2015 Maryland FMP Report (August 2016)
Section 8. Bluefish (*Pomatomus saltatrix*)

As a top predator in the marine and estuarine food web, bluefish are likely to accumulate contaminants such as mercury and polychlorinated biphenyls (PCBs) in their body tissue. A recent report indicates that mercury levels in bluefish have steadily been dropping over the last four decades. The results indicate that regulations on mercury pollution are working. The Maryland Department of the Environment (MDE) monitors contaminants in fish. Based on their monitoring data, MDE recommends not consuming bluefish 15 inches and longer.

Bluefish are a coastal, pelagic species inhabiting inshore and offshore waters of the eastern coast of the United States. Their seasonal migration ranges from Maine to Florida along the Atlantic coast. Estuaries and other near shore habitats are used as nurseries by bluefish larvae and by juveniles. Bluefish are highly targeted by the recreational fishery due to their aggressive feeding behavior. High numbers of large bluefish in the recreational fishery have not been seen in the Chesapeake Bay since the early 1990's. Commercial harvest of bluefish occurs but their soft flesh make them a poor choice to freeze and this limits their market demand. In 2015, new biological reference points were developed during the benchmark stock assessment of the coastal stock because of the uncertainty in the stock recruitment relationship. Based on data through 2014, the bluefish stock is not overfished and overfishing is not occurring.

Chesapeake Bay FMP

The Chesapeake Bay Bluefish Fishery Management Plan (CBB FMP) was adopted in 1990 and amended in 2003. The CBB FMP Amendment 1 adopted the Mid-Atlantic Fisheries Management Council (MAFMC) and the Atlantic States Marine Fisheries Commission (ASMFC) coastal overfishing definition and rebuilding schedule. The 1989 ASMFC/MAFMC FMP was initially developed to address the concerns raised by recreational fishermen about harvest by the tuna purse seine fisheries.

The coastal bluefish FMP was the first FMP to be developed jointly by an interstate commission and regional fishery management council. The MAFMC/ASMFC FMP was amended by ASMFC in 1998 to prevent recruitment overfishing, reduce fishing waste, improve cooperative management among states, maximize availability, and improve biological understanding of the species. Addendum I to Amendment 1 (2012) mandated increased collection of length at age data by states responsible for 5% or more of the coastal harvest; MD is exempt from the mandate.[1] The MAFMC has amended the FMP five times (2000, 2007, 2011, 2014 and 2015). The 2015 omnibus amendment for all MAFMC species adds various measures to improve and expand on the Standardized Bycatch Reporting Methodology. It is unclear how this amendment will affect bluefish fisheries because commercial discards are considered to be negligible in the stock assessment.

Maryland is required to submit an annual compliance report to ASMFC. The compliance report describes the fishery dependent and independent monitoring, current regulations, commercial and recreational landings, and planned management actions.[3]

Stock Status

Bluefish are managed as a single coastal stock. A benchmark stock assessment (SA) completed in 2015 projected stocks status through 2018.[2] The peer-reviewed assessment used new input data to improve upon the shortcomings of the previous model, which relied heavily on uncertain relationships between spawning stock biomass (SSB) and future recruitment. Catch estimates and juvenile recruitment indices were incorporated into the age-structured assessment program (ASAP) model to produce estimates of fishing mortality (F) and stock biomass.[4] The 2015 assessment resulted in lower biomass estimates and reference points than the previous model, and a 10% decrease in the acceptable biological catch (ABC) to 19.45 million pounds.[2]

Bluefish are not overfished, i.e. spawning stock biomass in 2014 (191 million pounds) was above the SSB threshold (112 million pounds). SSB was 50% of the target level of 223 million pounds. Overfishing is not occurring, i.e. fishing mortality (F) in 2014 (0.157) was below the threshold of 0.17. Fishing mortality has declined steadily since 2007.[2] Coastal recruitment has historically been variable, but a period of low recruitment persisted from 2008-2012. Coastal recruitment in 2013 and 2014 was above average. Total abundance increased in 2014 to 82 million fish, while total stock biomass decreased slightly from 214 million pounds in 2013 to 208 million pounds in 2014.[2]

