2015 Maryland FMP Report (July 2016)
Section 6. Black Sea Bass (*Centropristis striata*)

Recreational management of black sea bass is confused by a stock that is at a high abundance in the northern part of its range and at low abundance in the southern part of its range. At the same time, the scientific and statistical committee (SSC) that informs the Mid-Atlantic Fishery Management Council (MAFMC) on quotas has not recommended any management changes in response to an overall increase in abundance. The result has been restrictive recreational fishing measures in the northern states and dissatisfied head boat captains up and down the coast. There remains a controversy about how to effectively manage a data-poor species.

A species usually associated with structure, black sea bass favor complex habitats such as cold water corals in federal waters, oyster reefs in Chesapeake Bay, and natural hard bottom. The movements of black sea bass determined by tagging studies are more regional than coast-wide migrations. As a result, regional management has been implemented and the coastal management framework is evaluated on a yearly basis.

Chesapeake Bay FMP

The Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan (BSB FMP) was adopted in 1996. At that time, the black sea bass stock was overfished. The BSB FMP was developed to reduce fishing mortality particularly on juvenile black sea bass. The Chesapeake Bay and Coastal Bays provide nursery areas for juvenile black sea bass which utilize reef structures and submerged aquatic vegetation (SAV). Protecting these two habitats is part of the Chesapeake Bay Program's habitat goals.

Black sea bass were incorporated as one component of the Atlantic States Marine Fisheries Commission (ASMFC) and Mid-Atlantic Fishery Management Council (MAFMC) joint management framework for summer flounder and scup in 1996 with a Black Sea Bass Fishery Management Plan (ASMFC/MAFMC BSB FMP). The ASMFC/MAFMC FMP implemented permit requirements for charter boats, commercial fishermen, and seafood dealers; specifications for fishing gear; and criteria to designate special management zones around artificial reefs. A progressive implementation schedule was instituted to increase minimum length, reduce landings, modify gear, and introduce a commercial quota system. Several addenda (ASMFC), frameworks (MAFMC), and amendments have been implemented to modify the overfishing mortality threshold and target exploitation rates and quota management.

Addenda IV (2001), VI (2002), XVI (2005) improved upon the timeliness of developing and implementing management requirements. Framework 1 (2001) established a research set-aside quota. The ASMFC/MAFMC Amendment 13 (2002, 2003) was developed to reduce fishing mortality, improve yield, align and minimize jurisdictional regulations; and revised the commercial quota system. Addendum XII (2004) instituted state-by-state quota shares for the commercial fishery; Maryland's share is 11%. Addendum XIII (2004) and Framework 5 (2004) established that a commercial quota can be specified for up to three years at a time. Addendum XIX (2007) continued state-by-state commercial quota management which began in 2003. Framework 7 (2007) improved the efficiency of implementing management actions as stock status changed. Amendment 16 (2007) standardized requirements for bycatch reporting. Addendum XX (2009) streamlined the procedures for commercial quota transfer among states. Addenda XXI (2011), XXIII (2013), and XXV (2014) provided flexibility for regional management measures. Addendum XXVII (February 2016) continues the use of adaptive regional management measures for the recreational fishery in 2016.

Stock Status

Black sea bass are protogynous hermaphrodites which means they begin life as a female but change sex to male. For black sea bass, this change typically occurs between ages 2 to 5 (9" to 13"). Protogyny increases the uncertainty associated with stock assessments.

Black sea bass from Cape Hatteras, North Carolina to the United States-Canadian border are managed as a single northern stock. The northern black sea bass stock is not overfished and overfishing is not occurring.[1] Revised biological reference points (BRP) presented in the Northeast Fisheries Science Center's 2012 stock assessment were rejected by the review committee due to model uncertainties.[1] The target fishing mortality (F) is 0.42, F threshold is $F_{40\%}$ = 0.44, target spawning stock biomass (SSB) is 12,537 metric tons (27.6 million pounds), and threshold $SSB_{40\%}$ is 10,886 metric tons (24.0 million pounds). [2, 3] Current F is 0.21 and SSB is 24.6 million pounds.[3] Reference points and stock status should be viewed with caution.[4] A new stock assessment is scheduled for 2016 and the working group has already met to begin the process.

