermen that harvest striped bass will be required to have a special permit to sell striped bass.	On-going	CB jurisdictions are in compliance.
	2.3.1 C) The sale of striped bass caught by recreational or charter boat fishermen will be prohibited.	On-going	CB jurisdictions are in compliance.
	2.3.2 Maryland and Virginia will establish a weekly reporting system for licensed commercial fishermen and a daily reporting system for buyers during the commercial season. Maryland and Virginia will provide the Potomac River Fisheries Commission with information obtained through their mandatory buyer reporting provisions. The Potomac River Fisheries Commission will reduce the time period required for the finfish reporting system from monthly to weekly.	2006 2009 2010  2011	Electronic harvest reporting was established for check stations and fishermen.  Commercial Harvest Reports must be submitted to MDNR Fisheries Service within 10 days after the end of the month being reported. After 10 days the report is late. Watermen having late reports will be identified on the MDNR commercial webpage and in the Maryland Watermen's Gazette. Official violations are recorded for a license if a harvest report is not received within 50 days after the due date. Two or more reporting violations may result in license suspension.

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
		2011	<p>MD Senate Bill 655 and House Bill 1225 increased the penalty for commercial fishing with a suspended license, a revoked license, or without a license. The fine is up to \$25,000 and imprisonment for up to one year.</p> <p>MD House Bill 1252, established a misdemeanor charge and up to two years imprisonment for the unlawful capture of &gt;\$20,000 worth of striped bass (based on sale proceeds).</p>
<p>2.4.1 Fishing seasons will be established for the recreational, charter boat and commercial fisheries. The length of the season may be adjusted as needed, including when quotas are reached (see Action 2.1.2), by opening and closing areas to fishing, or with other actions as appropriate. Seasons will be consistent among jurisdictions to the extent possible.</p>	<p>2.4.1 A) The District of Columbia will establish a recreational fishing season within the period June through December.</p>	Completed	<p>The season opens in May and concludes at the end of December.</p>
	<p>2.4.1 B) Maryland will establish fishing seasons within the following periods:</p> <ul style="list-style-type: none"> <li>○ The commercial gill net season will be within the period November through March 15.</li> <li>○ The commercial pound net/haul seine/fyke net/hook and line seasons will be within the period June through November.</li> <li>○ The recreational and charter boat seasons will be within the period June through November.</li> <li>○ There may be a May trophy fishery for recreational and charter boat fishing, effective May 1991, limited to a single trophy fish per boat per day.</li> </ul>	<p>On-going</p> <p>Dates modified &amp; subject to change</p> <p>Dates modified &amp; subject to change</p>	<p>Fishing season dates are annually reviewed by ASMFC.</p> <p>Pound net: Monday – Saturday from June 1 – November 30. Haul seine: Monday – Friday from June 7 – November 30. Hook and line: Monday – Thursday from June 7 – November 30. Drift gill net: Monday – Friday from January 1 – February 28 and December 3 – 31. Atlantic coast: Monday – Friday from January 1 – April 30 and November 1 – December 31.</p> <p>Upper Chesapeake Bay (Susquehanna Flats) catch and release: March 1 – May 3, and the catch and keep: May 16 – 31. Spring trophy: 3<sup>rd</sup> Saturday in April – May 15. Summer – fall recreational/charter boat: May 16 – 31 and June 1 – December 15.</p>
	<p>2.4.1 C) Virginia will establish fishing</p>	Dates	<p>Commercial season is January 16 –</p>

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	seasons within the following periods: <ul style="list-style-type: none"> <li>○ The commercial netting season will be within the period September through February.</li> <li>○ The recreational and charter boat seasons will be within the period June through December.</li> </ul>	modified & subject to change  Dates modified & subject to change	December 31 ( $\geq 18''$ ) and March 26 – June 15 ( $\leq 28''$ ).  Recreational Chesapeake Bay spring trophy fishery: May 1 - June 15. Spring/summer fishery: May 16 - June 15. Fall fishery: October 4 - December 31
	2.4.1 D) The Potomac River Fisheries Commission will establish fishing seasons within the following periods: <ul style="list-style-type: none"> <li>○ The commercial gill net season will be within the period November through March.</li> <li>○ The commercial pound net/haul seine/hook and line seasons will be within the period June through December.</li> <li>○ The recreational and charter season will be within the period June through December.</li> </ul>	Dates modified & subject to change	Pound net, Haul Seine, and miscellaneous gear: February 15 – March 25 ( $18'' - 36''$ ) and June 1 – December 15 ( $\geq 18''$ ). Hook and line: February 15 – March 25 ( $18'' - 36''$ ) and June 1 – December 31 ( $\geq 18''$ ). Gill net: November 12 – February 14 ( $\geq 18''$ ) and February 15 – March 25 ( $18'' - 36''$ ).  Recreational seasons differ by size, possession, and bait limits. Spring season: April 20 – May 15. Fall season: May 16 – December 31.
	2.4.1 E) Maryland, the Potomac River Fisheries Commission and Virginia will annually review the need for a Bay spawning season fishery in relationship to the issue of parity with the coastal states.	Continue	Addressed by ASMFC.
2.4.2 Establish time periods when fishing is allowed to aid law enforcement and monitoring.	2.4.2 Maryland will prohibit commercial fishing on weekends and at night during the transitional fishery.	Completed	Weekend and evening/night fishing have been prohibited.
2.4.3 Maryland, the Potomac River Fisheries Commission and Virginia will maintain appropriate striped bass fishing areas.	2.4.3 Maryland will continue to restrict fishing for striped bass in spawning areas and rivers, and spawning reaches as defined in COMAR 08.02.05.02. Virginia will continue to restrict fishing within the spawning reaches defined in VMRC Regulation 450-01-0034. The Potomac River Fisheries Commission	Completed  On-going	Area closures are regulated.  Jurisdictions follow ASMFC harvest restrictions.