Current Management Measures

Bluefish allocation among fisheries and coastal jurisdictions is based on historic landings data (1981-1989). Annual stock assessments are used to determine total allowable landings (TAL) for commercial and recreational fisheries. Seventeen percent of the TAL is allocated to the commercial fishery and the other 83% of the TAL is allocated to the recreational fishery. The commercial fishery is managed under state-by-state quotas and Maryland receives 3% of the coastwide quota.[5] For a brief overview of the Atlantic coast bluefish management and fishery performance for 2015 and 2016, go to: http://www.mafmc.org/bluefish/ The 2016 Atlantic coast commercial quota is 4.88 million pounds and the recreational harvest limit for the coast is 11.58 million pounds.[7] The 2016 TAL is about a 10% decrease from the 2015 TAL. Maryland's 2016 commercial quota is 146,631 pounds, a slight decrease from 2015 (153,662 lbs.).[3,7]

The Fisheries

Maryland's commercial and recreational bluefish fisheries are open year round with a minimum size limit of 8". The recreational fishery has a daily limit of 10 fish/per person/day.

Maryland's commercial landings in 2015 were 91,105 pounds, a 15% increase from 2014 (Figure 1).[3] Approximately 54% of the commercial catch is harvested from the Atlantic Ocean with the remainder caught from the Chesapeake Bay.[3] The Marine Recreational Information Program (MRIP) preliminary harvest estimate (A+B1) for 2015 was 85,749 fish (118,344 lbs) in Maryland, a 42% decrease from 2014 (Figure 2)**.** [8] Live discards (B2) increased from 142,034 in 2014 to 190,360 in 2015 (Figure 2). [8]

Monitoring Programs

Bluefish data is collected by the Maryland DNR's Chesapeake Bay Finfish Program (CBFP) and Coastal Bays Program. Bluefish are sampled from pound nets (CBFP) to assess size structure of resident bluefish.[3] Seine surveys are conducted in the Chesapeake Bay and the Atlantic Coastal Bays to develop bluefish juvenile indices.[3] The 2015 Chesapeake Bay bluefish juvenile index was 0.02, below the time-series average of 0.22. The 2015 Coastal Bays bluefish juvenile index was 0.41, almost equal to the time-series average of 0.42.[3]

The Chesapeake Bay Multispecies Monitoring and Assessment Program (ChesMMAP) is designed to maximize the collection of biological and ecological data from important finfish species and is implemented by the Virginia Institute of Marine Science (VIMS). Bluefish stomachs have been collected from this survey to evaluate food habits. Bluefish are predominantly piscivorous and consume bay anchovy, spot, menhaden, silver perch, weakfish, and mysid shrimp.[2]

Issues/Concerns

The 2015 benchmark SA included more robust age data from multiple east coast states as required by Addendum 1 to Amendment 1.[1,2] Age-0 bluefish have a bi-modal (spring and summer) recruitment pattern. The contribution of recruits from each season to the adult population is uncertain, although it has been hypothesized that the spring cohort has a greater influence on adult abundance.[4]

The 2015 SA combined young of year indices from 6 states (NH, RI, NY, NJ, MD, VA) into a single composite index to reflect coastal recruitment patterns.[2] Recreational discard mortality is an important factor for bluefish stock assessments but data is limited. The bluefish Technical Committee conducted a thorough review of bluefish discard mortality literature for the latest stock assessment and approved an estimate of 15% for use in modeling.[2.] Commercial discard mortality is uncertain though commercial discards are considered negligible.[2 6]

References

[1] ASMFC. 2011. Addendum I to Amendment 1 to the bluefish fishery management plan. Atlantic States Marine Fisheries Commission. Alexandria, VA.

[2] ASMFC. 2015. Bluefish Benchmark Stock Assessment for 2015. Atlantic States Marine Fisheries Commission. Alexandria, VA.

[3] Durell, E.Q. 2016. Maryland 2015 Bluefish (*Pomatomus saltatrix*) Compliance Report to the Atlantic States Marine Fisheries Commission. Maryland Department of Natural Resources.

[4] National Marine Fisheries Service. 2012. Bluefish 2012 stock assessment update. US Dept Commerce, Northeast Fishery Science Center.