Maryland monitors black sea bass juvenile abundance using trawl and beach seine surveys in the Coastal Bays. In Maryland, the geometric mean catch per unit effort (CPUE) for juveniles has varied annually since the surveys were standardized in 1989. There is no CPUE trend for either the trawl or beach seine surveys. Maryland does not collect fishery-dependent black sea bass data.

Current Management Measures

Coastwide, the commercial fishery is allocated 49% of the total allowable catch and the recreational sector is allocated the remaining 51%.[3] The 2016 and 2017 coastwide commercial quotas are 2.7 million pounds for each year. [5] Among the coastal states, Maryland receives 11% of the commercial quota. In a given fishing season excess quota in one state can be transferred to another state which has exceeded its quota.

The Maryland commercial black sea bass fishery is managed through limited entry. A permit transfer from a licensed fisherman is required to enter the fishery and individual fishing quotas are assigned to each black sea bass permit holder. Quota reserved for permit holders who do not enter the fishery is reallocated among declared permit holders. However, an individual is not allowed to have >20% of the quota. Overages are deducted from the following year's quota allocation. Quota is allocated among four commercial sectors: 87% pots, 11% trawl, 1% hook and line, and 1% for all other fishing gear. Licensed commercial fishermen without a commercial black sea bass permit card are limited to landing 50 lbs. per day. The commercial fishery has an 11" minimum size limit.[7]

Maryland's recreational fishery (including federal waters) in 2015 was managed with a 12½" minimum size, 15 fish per person per day creel, and was open May 15 – September 21 and October 22 – December 31.[7,8] In Maryland, almost all of the recreational black sea bass fishery occurs in federal waters.[9] A recreational quota is not allocated among the states but a coastwide total allowable landings (TAL) is determined. Since 2012, states have worked together to establish regional regulations to comply with ASMFC requirements (conservation equivalency). There are no changes in recreational fishing measures for 2016.

The Fisheries

Maryland's 2015 commercial quota was 239,000 pounds[11] with a reported harvest of 230,018 pounds (Figure 1). Maryland's quota for 2016 is 298,289 pounds.

States do not get individual recreational quotas. The north and mid-Atlantic recreational harvest limit for 2013 and 2014 was 2.26 million pounds. For 2016 and 2017, the coastal recreational quota was increased to 2.82 million pounds. Maryland's recreational harvest estimate was 87,000 pounds (68,500 fish) in 2014 and 78,000 pounds (57,600 fish) in 2015 (Figure 2).[12] Limits for 2017 may be adjusted as necessary based on additional data from previous years and recommendations from the next stock assessment scheduled in 2016.

Issues/Concerns

The 2012 black sea bass stock assessment peer review rejected the use of an age-based assessment model due to the limited amount of age data for the assessment. The ASMFC convened an ageing workshop for northern stock black sea bass in 2013 to establish standardized methodology to determine ages from otoliths and scales.[13] Standardization of methods was hoped to increase the number of data sets that could be incorporated into the assessment models. However, age in black sea bass is extremely variable. The nature of the tail and the propensity to break off the filament confound management based on age at length.

Tagging results indicate that black sea bass migration is limited to regional areas. Addenda XXI, XXII, XXIII, XXV and now XXVII have been implemented to facilitate regional management including regional management. This management framework is being proposed on an annual basis.

The scientific and statistical committee (SSC) from the Mid-Atlantic Fishery Management Council (MAFMC) continues to use a cautionary approach to setting harvest quotas because they consider the stock assessment data poor. This has led to restrictive recreational management measures especially in the northern states where there has been an increase in abundance. Since data for the species is lacking, the SSC has maintained a conservative approach and has not changed the quota. There remain many questions about how to effectively manage a data poor species.