**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	will continue its prohibition on gill netting or striped bass fishing during April and May throughout the entire Potomac River during the transitional fishery.		
2.4.4 The District of Columbia, Maryland, the Potomac River Fisheries Commission and Virginia will establish recreational and charter boat creel limits consistent with ASMFC guidelines and dependent on length of season.	2.4.4.1 The District of Columbia, Maryland, the Potomac River Fisheries Commission and Virginia will establish creel limits for the recreational and charter boat fisheries of up to five (5) fish per person per day within the established season.	On-going	Jurisdictions are in compliance with ASMFC harvest restrictions.  See Strategy 1.2 for creel limits.
	2.4.4.2 Maryland may allow one trophy fish per boat during a May trophy season.	On-going	Jurisdictions are in compliance with ASMFC harvest restrictions.  See Strategy 1.2 for creel limits.
2.5 Maryland, Virginia and the Potomac River Fisheries Commission will establish monitoring programs to provide timely knowledge of harvest and effort data.	<p>2.5.1 Maryland, the Potomac River Fisheries Commission and Virginia will monitor harvest for the striped bass fishery by one or a combination of the following:</p> <ul style="list-style-type: none"> <li>○ Utilize daily trip tickets for commercial and charter fishermen.</li> <li>○ Conduct port sampling of commercial vessels.</li> <li>○ Conduct onboard sampling of commercial catches.</li> <li>○ Utilize check-in station sampling to characterize exploited stocks.</li> <li>○ Require dealer logs</li> <li>○ Maintain Natural Resource Police activity reports.</li> <li>○ Utilize aerial overflights to estimate recreational effort.</li> <li>○ Conduct port and onboard sampling of recreational vessels.</li> <li>○ Conduct telephone surveys to estimate recreational participation.</li> </ul>	<p>1995 - 2003 On-going</p> <p>On-going</p> <p>2007</p>	<p>Amendment V of the ASMFC FMP requires MD and VA to conduct annual juvenile abundance (JAI) surveys. CB jurisdictions are required to compile and submit commercial and recreational fisheries data.</p> <p>Monitoring programs include the juvenile striped bass seine survey (JAI); spring spawning stock survey; spring tagging; commercial pound net, haul seine, hook and line, and drift gill net; and recreational Susquehanna Flats catch and release, spring trophy, spring-early summer and summer-fall recreational/charter boat seasons. Monitoring requirements may be changed as necessary.</p> <p>Data collected from Federal waters is coordinated with NOAA Fisheries. Addendum I to Amendment 6 of the</p>



**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
<p>will promulgate regulations necessary to comply with the ASMFC and Chesapeake Bay Striped Bass Management Plans.</p>	<p>deficiencies if noted.                      -----                      2.6.2 The District of Columbia, Maryland, the Potomac River Fisheries Commission and Virginia will adopt consistent enforcement policies for the striped bass fishery throughout the Chesapeake Bay. Strategies to address enforcement needs will be developed.</p>	<p>On-going  2011  2011</p>	<p>ASMFC's Law Enforcement Committee develops minimum enforcement policies.  Additional enforcement resources have been made available. Resources include additional officers, equipment, access to state of the art surveillance tools, legislation and regulation, increased penalty system, and a streamlined judicial framework.  MD Senate Bill 635 and House Bill 1154 require the revocation of an individual's commercial fishing license if found by an Administrative Law Judge to have knowingly committed an egregious or repeat violation against striped bass including: using illegal gear; harvesting during closed seasons; harvesting from a closed area; violating established harvest, catch or size limits; or violating tagging and reporting requirements.</p>
<p>3 - Stock Assessment and Research Needs: The Chesapeake Bay Stock Assessment Committee (CBSAC) will continue to improve the coordination of stock assessment pursuant to the Chesapeake Bay Stock Assessment Plan. Stock identification studies should be expanded, especially for the Chesapeake &amp; Delaware Canal and along the coast, to provide information on stock mixing. The contribution of hybrids and hatchery produced fish to the wild population needs to be determined. A review of hooking mortality and other by-catch mortality rates would allow greater precision in establishing fishing mortality controls. Studies on larval survival and growth in relation to environmental variables would provide a better understanding of the factors</p>		<p>On-going  On-going  Completed  2009</p>	<p>MD and VA have instituted tagging programs to estimate migration and mortality rates.  Gillnet survey is used to collect population data.  Studies demonstrating the effectiveness of circle hooks for reduced gut hooking and release mortality have been completed.  Research has linked striped bass recruitment with climate cycles. Wood &amp; Austin, 2009, Synchronous multidecadal</p>