[5] Rootes-Murdy, K. nd. 2014 review of the Atlantic States Marine Fisheries Commission fishery management plan for the 2013 bluefish fishery: Bluefish (*Pomatomus saltatrix*). Atlantic States Marine Fisheries Commission. Alexandria, VA.

[6] Waine, M. 2011. 2011 Review of the Atlantic States Marine Fisheries Commission fisheries management plan for bluefish (*Pomatomus saltatrix*). Atlantic States Marine Fisheries Commission. Alexandria, VA.

[7] Fisheries of the Northeastern United States; Bluefish Fishery 2016-2018 Bluefish Specifications. FR Doc. 2016-07263.

[8] Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division. June 2, 2016.

[9] Personal communication from the Atlantic Coastal Cooperative Statistical Program, Joseph Myers. (2016).

Figure 1. Commercial bluefish landings in Maryland from 1950 to 2015. [3,9]

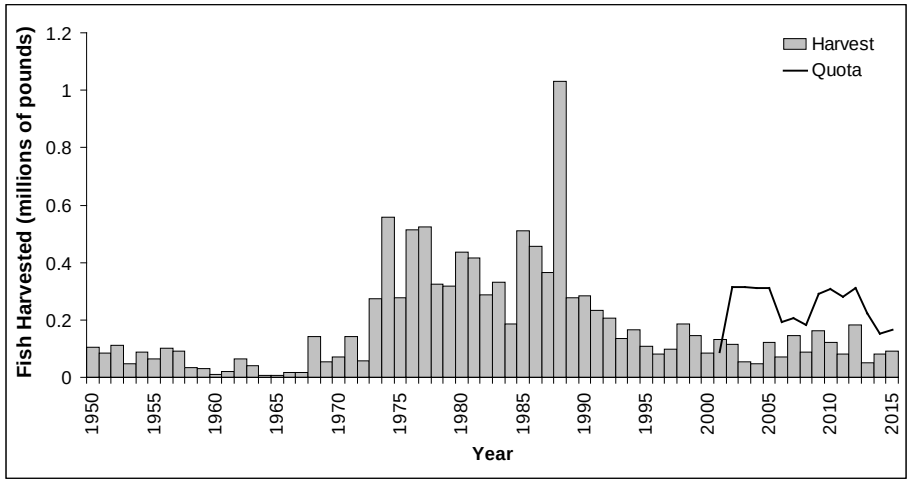
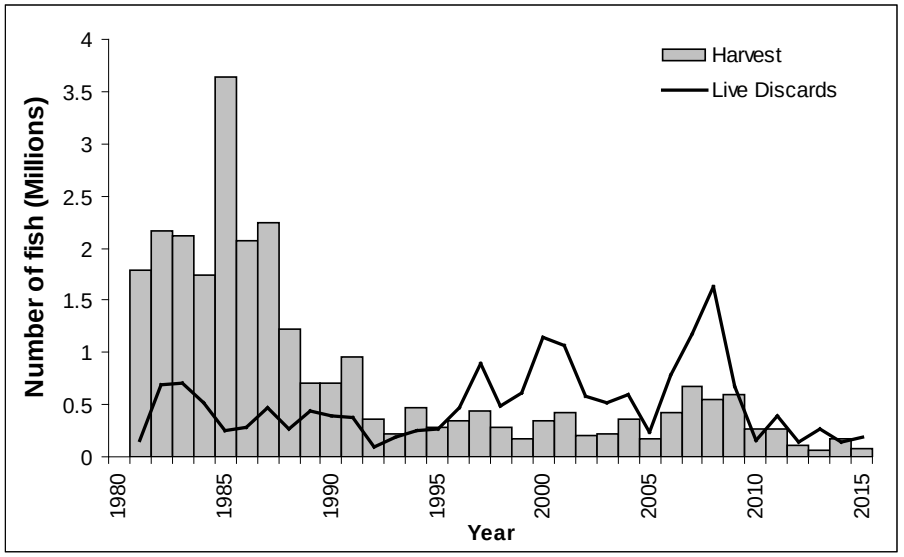