Figure 1. Black sea bass harvested by the commercial fishery in Maryland: 1990 – 2015.[12]

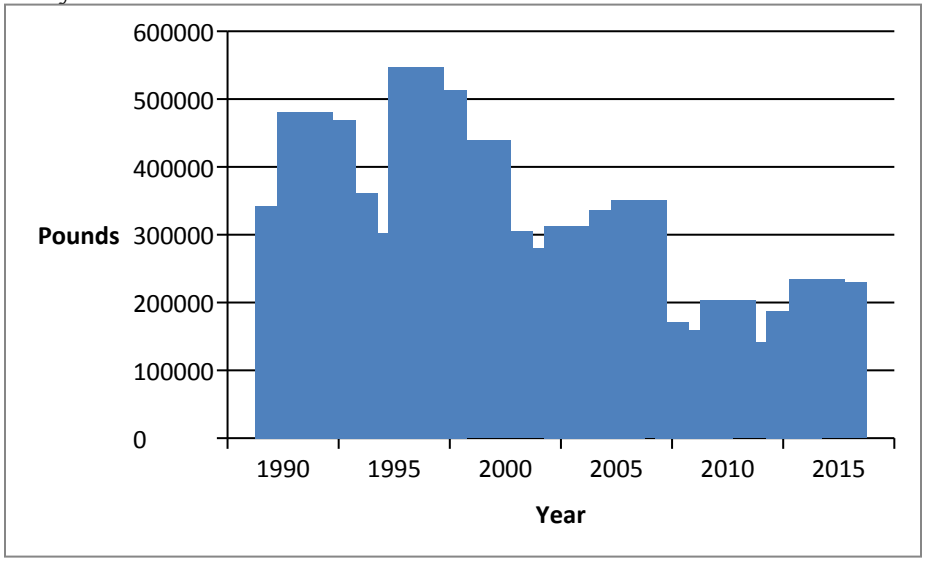
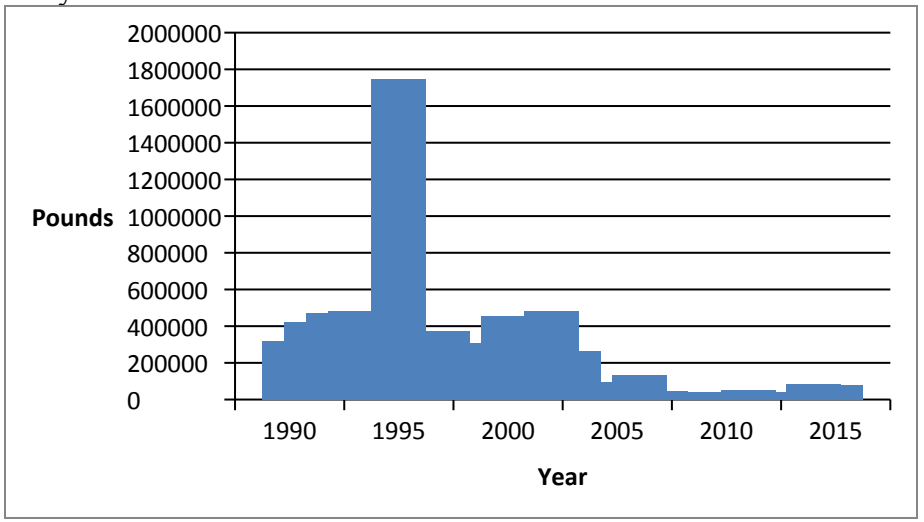


Figure 2. Estimated recreational harvest of black sea bass from Maryland: 1990-2015.[10]



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[11] Federal Register / Vol. 79, No. 99 / Thursday, May, 22, 2014 / Rules and Regulations.

[12] Personal communication from the National Marine Fisheries Service, Fisheries Statistics. Accessed on August 18, 2016. Division. http://www.st.nmfs.noaa.gov/st1/commercial/.

[13] Atlantic States Marine Fisheries Commission. 2013. Proceedings of the 2013 black sea bass ageing workshop. Atlantic States Marine Fisheries Commission. Alexandria, VA.