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
affecting year class strength.		2008 - 2011	fish recruitment patterns in Chesapeake Bay, USA.  SARC determined stock is not overfished is not undergoing overfishing.
3.1 The jurisdictions will continue to obtain stock information on striped bass in Chesapeake Bay.	3.1 The District of Columbia will continue monitoring aspects of striped bass population dynamics. Maryland will continue surveys of the spawning and premigratory striped bass stock in the Chesapeake Bay. Virginia will initiate surveys on its spawning stock of striped bass. Collection of tissue and scale samples to augment tagging information and stock identification will be considered.	On-going  On-going	MD has a gill net survey to monitor the spring spawning stock.  MD and VA tag fish for the USFWS Cooperative Coastal Striped Bass Tagging Program to monitor migratory and resident striped bass population dynamics. ASMFC does not require DC to tag fish.
3.2 Efforts will be made to improve our understanding of factors that affect reproduction and recruitment to the fishery.	3.2 The District of Columbia, Maryland and Virginia, in cooperation with federal agencies, will review and update existing data, and initiate new studies that target: striped bass reproduction and early life history, especially in relation to environmental parameters; natural mortality; and catch-release mortality induced by various fishing methods.	2007 Continue  2009 Continue  On-going	Addendum I to Amendment 6 of the ASMFC FMP requires states to implement angler education about catch and release best practices.  Tagging data indicates striped bass M <u>may</u> be increasing unless CB emigration has increased. Increased M may reflect an increased incidence of mycobacteriosis, decreased prey availability, or poor water quality.  Tagging study design and implementation requirements are coordinated with ASMFC.
4 – Declining Water Quality: Adequate spawning and nursery areas with good water quality are critical for striped bass survival. Although causes for the decline in reproduction may differ between years and between spawning areas, several water quality aspects are identified as reducing survival of young. State and Federal studies will continue to examine	4.1 The first four action items are commitments under the 1987 Chesapeake Bay Agreement. The DCFM, MDNR, PRFC and VMRC are not the agencies responsible for carrying out the actual commitments, but are involved in setting the objectives of the	1990 On-going  2010	Water quality issues are also addressed in the Chesapeake 2000 Agreement and most recently in the 2009 Executive Order.  US EPA established a Chesapeake Bay TMDL “pollution diet” mandating

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
the effects of environmental contaminants on striped bass. 4.1 Identify those water quality factors, both natural and man-induced, which affect striped bass reproduction and survival, and focus on the control of those factors.	programs to fulfill the commitments. The achievement of these commitments will lead to improved water quality and enhanced biological production that can only benefit striped bass populations. The DCFM, MDNR, PRFC and VRMC fully support these commitments.		nutrient and sediment reductions for compliance with the Clean Water Act.
	1 - The first commitment adopted under the 1987 Chesapeake Bay Agreement was a report titled, "Habitat Requirements for Chesapeake Bay Living Resources". This document listed the habitat requirements for selected target species including striped bass. The report is being revised and updated by a workgroup of the Living Resources Subcommittee. When complete in May, 1990, the habitat requirements contained in the report will be used to aid managers in improving water quality: a) Assist in the revision of water quality standards and criteria as needed, b) Develop a Habitat Requirements Use Report which will detail resource needs by river segment, c) Assist in the 1991 Nutrient Re-evaluation by providing living resource habitat requirement for use in the 3-D Model (The model will compare existing water quality with the habitat requirements and project whether the requirements would be met under various nutrient removal scenarios), and d) Assist in the implementation of the nutrient, toxics and conventional pollutant control strategies by identifying critical habitat needs.	1991    2001 2007 Completed   1990 On-going	Document published.  CB jurisdictions have implemented management strategies to protect striped bass habitat. MD spawning areas are protected from harvest March through May.  An ecosystem-based fishery management process was facilitated by MD Sea Grant. Habitat issues/stressors were defined for striped bass.  Chesapeake Bay Program develops, revises, and monitors goals and strategies for living resources (blue crab, menhaden, oyster, shad, and striped bass. For more information: <a href="http://www.chesapeakebay.net/issues/issue/blue_crabs">http://www.chesapeakebay.net/issues/issue/blue_crabs</a> <a href="http://www.chesapeakebay.net/issues/issue/menhaden">http://www.chesapeakebay.net/issues/issue/menhaden</a> <a href="http://www.chesapeakebay.net/issues/issue/oysters">http://www.chesapeakebay.net/issues/issue/oysters</a> <a href="http://www.chesapeakebay.net/issues/issue/shad">http://www.chesapeakebay.net/issues/issue/shad</a> <a href="http://www.chesapeakebay.net/issues/issue/striped_bass">http://www.chesapeakebay.net/issues/issue/striped_bass</a>
	4.1 2 –Development and adoption of a	1990	Currently addressed through the

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	basinwide plan that will achieve a reduction of nutrients entering the Chesapeake Bay: a) Construct public and private sewage facilities. b) Reduce the discharge of untreated or inadequately treated sewage. c) Establish and enforce nutrient and conventional pollutant limitations in regulated discharges. d) Reduce levels of nutrients and other conventional pollutants in runoff from agricultural and forested lands. e) Reduce levels of nutrients and other conventional pollutants in urban runoff.	On-going	Chesapeake Bay Program's 2 year milestones towards reaching the 2025 water quality goals.  Chesapeake Bay Program develops, revises, and monitors goals and strategies for nutrient reduction. For more information: <a href="http://www.chesapeakebay.net/issues/issue/nutrients">http://www.chesapeakebay.net/issues/issue/nutrients</a>
	4.1 3 – Development and adoption of a basinwide plan for the reduction and control of toxic materials entering the Chesapeake Bay system from point and nonpoint sources and from bottom sediments: a) Reduce discharge of metals and organic compounds from sewage treatment plants receiving industrial wastewater. b) Reduce the discharge of metals and organic compounds from industrial sources. c) Reduce levels of metals and organic compounds in urban and agricultural runoff. Reduce chlorine discharges to critical finfish areas.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for chemical contaminants. For more information: <a href="http://www.chesapeakebay.net/issues/issue/chemical_contaminants">http://www.chesapeakebay.net/issues/issue/chemical_contaminants</a>
	4.1 4 – Development and adoption of a basinwide plan for the management of conventional pollutants entering the Chesapeake Bay from point and nonpoint sources:	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for sediment, wastewater, stormwater runoff, and agriculture. For more information:

**1989 Chesapeake Bay Striped Bass Management Plan Implementation Table (updated 6/2013)**

Strategy	Action	Date	Comments
	a) Manage sewage sludge, dredge spoil and hazardous wastes. b) Improve dissolved oxygen concentrations in the Chesapeake Bay through the reduction of nutrients from both point and nonpoint sources. c) Continue study of the impacts of acidic conditions on water quality. d) Manage groundwater to protect the water quality of the Chesapeake Bay. e) Continue research to refine strategies to reduce point and nonpoint sources of nutrient, toxic and conventional pollutants in the Chesapeake Bay.		<a href="http://www.chesapeakebay.net/issues/issue/sediment">http://www.chesapeakebay.net/issues/issue/sediment</a> <a href="http://www.chesapeakebay.net/issues/issue/wastewater">http://www.chesapeakebay.net/issues/issue/wastewater</a> <a href="http://www.chesapeakebay.net/issues/issue/sediment">http://www.chesapeakebay.net/issues/issue/sediment</a> <a href="http://www.chesapeakebay.net/issues/issue/stormwater_runoff">http://www.chesapeakebay.net/issues/issue/stormwater_runoff</a>
	4.1 5 – The development and adoption of a plan for continued research and monitoring of the impacts and causes of acidic atmospheric deposition into the Chesapeake Bay and its tributaries. This plan is complemented by Maryland’s research and monitoring program on the sources, effects, and control of acid deposition as defined by Natural Resources Article Title 3, Subtitle 3A, (Acid Deposition: Sections 3-3A-01 through 3-3A-04): a) Determine the relative contributions to acid deposition from various sources of acid deposition precursor emissions and identify any regional variability. b) Assess the consequences of the environmental impacts of acid deposition on water quality. c) Identify and evaluate the effectiveness and economic costs of technologies and mitigative techniques that are feasible to control acid deposition into the Chesapeake Bay.	1990 On-going	Chesapeake Bay Program develops, revises, and monitors goals and strategies for air pollution. For more information: <a href="http://www.chesapeakebay.net/issues/issue/air_pollution">http://www.chesapeakebay.net/issues/issue/air_pollution</a>





Appendix B. Implementation table for Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan. The comment column includes information (**bold**) pertinent to additional management indices.

<b>Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (6/2013)</b>			
<b>Management Areas</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
Stock Status	Amendment 1 to the Chesapeake Bay Program FMP augments the 1989 Plan. CBP jurisdictions adopted coastal ASMFC management scenarios for the Bay. The coastal stock was declared restored to historic levels in 1995. ASMFC approved Amendment VI of the Interstate Fisheries Management Plan for Atlantic Striped Bass in February 2003.	2003 Continue  2008	<p>CBP jurisdictions have option of maintaining current regulations or implementing stricter regulations than required under ASMFC Amendment VI.</p> <p>SARC determined stock is not overfished and is not undergoing overfishing.</p> <p>---</p> <p>Age structure diversity is not based on specific proportions of a given age class. Current evaluation of age diversity is based on following trends for various age classes. Management framework and regulatory changes for addressing reduced age diversity should reflect the manner in which the issue was addressed during the moratorium. A diversity index to evaluate age diversity could be useful.</p> <p>All alternate indices (other than F, SSB, &amp; JAI) will inform biologists but currently not critical when making management decisions.</p> <p>A predator prey ratio for striped bass and menhaden would be useful, and it is worth suggesting/developing as a management parameter. However, the ASMFC is the primarily management and implementation entity for striped bass, menhaden, and weakfish multi-species issues. Prior ASMFC approval will probably be required for any suggested actions by The Chesapeake Bay Program Goal Implementation Team.</p> <p>The use of bioenergetic models to inform management decisions will require further discussion. The models are typically used to describe habitat (DO and temperature) adequacy (good vs. bad) and extent, forage issues based on gut contents, and carrying capacity. Bioenergetics modeling is not amenable to short or long term harvest management, but could provide some insight into predator prey dynamics for long term management.</p> <p>The possibility exists for a negative impact to striped bass from nonnative blue catfish, flathead catfish, and northern snakehead. Management options for</p>

<b>Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (6/2013)</b>			
<b>Management Areas</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
			<p>blue catfish are being addressed by the Chesapeake Bay Program's Goal Implementation Team process.</p> <p>Percent of fish infected by disease could be used as a population health measure.</p>
Monitoring Requirements	<p>Amendment V of the Interstate FMP requires CBP jurisdictions to compile results of their commercial and recreational fisheries and submit them to ASMFC. Specific monitoring requirements may be changed as necessary. Amendment VI modifies the monitoring requirements by adding a mandatory discard data collection program.</p>	<p>1995 2003 Continue</p> <p>2007</p>	<p>ASMFC requirements are part of a bycatch reduction program. CB jurisdictions track commercial and recreational fishing mortality and will add bycatch data to their fishery statistics information. Monitoring programs include the juvenile striped bass seine survey, spring spawning stock survey, spring tagging, commercial pound net, haul seine, hook and line, drift gill net, and recreational Susquehanna Flats catch and release, spring trophy, spring-early summer, summer-fall recreational/charter boat seasons.</p> <p>Addendum 1 to Amendment 6 of ASMFC FMP requires increased bycatch data quality control (ACCSP standards) and determine bycatch mortality information gaps.</p>
Assessment of Recruitment	<p>Amendment V of the Interstate FMP requires MD and VA to conduct annual juvenile abundance (JAI) surveys. Amendment VI modifies the acceptable level of variation allowed in the JAI from 90% to 75%. If MD and VA juvenile indices are lower than 75% of all other values in the data set for three consecutive years additional actions may be taken.</p>	<p>Continue</p> <p>2010</p>	<p>Juvenile abundance data is used by ASMFC to estimate coastal SSB and VPA of coastal stock. Strong recruitment of 1993, 1996, 2001, 2003, and 2011 year classes.</p> <p>Addendum 2 to Amendment 6 established a fixed recruitment failure value of 1.60.</p> <p>Much of the necessary data for the suite of indices being proposed are collected by field surveys.</p>
Spawning Stock Biomass (SSB)	<p>If SSB decreases below the (1960-1972) reference level, additional actions may be taken</p>	<p>1997 Continue</p>	<p>MD and VA provide data to ASMFC to estimate SSB and conduct VPA. SSB is estimated using a statistical catch at age (SCA) model. The VPA model is no longer used. As of 2008, <math>SSB_{\text{threshold}} = 102</math> million lbs and <math>SSB_{\text{target}} = 81.3</math> million lbs.</p> <p>There has been an expansion in age structure of female fish ages 9+. A 17</p>

Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (6/2013)			
Management Areas	Action	Date	Comments
			<p>year old fish was caught in 2008.</p> <p>SSB has remained above 1995 SSB<sub>target</sub> from 1996-2009. Coastwide SSB was 111 million lbs. in 2011.</p>
Fishing Mortality (F)	The current target fishing mortality rate is $F=0.30$ and the overfishing definition is $F_{msy}=0.41$ . If coastwide estimated mortality rates exceed the target rate for 2 consecutive years the ASMFC Management Board will recommend harvest reductions	<p>2000 Continue</p> <p>2009 Continue</p> <p>Discontinued</p> <p>2013/2014</p>	<p>All CBP jurisdictions have implemented regulations to insure the target mortality is not exceeded. MD and VA have instituted tagging programs to estimate migration and mortality rates.</p> <p>Tagging data indicates striped bass <math>M</math> <u>may</u> be increasing unless CB emigration has increased. Increased <math>M</math> may reflect an increased incidence of mycobacteriosis, decreased prey availability, or poor water quality.</p> <p>---</p> <p>Variable natural mortality estimates are currently being used as part of the striped bass stock assessment. Estimates of <math>M</math> are based on tagging data. A time-varying <math>M</math> is estimated for two classes of fish, 18-28 inches (producer area fisheries) and 28+ inches (coastal fisheries). An increase of <math>M</math> over time is indicated. <math>M</math> is rising for all coastal striped bass, but the signal is particularly strong for 18-28 inch fish in MD's Chesapeake Bay.</p> <p>Marine Stewardship Council (MSC) Sustainable Fisheries Certification Assessment has been discontinued due to funding and programmatic issues.</p> <p>Implementation of catch shares management to the Maryland striped bass fishery is being pursued.</p>
Stocking	The coastal stock has been restored	1995	Maryland and Virginia discontinued stocking of striped bass
Bycatch reduction	CBP jurisdictions are required to estimate discard mortality to ASMFC	<p>1995 Continue</p> <p>2007</p>	<p>CBP jurisdictions are in full compliance. Estimates of bycatch discard mortalities are used in VPA of coastal stock.</p> <p>Addendum 1 to Amendment 6 of ASMFC FMP requires states to address bycatch and angler education. States are required to collect commercial and recreational catch and bycatch data that is consistent with ACCSP standards, coordinate data collection from Federal waters with NOAA Fisheries, and review discard mortality studies for information gaps. States are to implement angler education about best practices for catch and release fishing.</p>
Habitat	CBP jurisdictions are	2001	CBP jurisdictions have developed and implemented management strategies to

<b>Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (6/2013)</b>			
<b>Management Areas</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
	required to delineate essential fish habitat and habitat areas of concern	Continue  2010	<p>protect striped bass habitat. Striped bass harvest in Maryland is prohibited in spawning areas (tributaries) from March through May. Harvest is restricted to the CB mainstem.</p> <p>US EPA established a Chesapeake Bay TMDL “pollution diet” mandating nutrient and sediment reductions for compliance with the Clean Water Act.</p> <p>---</p> <p>DNR must effectively communicate the importance of natural resources to local and state planners and policy makers and the impacts of their land use decisions on those natural resources. Target and threshold levels for impervious surface and general management concepts have been developed for estuarine fisheries, which can be used to evaluate watersheds having striped bass habitat.</p> <p>The question is "Are there habitat or other issues that are manageable that are having a serious impact on dynamics". Management options and leverage points other than harvest management are being addressed by intra- and inter-departmental cooperation for managing watershed development (see watershed development issue). Fisheries Service and other DNR units (Chesapeake and Coastal Watershed Services, Resource Assessment Services, Office for a Sustainable Future, and Critical Areas Commission) are developing processes for addressing land planning and the cumulative impacts from development. DNR is engaging both the MD Department of Planning and Department of Environment</p> <p>Climate based indicators will require relationships to be developed between the stock and climate regimes. It is uncertain if current monitoring data is sufficient to formulate any indicators. This topic is being researched at the NOAA Oxford Lab.</p> <p>Climate change management, such as emissions reductions, requires federal and international policy. Strategies for managing MD’s natural resources, including fisheries, in lieu of climate change are being addressed by other DNR Units. There is uncertainty about striped bass response to climate change scenarios and there is a need to invest time planning management strategies and actions for those uncertainties.</p>