Figure 2. Estimated number of bluefish harvested and live discards by the recreational fishery in Maryland from 1981 to 2015. [8]



2003 Amendment #1 to the 1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 8/2016)			
Problem Area	**Action**	**Date**	**Comments**
Stock Status **Management Strategy** Management measures for the bluefish stock in the Chesapeake Bay will be based on the most recent coastal stock assessment. As stock assessment data, specific to the bluefish resources in the Bay, becomes available, additional measures will be developed. Management actions in Amendment #1 of the 1990 CBP Bluefish FMP will gradually rebuild the bluefish stock in the Chesapeake Bay and its tributaries over a 9-year period by reducing F and increasing SSB.	**Action 1.0** CBP jurisdictions will continue to participate in scientific and technical meetings for managing bluefish along the coast and estuarine waters.	1999 Continue	MD and VA staff participate on technical and advisory committees for both MAFMC and ASMFC.
	Action 1.1 CBP jurisdictions will adopt the MAFMC/ASMFC overfishing definition, and adhere to the 9-year rebuilding schedule for the coast wide management of bluefish: F=0.51 (1999-2000) F=0.41 (2001-2003) F=0.31 (2004-2007).	1999 Continue 2008 201**5**	The 9-year rebuilding schedule reduced F: F=0.51(1999-2000) F=0.41(2001-2003) F=0.31(2004-2007) The bluefish stock is rebuilt, and overfishing is not occurring. **Fishing mortality target is F_{MSY} = 0.170 and most recent F estimate is 0.157, below the target.**
Fishery **Management Strategy**	**Action 2.0** CBP jurisdictions will adhere to the commercial TAL established by the MAFM/ASMFC. Individual state-by-state TALs are based on historic landings from 1981-1989.	Continue	TAL may vary annually. **NMFS revised the 2016 TALto16.46 million lbs. The coastal commercial quota is 4.88 million lbs. and the recreational harvest limit is 11.58 million lbs. MD receives 3% of the commercial quota, 146,631 lbs. VA receives 11.87% or ~580,000 lbs. For 2016, the VA quota was adjusted to include a state quota transfer request to Rhode Island. VA final quota for 2016 is 500,287. TAL had no allocation for research set-aside quota for 2015.**
	Action 2.1 CBP jurisdictions will continue to require licenses for harvest and sale of bluefish.	1991	Commercial licenses are required by each jurisdiction. VA requires an additional permit for commercial hook and line through a limited entry system. In VA, any species not managed under a coastal quota system is subject to the corresponding recreational creel limit for that species in the commercial hook and line fishery.
	Action 2.2 CBP jurisdictions will adhere to the coastal recreational harvest level established by the MAFMC/ASMFC. Virginia and the Potomac River Fisheries Commission (PRFC) instituted a 10 fish recreational creel limit in 1990.	1990 1991 Continue	Historically, recreational landings have accounted for 80-90% of the total catch. MD has a 10 fish creel limit with an 8 inch minimum size limit. VA and PRFC have a 10 fish creel, but no minimum size limit. **The coastwide Recreational Harvest Level (RHL)**