1996 Chesapeake Bay and Atlantic Coast Black Sea Bass Fishery Management Plan Implementation Table (updated 7/2016)			
Strategy	**Action**	**Date**	**Comments**
1.1) Reduce fishing mortality, increase YPR and provide more escape opportunities for small BSB to the spawning stock. A maximum spawning potential level of 22-30% should be achieved.	1.1a) The Bay jurisdictions will implement a 9" minimum size limit for commercial and recreational BSB fisheries in year 1 (1996) and year 2 (1997) of the plan. Beginning in year 3 (1998), the minimum size will be determined by MAFMC on an annual basis. Regulations will be written so that they are applicable to all fish landed in a state, whether caught in state or federal waters.	1996 1997 Continue 2003 2004 2009 2014	BSB have exceeded the survey index since 2003 and are not considered overexploited. The minimum size limit for the commercial fishery was 11 inches and for the recreational fishery was 11.5 inches with a 25 fish/day /person creel limit. In MD, individual commercial BSB quota and limit are identified on a BSB permit card. Non permitted individuals are limited to landing ≤50 lbs. MD & VA with an 11" minimum size limit for the commercial fishery. MD recreational minimum BSB size limit increased to 12.5"with a creel limit of 25/person/day VA recreational minimum BSB size limit increased to 12.5"with a creel limit of 25/person/day. MD & VA reduced their recreational creel to 15 fish/person/day and maintained the 12.5" size limit.
	1.1b) Based on the MAFMC Monitoring Committee's evaluation of the success of the FMP relative to the overfishing reduction goal, additional restrictions such as seasonal closures, creel limits, quotas, and limited entry, may be established.	Continue 2000 2002 2003 2010 2013	Amendment 13 of the MAFMC and ASMFC's Summer Flounder, Scup and BSB FMP changed the management of the commercial fishery from coastal quarterly quotas to state by state allocations. MD is allotted 11% of coastwide landings and VA is allotted 20%. The BSB fishery is open year round in MD & VA until quota is met. MD & VA implemented recreational closures from January 1 to May 21 and October 12 to October 31. Closure was revised to January 1-May 18 and September 19-October 17. Closure adjusted to January

		2015-2016 2010 2012	1 to May 14 and September 22 to October 21. Stock was assessed in 2010. The black sea bass coastal stock is not overfished and overfishing is not occurring based on 2012 revised BRPs.
1.2) Management agencies will require the use of escape panels, trawl efficiency devices, selective mesh sizes, culling devices and/or other methods to promote gear efficiency and reduce bycatch.	1.2a) VA, MD, and PRFC will investigate the potential for innovative devices designed to reduce the bycatch of juvenile finfish in non-selective fisheries. Continued testing of these bycatch reduction devices will be encouraged.	2000 Continue	PRFC tested plastic escape panels for pound nets. The device can provide escapement provide escapement for up to 80% of undersized fish.
	1.2b) VA and MD will work with MAFMC/ASMFC to develop and require the use of more efficient gear consistent with policies designed to reduce bycatch and/or discards.	As specified	No specific gear alterations have been recommended.
	1.2c) VA and MD will implement a mesh size of 4.0 inch diamond mesh for trawl vessels harvesting more than 100 pounds of BSB per trip. Changes in minimum mesh size will be implemented based on MAFMC/ASMFC recommendations. VA will continue its ban on trawling in state waters. PRFC will continue its ban on Potomac River.	1996 1980 1981 1992 2004 On-going	Mesh size requirements for the commercial fishery are appropriate for the minimum size requirements. MD COMAR 08.02.05.21: Minimum mesh: larger nets are required to possess a minimum of 75 meshes of 4 ½" diamond mesh in the cod-end or the entire net must have a minimum mesh size of 4 ½" throughout; smaller nets must have 4.5" mesh or larger throughout. Maximum roller rig trawl roller diameter ≤ 18"
	1.2 d) VA and MD will require escape vents in BSB pots, based on the recommendations of MAFMC/ASMFC. The minimum size requirements will be considered after the MAFMC completes its study on escape vents.	Continue 1996	Chesapeake Bay Program (CBP) jurisdictions are in compliance with vent requirements in pots and traps. MD COMAR: Unobstructed escape vent in holding chamber of at least 2 ½" diameter, if circular, or 2 ½" stretched mesh size if square. 4VAC20-950-40: Two escape vents of 2 ½" circular