<b>Amendment 1 to the 1989 Chesapeake Bay Striped Bass Fishery Management Plan (6/2013)</b>			
<b>Management Areas</b>	<b>Action</b>	<b>Date</b>	<b>Comments</b>
			<p>A variety of factors can disrupt stream and river flows such as water withdrawal and blockages. Development, agriculture, and industry increase the incidence of less optimal habitat conditions for good year-class success. Analysis of flow vs. recruit/egg residuals should be explored. A recruit/egg index can be developed from spawning stock indicators such as the JAI, SSB, or egg presence-absence. Current required daily flood regimes on the Susquehanna River at Conowingo Dam do not mimic the patterns of a natural flow regime. The FERC is not required to modify electricity generation patterns to mimic natural flow regimes. Flow alterations from blockages are minimal for other areas of striped bass spawning.</p> <p>A catch-and-release policy should be considered if excessive losses were attributed to fisheries in hypoxic areas.</p>

**Implementation Table Acronyms**

ACCSP – Atlantic Coastal Cooperative Statistics Program  
 ASMFC – Atlantic States Marine Fisheries Commission  
 CB – Chesapeake Bay  
 CBP – Chesapeake Bay Program  
 COMAR – Code of Maryland Regulations  
 DCFM – District of Columbia Department of Consumer and Regulatory Affairs, Fisheries Management Section  
 DNR – Department of Natural Resources  
 EPA – Environmental Protection Agency  
 F – Fishing Mortality  
 FERC – Federal Energy Regulatory Commission  
 FMP – Fishery Management Plan  
 JAI – Juvenile Abundance Index  
 M – Natural Mortality  
 MDNR – Maryland Department of Natural Resources  
 MSY – Maximum Sustainable Yield  
 NOAA – National Oceanic and Atmospheric Administration  
 NRP – Maryland Natural Resources Police  
 PRFC – Potomac River Fisheries Commission  
 PSE – Proportional Standard Error  
 SARC – Stock Assessment Review Committee

SCA – Statistical Catch at Age  
 SSB – Spawning Stock Biomass (females)  
 TMDL – Total Maximum Daily Load  
 USFWS – U.S. Fish and Wildlife Service  
 VMRC – Virginia Marine Resources Commission  
 VPA – Virtual Population Assessment

## **Appendix 1. Management Plan Development and Review Process**

Fishery management plans (FMPs) provide a framework for how a fishery resource will be managed based on a species life history, habitat, and fishery utilization over time. Maryland law (Natural Resources Article §4-215) contains a statutory mandate for the development of FMPs for a given list of species. Legislation enacted in 2010 expanded MD Department of Natural Resources' (MDNR) authority to prepare FMPs for additional fish species. MDNR no longer needs to go to the General Assembly to justify adding new species to the list. FMPs can be prepared for species based on specific concerns about the status of a species and after consultation with the Tidal Fisheries Advisory Commission (TFAC) and the Sport Fisheries Advisory Commission (SFAC).

A Maryland Task Force on Fishery Management (Task Force) was convened in 2008 to review the current fishery management planning process and recommend improvements to the process that would increase stakeholder input and transparency during all stages of the FMP development and review process (Appendices 4 and 5 for flowcharts of the FMP Development Process and the FMP Review Process). The FMP staff developed a time line to review FMPs for 26 species. It is used to delineate an annual work plan.

FMP review begins with the designation of a Plan Review Team (FSPRT) by the Fisheries Service Director. The FSPRT evaluates the FMP goal, objectives, management strategies, and actions for their implementation status and applicability to current management needs. Depending on the particular species, the FMP review could also include the Chesapeake Bay Program and/or coordination with the Atlantic States Marine Fisheries Commission (ASMFC). After reviewing the components of the FMP and providing comments on the status of the management actions, the FSPRT recommends one of three pathways: 1) continue implementing the plan; 2) develop an amendment to significantly change or add to the FMP; or 3) revision of the FMP. The FSPRT drafts a FMP review report for review by the Fisheries Service Senior Management Team. The draft is also sent to the TFAC and SFAC for their review and input. The final, revised FMP review report is submitted to the Fisheries Service Director who makes the final decision regarding which of the three options to pursue: status quo, amendment, or revision.

In 2008, the Task Force emphasized the need for ecosystem-based management for all state managed fish species, including ASMFC managed species such as striped bass. The Task Force recommended MDNR continue research on the influence of habitat on fish populations, factors that impair fish habitat, participation in the environmental review process, updating regulations, transparent management framework, and outreach to County, local, and public entities. Chesapeake Bay jurisdictions are developing quantitative ecosystem-based management tools that will supplement traditional management tools currently in use. Ecosystem-based tools will address habitat, food web, stock assessment, and socioeconomic issues.

**Appendix 2.** Maryland Saltwater Sportfishing Association (MSSA) request for striped bass allocation review.



**Maryland Saltwater Sportfishing Association**  
8461 Ft. Smallwood Rd, Suite C, Pasadena, MD 21122 - 410-255-5535 - [www.mssa.net](http://www.mssa.net)

March 19, 2013

Dear Mr. Early,

In accordance with the striped bass Fisheries Management Plan and the Fisheries Allocation Review policy the Maryland Saltwater Sportfishing Association (MSSA) would respectfully request the Department of Natural Resources (DNR) review and adjust the striped allocation to meet the current social and economic needs of Maryland.