2003 Amendment #1 to the 1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 8/2016)			
Problem Area	**Action**	**Date**	**Comments**
	Maryland established a 10 fish recreational creel limit in 1991. Creel limits and minimum size limits may be modified, based on the annual TAL established for the Atlantic coast.		**for 2016 is 11.58 million lbs.**
Research and Monitoring Strategy CBP jurisdictions will monitor the commercial and recreational fisheries and improve catch and effort data. CBP jurisdictions will also pursue studies to evaluate the social and economic aspects of the bluefish fishery in the Chesapeake Bay.	**Action 3.0** CBP jurisdictions will continue to collect catch and effort data from the commercial fishery, and expand the economic data to include dollar value of the commercial fishery and the annual dockside value received for bluefish in CBP jurisdictions.	Continue	Mandatory reporting is in effect in all CBP jurisdictions. MAFMC created a RSA program which allows up to 3% of the TAC to be sold and the money used to fund research projects. Dockside value is available from NMFS. The RSA program is currently suspended pending thorough review of cost, benefit, and law enforcement concerns.
	Action 3.1 CBP jurisdictions will assess methods for improving recreational and charter catch/effort data needed to evaluate biological and economic impacts.	Continue 2011 On-going	MD requires logbooks for charter boats. Beginning in 2004, coastal species managed by quota are electronically reported in real time**.** The MRIP implemented a Chesapeake Bay and Coastal sport fishing license to provide a more comprehensive assessment of recreational fishing statistics than the MRFSS.
	Action 3.2 CBP jurisdictions will continue to collect fishery independent data on bluefish.	2001 On-going	The ChesFIMS and ChesMMAP surveys provided data used to help manage bluefish in Chesapeake Bay. The ChesFIMS survey ended in 2006. Bluefish are regularly sampled by the MDNR Fisheries Service to estimate recruitment and characterize size structure.
Habitat Management Strategy CBP jurisdictions will utilize the results from the new independent multifish surveys and research projects within the Chesapeake Bay to identify and develop specific strategies to protect bluefish habitat and important forage species.	**Action 4.0** CBP jurisdictions continue to set goals for water quality and habitat restoration and protection, to address commitments established under Chesapeake Bay 2000 Agreement.	2003 2009 2010 2012	Bluefish habitat was identified in Amendment 1 to the Chesapeake Bay Bluefish FMP. President Barack Obama's executive order recommitted federal agencies to Bay restoration and regulatory enforcement. EPA established a Bay wide TMDL (aka: pollution diet). Each jurisdiction must establish 2 year milestones for progress towards meeting its TMDL. Legislation has been passed for restrictions on

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		2013	new developments using septic systems. Legislation for a stormwater fee based on impervious surface coverage was enacted. Chesapeake Bay Program monitors levels of mercury, PCBs, PAHs, organophosphate and organochloride pesticides. Ambient water quality criteria of DO, water clarity, and chlorophyll-a have been adopted for the Chesapeake Bay. See Chesapeake Bay Program website for updates on water quality criteria http://www.chesapeakebay.net/issues/issue/chemical_contaminants http://www.chesapeakebay.net/restoringwaterquality.aspx?menuitem=14728 nutrient reduction
	Action 4.1 CBP jurisdictions will regulate land and water activities that may negatively impact essential water quality parameters for bluefish, such as temperature, dissolved oxygen and turbidity.	Continue	The CBP continues to implement strategies to reduce nutrients and improve water quality in the Bay. Planting forest buffers, controlling stormwater runoff and reducing agricultural and urban non-point nutrient inputs are part of the current action plan. MD developed curriculum "Where Do We Grow from Here?" about population growth and its impacts on the Bay. See Chesapeake Bay Program website for updates on land and water stewardship. http://www.chesapeakebay.net/track/health
	Action 4.2 CBP jurisdictions will monitor activities that could negatively impact submerged aquatic vegetation in areas where bluefish have demonstrated a significant degree of association.	2003 On-going 2012	CBP monitors SAV in the Chesapeake Bay by annual aerial survey. The SAV goal adopted by Chesapeake Bay Program is planting 1,000 acres of SAV by 2008 and restoration of 185,000 acres of SAV by 2010. Planting goal revised to 20 acres per year. VIMS annually surveys SAV distribution in Chesapeake Bay.

2003 Amendment #1 to the 1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 8/2016)			
Problem Area	**Action**	**Date**	**Comments**
		2014	A Chesapeake Watershed Agreement was adopted in June 2014 with interim targets of 90,000 acres by 2017 and 130,000 acres by 2025. The **2015 SAV acreage was 91,621.** http://www.chesapeakebay.net/indicators/indicator/bay_grass_abundance_baywide MD developed a Blue Infrastructure that includes mapping structural habitat and SAV. 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.
	Action 4.3 CBP jurisdictions will monitor important forage species, when identified by fishery independent surveys to insure that activities such as directed fisheries or incidental by-catch in non-directed fisheries, do not adversely affect forage species abundance. If fishing activities are contributing to higher fishing mortality (F) of important managed forage species such as Atlantic menhaden, Atlantic croaker, spot and/or blue crab, additional management measures may be necessary.	In progress 2012 2014	Fish collected from ChesFIMS & ChesMAPP surveys provided stomachs for predator/prey analyses of juvenile and adult bluefish in the Chesapeake Bay. Variability of the abundance of forage fish in the Chesapeake Bay is also being examined by independent research project out of CBL. The ChesFIMs was discontinued after 2005 because of lack of funding. ASMFC determined that menhaden are overfished and that F needs to be reduced. The coastwide TAC is a 20% reduction from the average harvest during 2009-2011. Virginia is allocated 85% of the TAC while Maryland and PRFC are allocated 1.4% and 0.62%, respectively. Implementation began in 2013. Results of the most recent stock assessment for