		1996 1996	dimension, 2” square dimension, or 1 3/8” by 5 ¾” rectangular dimension. MD & VA require hinges or fasteners on one side panel or door made of the following materials: a) Untreated hemp, jute, or cotton string of 3/16” or less diameter; b) Magnesium alloy, timed float releases (pop-up devices), or similar magnesium alloy fasteners; or c) ungalvanized or uncoated iron wire of 0.094” or less in diameter.
	1.2e) The jurisdictions will define a BSB pot for enforcement requirements as recommended by the MAFMC.	2002 2008	Was not defined because CBP jurisdictional commercial fishermen use lobster pots and fish traps to catch both lobster and black sea bass. MD COMAR 08.02.05.02: (9) "Fish pot" means a single, finfish entrapment net device, without associated wings or leads, consisting of: (a) An enclosure of various shapes covered with wire, fabric, or nylon mesh webbing of not less than 1 ½” stretched mesh size; (b) One or more conical entrance funnels; (c) One or more unobstructed escape vents, in the holding chamber, of at least 2 ½” in diameter, if circular, or 2 ½” stretched mesh size if square. VA does not have a fish pot definition.
	1.2f) VA and MD will require that BSB pots and traps have biodegradable hinges and fasteners on one panel or door.	1996 Completed 2002	MD & VA require hinges or fasteners on one side panel or door made of the following materials: a) Untreated hemp, jute, or cotton string of 3/16” or less diameter; b) Magnesium alloy, timed float releases (pop-up devices), or similar magnesium alloy fasteners; or c) ungalvanized or uncoated iron wire of 0.094” or less in diameter. Pots and traps having wooden slats will remove one set of parlor slats so it is 1 1/8” apart.
2.1) VA and MD will work with	2.1a) Research on effects of hermaphrodism	Continue	Although the stock has been rebuilt, management

the Institute of Marine Science, Old Dominion, and University of Maryland to promote research concerning the effects of sex-reversal. The stock assessment departments of VMRC, MDNR, and PRFC will continue to collect information on size composition in commercial catches as part of a coastwide effort to monitor the effects of minimum sizes on BSB stocks.	on yield, spawning stock and other parameters will be encouraged. VMRC's stock assessment department, in cooperation with VIMS, will attempt to determine the appropriate size at which sex reversal takes place for BSB in this region.	2009	measures have been kept conservative because of unknown population dynamics due to hermaphrodism. Increased uncertainty in the stock assessment model was incorporated because black sea bass are protogynous hermaphrodites,.
	2.1b) VA will continue its annual VIMS Trawl Survey, of estuarine finfish species and crabs found in VA Bay waters, to measure size, age, sex, distribution, abundance, and catch-per-unit-effort (CPUE).	1997 2002 Continue	BSB were sporadically caught during the 2002-2006 trawl surveys. The majority of BSB abundance and biomass exist in Virginia waters of the Chesapeake Bay. Typically, BSB are first observed during the summer and peak during the fall portions of the survey. BSB may be observed during spring trawls.
2.2) The jurisdictions will promote research to define movements and mortality of BSB between state and federal waters.	2.2a) VMRC's Stock Assessment Program will continue to collect biological data (age, size, sex) from commercial catches of BSB.	Continue	Biological data is used for the coastal stock assessment.
	2.2b) Research on migration of BSB between inshore and offshore areas will be encouraged. Tagging experiments to provide data on BSB migration may be funded from sales of VA saltwater fishing licenses.	Continue	In VA, black sea bass is 1 of 10 species currently being tagged in the Virginia Volunteer Angler Gamefish Tagging Program.
	2.2c) PRFC will collect information on BSB harvested and discarded in the Potomac River pound net fishery as part of a two year pound net study funded by the Atlantic Coastal Fisheries Cooperative Management Act (ACFCMA).	Continue	PRFC continues to collect BSB harvest data.
2.3) MD, VA and PRFC will continue to support interjurisdictional efforts to maintain a comprehensive database on a baywide scale.	2.3a) The jurisdictions will collect information on commercial landings.	2008	MD does not have a fishery-dependent monitoring program. Data is occasionally collected from the recreational for-hire fishery. Northeast Data Poor Stocks Working Group determined that BSB are undergoing overfishing, but the stock is not overfished. ASMFC Technical Committee declared stock rebuilt.