The MSSA is requesting an allocation review based on triggers set forth in the Fisheries Allocation Review Policy:

**Trigger 1.** Initial Development or revision of a FMP

**Trigger 2.** Changing social patterns & values

Recreational Shift - Increase

Increase in Effort: 1989 Angler Trips – 1,740,564; 2011 Angler Trips – 2,777,125 <sup>1</sup>

Increase in Participation: 1989 # of Anglers - 506,962; 2011 # of Anglers - 835,992 <sup>2</sup>

Commercial Shift – Negative (*waiting on data from DNR*)

**Trigger 3.** Management resources & Market Dynamics

When determining economic viability of activities supported by fisheries, the overwhelming evidence supports the conclusion that recreational fisheries provide more economic advantages than commercial fisheries do. According to the latest NOAA Economic Impact Data, recreational fisheries hold a 2:1 advantage over commercial fisheries. While this request for reallocation deals only with striped bass, the general economic advantages of recreational vs. commercial fisheries cannot be ignored.

It seems clear that the commercial fishery is not economically viable since, even after the commercial fee increase legislation in 2013, it will still have a management cost recovery deficit of \$1.1 million to be made up by other sectors. These fisheries have to account for a major part of the total management costs and therefore must share the deficit as well.

The economic viability of activities supported by commercial fishing, in general, has been threatened by a combination of seafood derived from importation and aquaculture. Recent DNR data indicates that seafood from the Chesapeake Bay makes up less than 2% of the seafood consumed by our citizens. Requiring the general non-fishing public to subsidize the commercial fisheries and then to rarely eat local seafood doesn't appear to be a fair and equitable use for the general funds derived from their taxes.

**Proposed Allocation Shift:**

90% Recreational / Charter Boat (65% recreational & 25% charter boat); 10% Commercial

Sincerely,

Dave Smith, Executive Director

<sup>1</sup> Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division March 27, 2013 – Effort Query

<sup>2</sup> Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division March 27, 2013 – Participation Query

**Appendix 3. K. Hastings allocation request letter.**

3/31/13

Tom O'Connell, Director  
Fisheries Service  
Tawes State Office Building  
Annapolis, MD 21401

**SUBJECT: Reallocation of Striped Bass**

Dear Tom:

I have carefully reviewed a draft "Department of Natural Resources Fisheries Allocation Review Policy." Unfortunately, the latest document I can find is un-dated, lacks the formality of having a policy number assigned, and shows an effective date of July XX, 2012. However, I assume this document reflects the prevalent thinking of Fisheries Service managers that, in my opinion, supports the need for a reallocation discussion regarding striped bass. Since a pending Fisheries Management Plan (FMP) revision is one of the triggers for such discussions, please consider this document as a formal request for reallocation of this resource as part of the scheduled striped bass FMP revision process.

**Concepts.** The Policy says that allocation:

1. "Shall be fair and equitable to all individuals."

According to "Sportfishing In America, An Economic Force for Conservation, January 2013," produced for the American Sportfishing Association, there were 223,921 licensed salt water anglers age 16 and older eligible to fish for striped bass in MD in 2011. It seems clear that the current allocation of this resource is neither fair nor equitable for the recreational sector comprising 99.5% of all eligible striped bass fishermen to get just 58% of the total annual allocation.

2. "Shall be reasonably calculated to promote conservation."

Since a reallocation would use the same policies and procedures to promote conservation and prevent over-fishing as are employed currently, there would be no negative change in how these goals are managed or the probability of success.

3. "Shall be carried out in such a manner that no particular individual, corporation or other entity acquires an excessive share of such privileges."

Under the current allocation policy, 1200 commercial striped bass permit-holders comprising only .5% of the eligible fishermen received 42% of the total allocation for MD. This allocation violates the requirement that no particular entity shall acquire an "excessive share" of the fishing privileges.

4. "Shall prevent over-fishing while attempting to achieve the best and most efficient utilization of the State's fishery resources."

It seems intuitive that allowing better access to the resource for the greatest number of citizens would be a better utilization of the resource than to continue the discrimination against the majority stakeholders funding Fisheries Service management above and beyond 100% cost



recovery for the recreational sector. Perhaps some of that “excess” license fee revenue could be used to determine how many fishermen catch how many fish instead of relying on indirect, inefficient surveys like MRIP.

**Overarching Factors.** The Policy also lists the following “overarching factors in allocation decisions:”

1. Social and cultural importance of maintaining fisheries and dependent industries.

For generations, the Chesapeake Bay has been a magnet for outdoor recreation and the iconic striped bass has been a major attraction. As our population has grown and the striped bass abundance has decreased, fewer citizens can fully enjoy the fishing traditions passed from one generation to another. The traditional pastime of recreational fishing for striped bass is threatened by inequitable access to the resource and decreasing abundance of fish.

2. Economic viability of dependent fisheries.

It seems clear that the commercial fishery is not economically viable since, even after the commercial fee increase legislation in 2013, it will still have a management cost recovery deficit of \$1.1 million to be made up by other sectors. The Department’s denial of my request for the dollar values of sector services determined during the cost recovery analysis precludes me from allocating a specific portion of the deficit to the commercial striped bass fisheries. However, these fisheries have to account for a major part of the total management costs and therefore must share the deficit as well.

Since the directed fisheries are not economically viable without subsidies, it follows that the dependent fisheries (bait?) are not economically viable either. Also, the major bait species associated with striped bass fishing are either protected under a moratorium (river herring) or reduced Total Allowable Catch (TAC) mandates from ASMFC (menhaden).

3. Economic viability of activities supported by the fisheries.

The economic viability of activities supported by commercial fishing, in general, has been threatened by a combination of seafood derived from importation and aquaculture. Recent DNR data indicates that seafood from the Chesapeake Bay makes up less than 2% of the seafood consumed by our citizens. Requiring the general non-fishing public to subsidize the commercial fisheries and then to rarely eat local seafood doesn’t appear to be a fair and equitable use for the general funds derived from their taxes. At best, wild striped bass make up much less than 2% of the local seafood diet after other major species are included. Certainly blue crabs have to be a large part of that diet, thereby reducing the % for striped bass even more.