2003 Amendment #1 to the 1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 8/2016)			
Problem Area	**Action**	**Date**	**Comments**
		2015	menhaden which considered new data, indicate that menhaden are not overfished and overfishing is not occurring. The 2014 Chesapeake Watershed Agreement delineated a forage fish outcome and a forage workshop was held in Nov. 2014. **During 2015, a forage work plan was developed for 2016/2017http://www.chesapeakebay.net/managementstrategies/strategy/forage_fish**
	Action 4.4 CBP jurisdictions will monitor the abundance of important bluefish forage species that are not managed under CBP FMPs, such as bay anchovies and Atlantic silversides	On-going	MD and VA juvenile seine surveys monitor the abundance of anchovies and silversides. Non-managed forage fish abundance is examined by an independent, CBL research project.
	Action 4.5 CBP jurisdictions will continue to identify predator/prey interactions, both inter- and intra-species competition and other interactions that might effect the management of bluefish.	On-going 2012	Data from the ChesFIMS and the ChesMAP surveys will be utilized to identify and delineate ecological relationships. Development of multispecies fishery management plans may result from this data. A multispecies predator/prey model is being developed by ASMFC that includes bluefish, menhaden, striped bass, and weakfish.

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
1 – Stock Status and Increased Fishing Pressure: In order to protect the bluefish resource in the Chesapeake Bay and along the Atlantic coast from overexploitation, stock levels and fishing rates need to be monitored. Appropriate management actions may be needed if stock levels continue to decline and harvest levels continue to increase.			

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
1.1.1) Since bluefish are a highly migratory species harvested along the Atlantic coast, Maryland, the Potomac River Fisheries Commission, and Virginia will cooperate with the Mid-Atlantic Fishery Management Council and the Atlantic States Marine Fisheries Commission t solve interjurisdictional problems in managing the bluefish stock	1.1.1) Maryland, the Potomac River Fisheries Commission, and Virginia will continue to participate in scientific and technical meetings for managing bluefish along the Atlantic coast and in estuarine waters.	Continue	Jurisdictions will work closely with the MAFMC, ASMFC, and other coastal states, especially to monitor the commercial catch. See Amendment #1 Action 1.0
1.1.2) Maryland, the Potomac River Fisheries Commission, and Virginia will monitor the bluefish fisheries in the Chesapeake Bay and in state coastal waters and implement conservation management measures for the fisheries as needed.	1.1.2.1) Maryland, the Potomac River Fisheries Commission, and Virginia will adhere to state allocations established by the MAFMC and ASMFC if the commercial harvest is projected to equal or exceed 20% of the total bluefish catch from the Atlantic coast. Commercial harvest controls will be coordinated among Bay jurisdictions and will be consistent with those established in federal waters. Options may include gear restrictions, areal closures, trip limits, and quotas.	Dependent on harvest trends	Bay jurisdictions will coordinate with each other and with federal government. May include gear, trip, area, catch, and/or other restrictions. See Amendment #1 Action 2.0
	1.1.2.2) A) Maryland, Potomac River Fisheries Commission, and Virginia will continue current licensing requirements for the commercial harvest and sale of bluefish. B) Virginia will institute a 10 fish creel limit for the commercial harvest of bluefish by hook and line and work towards establishing a commercial hook and line license.	1991	VA will require new regulation for commercial hook and line fishery. A) See Amendment #1 Action 2.1 B) See Amendment #1 Action 2.2
	1.1.2.3) Maryland will establish a 10 fish per person per day recreational creel limit at present minimum for the Chesapeake Bay and state coastal waters. Virginia and the Potomac River Fisheries Commission established a 10 fish per person per day recreational limit in summer 1990. Upon a recommendation from the MAFMC and ASMFC, or as otherwise determined to be appropriate, jurisdictions may	1991	Will require new regulations. Jurisdictions will coordinate creel limits and size limits. See Amendment #1 Action 2.2