		2010	Revised BRPs are $F_{40\%}$ = 0.42 and $SSB_{40\%}$ = 27.6 million pounds. Overfished threshold is $SSB_{threshold}$ = 24.0 million pounds.
		2015	Maryland commercial landings were 230,018 lbs. in 2015.
	2.3b) VA will continue to supplement MRFSS data with more detailed catch statistics at the state level.	1996-1997 2012	MRFSS is used to collect recreational catch data. MRFSS replaced with the MRIP survey.
		2015	Maryland recreational estimate was 78,000 lbs. (57,600 fish) for 2015.
	2.3c) MD will require mandatory reporting for all black sea bass landed in Maryland, wherever harvested.	Continue	Data is included in commercial fishery statistics.
3.1a) Restoration of aquatic reefs would lead to increased habitat for black sea bass. Jurisdictions will continue to expand and improve their current oyster restoration programs with periodic program evaluations to ensure maximum success. Specific attention should be focused on aquatic reefs in the salinity range of the black sea bass.	3.1aA) MD and VA will continue implementation of the 1994 Oyster FMP which combines the recommendations of both the VA Holton Plan and the MD Roundtable Action Plan.	Continue	CBP jurisdictions developed a 2004 Oyster Management Plan (2005) which combines the FMP and habitat objectives. It includes reef development using reclaimed and fresh oyster shell, oyster repletion and oyster sanctuary and harvest reserve areas. Maryland is currently managing oyster restoration under the Maryland 10-point Action Plan.
		2008	*Crassostrea virginica* (native oyster) and not *Crassostrea ariakensis* (Asian oyster) will be used for reef development following the Environmental Impact Statement for Oyster Restoration in Chesapeake Bay Including the Use of a Native and/or Nonnative Oyster.
		2010	Maryland is implementing a 10-point Oyster Restoration and Aquaculture Development Plan. The plan increases the network of oyster sanctuaries from 9% of available habitat to 25%. The priority targeted restoration areas are Harris Creek, Tred Avon and Little Choptank.

		2015	**The management of oyster sanctuary areas is under review and a final report is scheduled for completion in July 2016.**
	3.1aB) MD and VA will continue the implementation of the Aquatic Reef Habitat Plan.	Continued 2007 Continue 2010 On-going	Artificial Reef Committee, Maryland Artificial Reef Initiative, and Maryland's Artificial Reef Management Plan were developed and several reefs have been created in Bay and the Atlantic Ocean. Reefs are qualitatively monitored with underwater video. ARC and MARI have begun support for shallow water (<20 ft.) reef projects. For a complete list of reef sites go to http://dnr2.maryland.gov/fisheries/Pages/reefs/index.aspx
3.1b) The creation of new artificial reefs and the expansion and improvement of preexisting reefs will provide additional habitat for the BSB population.	3.1bA) Jurisdictions will continue to maintain, expand, and improve their artificial reef programs.	Continuing 1996-2006 2007 2008	In VA, artificial reefs are being funded through Recreational Advisory Board. All artificial reefs created by funds from recreational license revenues adhere to the gear type prohibition. MD terminated its program in 1996. Artificial reef development was administered in the Chesapeake Bay by MD Environmental Service and in the Atlantic Ocean by the Ocean City Reef Foundation (OCRF). MD Artificial Reef Committee and the MD Artificial Reef Initiative (MARI) were established to develop reefs in cooperation with OCRF. Both MARI and OCRF accept private donations while MD contributes funds when available for reef development projects. 44 NY subway cars were deployed off Ocean City. USN Destroyer *Radford* is being prepared for reefing.