When determining economic viability of activities supported by fisheries, the overwhelming evidence supports the conclusion that recreational fisheries provide more economic advantages than commercial fisheries do. According to the latest NOAA Economic Impact Data, recreational fisheries hold a 2:1 advantage over commercial fisheries. While this request for reallocation deals only with striped bass, the general economic advantages of recreational vs. commercial fisheries cannot be ignored. The somewhat dated “The Economics of Recreational & Commercial Striped Bass Fishing in Maryland, December, 2005” by Southwick Associates sets the retail sales advantage of recreational striped bass fishing over commercial striped bass fishing at 25.5 times larger.

4. Potential for new fisheries to develop.

The potential for new commercial fisheries to develop seems low given the Department's commitment to manage the striped bass fishery via catch shares. Unless, striped bass abundance increases (not likely in the near future), there will be no expansion of individual shares allocation and more likely there will be a decrease in shares allocation. However, a reallocation to improve recreational striped bass fishing would allow existing fisheries to expand and share the economic advantages of a world class recreational striped bass fishery.

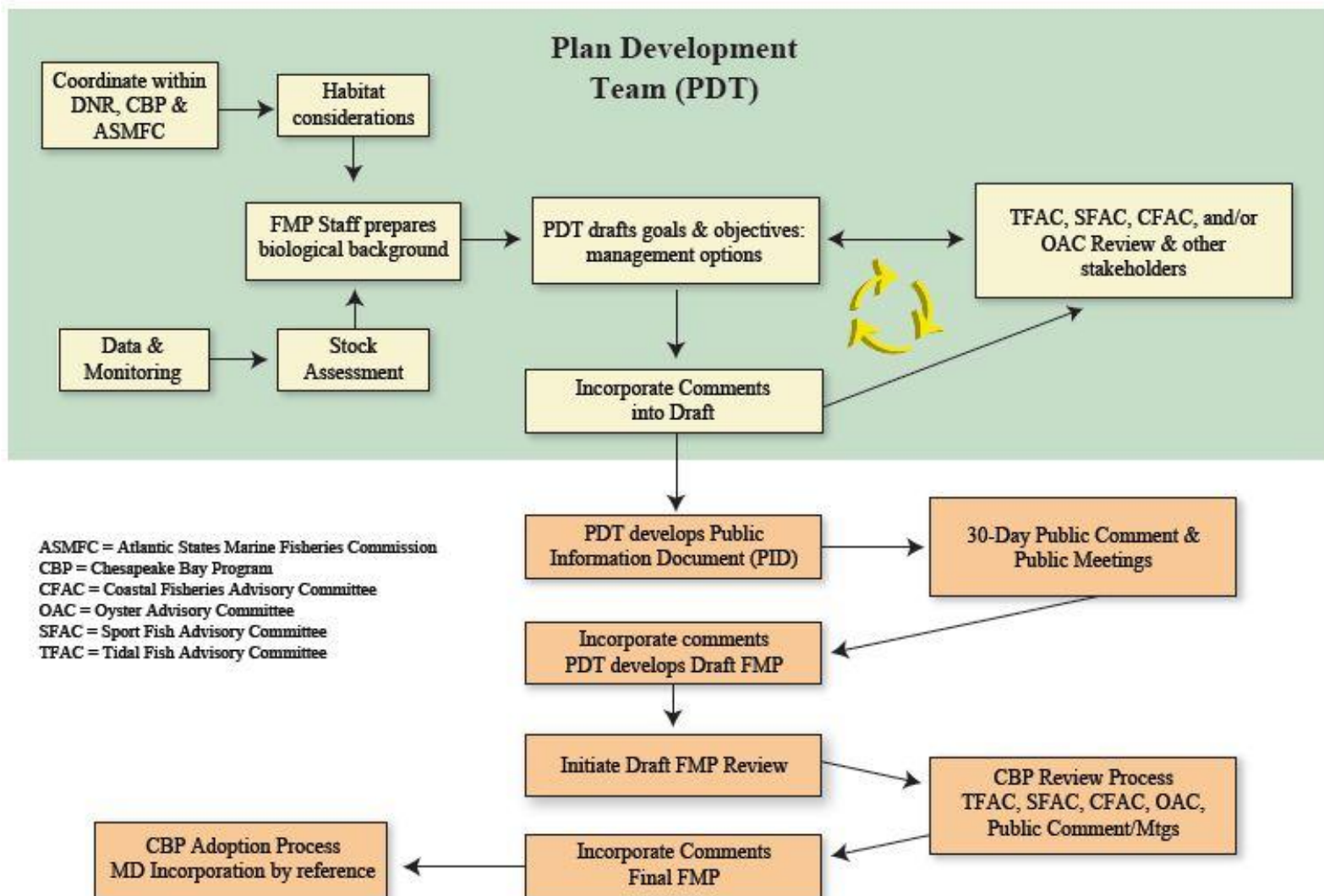
**Bottom Line.** This reallocation request addresses most of the issues identified in your policy document while providing a rationale for reallocation in terms of achieving stated goals regarding fairness, equity, efficiency, and economic viability. It also emphasizes the social and cultural importance of recreational fishing that is generally ignored by management allocation decisions.

Sincerely,

Ken Hastings

Appendix 3. Schematic of the fishery management plan development process in Maryland.

## Fishery Management Plan (FMP) Development Process



**Appendix 4.** Schematic of the fishery management plan review process in Maryland.

## Fishery Management Plan (FMP) Review Process