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
	modify the possession limit and/or minimum size limit.		
2 – Wasteful Harvest Practices: There will be a baywide effort to eliminate and/or minimize wasteful harvest practices in the bluefish commercial and recreational fisheries.			
2.1) Efforts will be made to reduce the discard of dead bluefish in the Chesapeake Bay.	2.1.1) Virginia and the Potomac River established a 10 fish per person per day recreational creel limit and Maryland will establish a 10 fish creel limit to minimize wastage (see Action 1.1.2.3).	1991	See Action 1.1.2.2 See Amendment #1 Action 2.2
	2.1.2) Maryland, the Potomac River Fisheries Commission, and Virginia will educate the general public, through the use of information brochures and other means, about the need to reduce the waste problem in the bluefish fishery. Hook and release will be promoted as one method for reducing waste in the fishery.	1991	MD has produced a video & fact sheet on hook & release; ASMFC has also developed hook & release brochure. Will explore other means to educate the public about reducing waste.
	2.1.3) Maryland, the Potomac River Fisheries Commission, and Virginia will begin assessing factors contributing to waste in the commercial bluefish fishery and identifying potential solutions. Issues to be considered include migratory patterns of bluefish, bycatch, the bait fishery, and market demand.	1991	Waste associated with the commercial fishery is no longer an issue.
3 – Research and Monitoring Needs: In order to increase the knowledge and understanding of the bluefish fishery in the Chesapeake Bay, the jurisdictions will monitor the commercial and recreational fishery and improve catch and effort data. The jurisdictions will also pursue studies to evaluate the economic aspects of the bluefish fishery.			
3.1) Maryland, the Potomac River Fisheries Commission, and Virginia will increase the knowledge and understanding of the bluefish	3.1.1) Maryland, the Potomac River Fisheries Commission, and Virginia will improve the catch and effort data collected from the bluefish	1991	Will be accomplished in conjunction with other fish species reporting. Need to assess licensing, reporting, and follow up systems. VA will

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
fishery in the Chesapeake Bay.	commercial fishery in the Chesapeake Bay. Recommendations for improving the system include: 1) Coordinate finfish license requirements with the needs of finfish catch and effort reports. 2) Reevaluate the reporting form to include information on what types of gear a fisherman owns, how much they used on a particular day, and how much they caught. 3) Develop a check and balance system to validate the catch and effort records. 4) Continue the commercial reporting requirements in Maryland and establish a mandatory reporting system in Virginia. 5) Evaluate how the use of young bluefish in the bait fishery contributes to fishing mortality.		pursue mandatory reporting system. See Amendment #1 Action 3.0
	3.1.2 Maryland, the Potomac River Fisheries Commission, and Virginia will assess methods for improving recreational/charter catch and effort data needed to evaluate the biological and economic impacts of these fisheries. Recommendations include: 1) Evaluate hook and line data collected from the Maryland charter boat industry, i.e., age and length frequency, to characterize the recreational catch in the Bay. 2) Obtain economic information for the recreational and charter fisheries to determine the factors important for sustaining these industries and determining their value to the region. 3) Institute a pilot survey of sportsfishermen. 4) Institute a pilot survey of sportsfishermen in Maryland to obtain catch and effort data for several species, including bluefish.	1991	The ASMFC is encouraging states to buy into MRFSS for bluefish; Bay jurisdictions will assess feasibility. Need staff to look at existing biological data and assess economic factors. See Amendment #1 Action 3.1
	3.1.3) Maryland, the Potomac River Fisheries Commission, and Virginia will encourage research to collect data on bluefish biology,	1991	Will coordinate with CBSAC, universities, other agencies.