		Continue 2011	Ship continues to be tested for contaminants. Additional funding is required. Permits are pending. OCRC continues to deploy small steel hulled vessels and concrete material for reef development. USN Destroyer *Radford* was reefed on August 10, 2011. The vessel has since broken into 3 pieces but remains upright.
	3.1bB) VA recently prohibited use of all gear except recreational rod and reel, hand-line, spear, or gig on four artificial reefs in state waters.	Continuing 1998	MD and VA adopted legislation that prohibits hydraulic clamming (and crab dredging in VA) in or near SAV beds.
3.2) Jurisdictions will continue efforts to "achieve a net gain in submerged aquatic vegetation distribution, abundance, and species diversity in the Chesapeake Bay and its tributaries over current populations	3.2a) Protect existing SAV beds from further losses due to degradation of water quality, physical damage to plants, or disruption to the local sedimentary environment as recommended by Chesapeake Bay SAV Policy Implementation Plan. • Protect SAV and potential SAV habitat from physical disruption. Implement a tiered approach to SAV protection, giving highest priority to protecting Tier I and II areas but also protecting Tier III areas from physical disruption. • Avoid dredging, filling or construction activities that create turbidity sufficient to impact nearby SAV beds during the SAV growing season. • Establish an appropriate undisturbed buffer around SAV beds to minimize the direct and indirect impacts on SAV from activities that significantly increase turbidity. • Preserve natural shorelines. Stabilize	Continue 2003 2011	MD implemented a living shorelines program in 1970 to encourage vegetative shoreline stabilization. Regulations are in place to prohibit dredging through SAV beds. Tiered designation and prioritization of SAV beds has not been implemented. Avoidance of dredging, filling and construction impacts to SAV is strictly enforced by MDE and USACE with input from DNR, USFWS, and NMFS. MD has not established undisturbed buffers. VA has established buffer criteria. The revised SAV goal adopted by Chesapeake Bay Program is restoration of 185,000 acres of SAV by 2010 and planting 1,000 acres of SAV by 2008. Only 15% of restoration target was met by 2008. There's been very little long-term survival from SAV plantings. STAC reviewed the SAV restoration projects during 2011 and concluded that the projects were operationally successful but functionally unsuccessful.

	shorelines, when needed, with marsh plantings as a first alternative. Use structures that cause the smallest increase in local wave energy where planting vegetation is not feasible. • Educate the public about the potential negative effects of recreational and commercial boating on SAV and how to avoid or reduce them.	2014 2008	The restoration planting goal was revised to 20 acres per year. A new Chesapeake Watershed Agreement was adopted (June 2014) to achieve the ultimate goal of 185,000 acres of SAV baywide with a target of 90,000 acres by 2017 and 130,000 acres by 2025. MD legislated that shoreline stabilization projects must use living shoreline techniques unless demonstrated to be infeasible.
	3.2b) Set and achieve regional water and habitat quality objectives that will result in restoration of SAV through natural revegetation as recommended by the Chesapeake Bay SAV Policy Implementation Plan.	Continuing	Water quality criteria have been adopted http://www.chesapeakebay.net/issues/issue/nutrients.
	3.2c) Set regional SAV restoration goals in terms of acreage, abundance, and species diversity considering historical distribution records and estimates of potential habitat as recommended by the Chesapeake Bay SAV Policy Implementation Plan.	2003 2011 On-going 2014 2015	Bay wide SAV restoration goal was 1,000 acres planted by 2008. In 2012, the restoration planting goal was revised to 20 acres per year. Little progress has been made since 2010 and a SAV restoration goal was not included in the new Chesapeake Watershed Agreement. One acre was planted in 2013. Tracking of this indicator was discontinued in 2014 with a programmatic focus on restoring water clarity and protecting existing Bay grass beds. SAV covered 59,927 acres in 2013. SAV increased 27% to 75,835 acres in 2014. This increase is attributed to a rapid expansion of widgeongrass and a modest recovery of eelgrass. Between 2014 and 2015, SAVs increased by 21% for a total of 91,621 acres. This marks 3 years of consecutive growth. See Chesapeake Bay Program website for