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
	especially estimates of population abundance, mortality, and recruitment in the Chesapeake Bay. Suggested research topics include: 1) Determine the factors that affect bluefish movements and distribution in the Bay. 2) Collect data on length frequency and age composition of both the commercial and recreational bluefish catch. 3) Investigate the environmental parameters that affect reproduction and growth of bluefish.		See Amendment #1 Action 3.2
4 – Habitat Issues) Adequate water quality is necessary to insure protection of living resources in Chesapeake Bay. The jurisdictions will continue their efforts to improve water quality and define habitat requirements for the living resources in Chesapeake Bay.			
4.1) The District of Columbia, Environmental Protection Agency, Maryland, Pennsylvania, the Potomac River Fisheries Commission, and Virginia will continue to promote the commitments of the 1987 Chesapeake Bay Agreement. The achievement of the Bay commitments will lead to improved water quality and enhanced biological production.	4.1) The District of Columbia, Environmental Protection Agency, Maryland, Pennsylvania, the Potomac River Fisheries Commission, and Virginia will continue to set specific objectives for water quality goals and review management programs established under the 1987 Chesapeake Bay Agreement. The Agreement and documents developed pursuant to the Agreement Call for: 1) Developing habitat requirements and water quality goals for various finfish species. 2) Developing and adopting basinwide nutrient reduction strategies. 3) Developing and adopting basinwide plans for the reduction and control of toxic substances. 4) Developing and adopting basinwide management measures for conventional pollutants entering the Bay from point and non-point sources. 5) Quantifying the impacts and identifying the sources of atmospheric inputs on the Bay	Continue	Agencies must coordinate closely; must continue work on habitat requirements for bluefish and other water quality issues in the Bay. Chesapeake Bay Program (CBP) develops, revises, and monitors goals and strategies for agriculture, air pollution, bay grasses, chemical contaminants, climate change, development, education, forests, groundwater, nutrients, population growth, rivers and streams, sediment, stormwater runoff, wastewater, weather, and wetlands. For more information: http://www.chesapeakebay.net/issues http://www.chesapeakebay.net/issues/issue/nutrients http://www.chesapeakebay.net/issues/issue/chemical_contaminants http://www.chesapeakebay.net/issues/issue/sediment http://www.chesapeakebay.net/issues/issue/was

1990 Chesapeake Bay Bluefish Fishery Management Plan Implementation Table (updated 6/2015)			
Strategy	**Action**	**Date**	**Comments**
	system. 6) Developing management strategies to protect and restore wetlands and submerged aquatic vegetation. 7) Managing population growth to minimize adverse impacts to the Bay environment.		tewater http://www.chesapeakebay.net/issues/issue/stormwater_runoff http://www.chesapeakebay.net/issues/issue/air_pollution http://www.chesapeakebay.net/issues/issue/wetlands http://www.chesapeakebay.net/issues/issue/bay_grasses http://www.chesapeakebay.net/issues/issue/development See Amendment #1 Actions 4.0, 4.1, 4.2

Acronyms

ABC – Allowable Biological Catch
ASMFC – Atlantic States Marine Fisheries Commission
B_{msy} – Biomass maximum sustainable yield
BRP – Biological Reference Point
CBL – Chesapeake Biological Laboratory
CBP – Chesapeake Bay Program
CBSAC – Chesapeake Bay Stock Assessment Committee
CHESFIMS – Chesapeake Bay Fishery Independent Multispecies Survey
CHESMAP – Chesapeake Bay Multispecies Monitoring & Assessment Program
COMAR – Code of Maryland
EPA – Environmental Protection Agency
F – Fishing Mortality
FMP – Fishery Management Plan
F_{msy} – Fishing mortality maximum sustainable yield (MSY).
MAFMC – Mid-Atlantic Fisheries Management Council
MDNR – Maryland Department of Natural Resources
MRFSS – Marine Recreational Fisheries Statistics Survey
MRIP – Marine Recreational Information Program
NMFS – National Marine Fisheries Service
PFC – Pennsylvania Fish Commission
PRFC – Potomac River Fisheries Commission
RHL – Recreational Harvest Limit
RSA – Research Set-Aside
SAV – Submerged Aquatic Vegetation
TAC – Total Allowable Catch
TAL – Total Allowable Landings
VMRC – Virginia Marine Resources Commission