			updates on SAV restoration. http://www.chesapeakebay.net/issues/issue/bay_grasses
3.3) Establish a goal of no net loss of wetlands and a long term goal of a net resource gain for tidal and nontidal wetlands as recommended in the Chesapeake Bay Wetlands Policy.	3.3) Jurisdictions should strive towards achieving the following, especially in the salinity range of BSB. • Define the resource through inventory and mapping activities. • Protect existing wetlands. • Rehabilitation, restoring and creating wetlands. • Improving education. • Further research.	Continuing 2006 Continuing 2006 Continue 2009 Continue 2012 2014	Programs have been expanded to the tributaries. GIS mapping activities are underway to target protection and restoration efforts habitat resources, but habitats are not targeted for a single, specific species' benefit. MD developed a Blue Infrastructure that includes mapping of BSB habitats such as structural habitat and SAV. MD developed a Blue Infrastructure that includes mapping structural habitat and SAV. Wetland mosquito ditches from the 1930s-1940s are being plugged to reduce tidal flow and restore wetland hydrology and function. Wetland enhancement and restoration is tracked cumulatively among tidal and non-tidal wetlands and salinity regimes. Between 2010 and 2012, wetland acres established or re-established in MD = 1,646 and in VA = 16,853. Wetland acres enhanced or rehabilitated from 2010-2012 in Chesapeake Bay watershed was 5,503. See Chesapeake Bay Program website for updates on wetland rehabilitation and restoration. http://www.chesapeakebay.net/indicators/indicator/tidal_wetlands_abundance http://www.chesapeakebay.net/indicators/indicator/restoring_wetlands
3.4) Jurisdictions will continue efforts to improve baywide water quality through the efforts of	3.4a) Based on the 1992 baywide nutrient reduction plan reevaluation, the jurisdictions will:	Continue	Maps that indicate regions of concerns for living resources have been developed.

programs established under the 1987 Chesapeake Bay Agreement. In addition, the jurisdictions will implement new strategies, based on recent program reevaluations, to strengthen deficient areas.	• Expand program efforts to include tributaries. • Intensify efforts to control nonpoint sources of pollution from agriculture and developed area. • Improve on current point and nonpoint source control technologies.	2009 2012/2014	President Obama executive order recommitting federal agencies to Bay restoration and regulatory enforcement. The Chesapeake Bay Program and Chesapeake Bay jurisdictions signed a new Watershed Agreement with 2 year milestones for nutrient reduction and water quality improvement. See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/track/restoration
	3.4b) Based on the 1994 Chesapeake Bay Toxics Reduction Strategy Reevaluation Report, the jurisdictions will emphasize the following four areas: • Pollution Prevention: Target "Regions of Concern" and "Areas of Emphasis. • Regulatory Program Implementation: Insure that revised strategies are consistent with and supplement pre-existing regulatory mandates. • Regional focus: Identify and classify regions according to the level of contaminants. • Directed Toxics Assessment: Identify areas of low level contamination, improve tracking and control of non-point sources.	Continue	See Chesapeake Bay Program website for updates on nutrient reduction. http://www.chesapeakebay.net/track/health/factors Chesapeake Bay Program is monitoring levels of mercury, PCBs, PAHs, organophosphate and organochloride pesticides.
	3.4c) The jurisdictions will continue to develop, implement and monitor their tributary strategies to improve bay water quality.	Continuing 2010 2013	Ambient water quality criteria of DO, water clarity, and chlorophyll-a have been adopted for the Chesapeake Bay (April 2003). EPA's Phase I TMDL requirements (WIP development) completed. Phase II requirements have been initiated. Targets and progress will be evaluated in 2017 and Phase III WIPs will be developed.

Acronyms

ARC – Artificial Reef Committee

ASMFC – Atlantic Marine Fisheries Commission
BSB – Black Sea Bass
CB – Chesapeake Bay
COMAR – Code of Maryland
CPUE – Catch per Unit Effort
DO – Dissolved Oxygen
EPA – Environmental Protection Agency
F – Fishing Mortality
FMP – Fisheries Management Plan
GIS – Geographic Information System
MAFMC – Mid-Atlantic Fisheries Management Council
MARI – Maryland Artificial Reef Initiative
MDE – Maryland Department of the Environment
MDNR – Maryland Department of Natural Resources
MRFSS – Marine Recreational Fisheries Statistics Survey
NMFS – National Marine Fisheries Service
PAH – Polycyclic Aromatic Hydrocarbon
PCB – Polychlorinated Biphenyl
PRFC – Potomac River Fisheries Commission
RHL – Recreational Harvest Limit
SAV – Submerged Aquatic Vegetation
SSB – Spawning Stock Biomass
STAC – Scientific and Technical Advisory Committee
TAL – Total Allowable Catch
TMDL – Total Maximum Daily Load
USACE – U.S. Army Corps of Engineers
USFWS – U.S. Fish and Wildlife Service
VAC – Code of Virginia
VIMS – Virginia Institute of Marine Science
VMRC – Virginia Marine Resource Commission
WIP – Watershed Implementation Plan
YPR – Yield per Recruit