

## 2015 Maryland FMP Report (May 2016)

### Section 20. a) Weakfish (*Cynoscion regalis*); b) Spotted Seatrout (*C. nebulosus*)

A bench mark stock assessment was completed in 2015 and accepted for management action by the Atlantic States Marine Fisheries Commission (ASMFC) in 2016. The stock remains depleted and natural mortality remains high. New biological reference points (BRPs) were adopted in 2016 based on total mortality (natural and fishing mortality combined). Current total mortality was below the target in 2014 for the first time in 13 years, but will need to continue below the target for several years to allow the stock to recover. No change in management was recommended by the ASMFC Weakfish Board.

#### Fishery Management Plans (FMPs)

The Chesapeake Bay Weakfish and Spotted Seatrout Fishery Management Plan (CBW/SS FMP) was adopted in 1990 to enhance and perpetuate the Chesapeake Bay's weakfish and spotted seatrout stocks. Since then, the plan was revised in 2003 and addresses only weakfish and not spotted seatrout (see spotted seatrout 'notes' at the end of the weakfish update). The revised plan was developed in response to the improvement in the status of the weakfish stock from overfished (below a threshold) to fully exploited (fished at MSY) and included new biological data pertinent to the Chesapeake Bay. The CBW FMP follows the compliance requirements set forth in the ASMFC Amendment 4 to the Interstate Weakfish Management Plan (2002) and several addenda (2003-2009). Maryland is required to submit annual compliance reports to ASMFC for both weakfish and spotted seatrout.

The CBP plan was reviewed by the Maryland DNR Fisheries Service (FS) weakfish and spotted seatrout plan review team (PRT) in 2012/2013. A report was presented to the Tidal Fisheries Advisory Committee and Sport Fisheries Advisory Committee as part of the plan review process. The PRT recommended no changes to spotted seatrout or weakfish allocation, but noted a need for additional socioeconomic data.

#### Stock Status

A benchmark stock assessment was prepared in 2015, peer reviewed and accepted for management by ASMFC in 2016. The Atlantic coastwide weakfish stock is considered depleted, and has been since 2002. The term "depleted" is used when factors other than fishing mortality have contributed to a decline in biomass. A Bayesian statistical catch at age model was used to examine time varying natural mortality in addition to fishing mortality and recruitment. New BRPs based on total mortality were adopted, with the threshold set at 30% and the target set at 20%. The 2014 total mortality was below the threshold but above the target, indicating a

sustainable level of mortality in the terminal year of the model. This was the first time in 13 years total mortality was below the threshold. However, SSB remains very low. Natural mortality increased significantly in the early 2000s then stabilized at a high level which led to an increase in total mortality. Fishing mortality from 2011 to 2014 was low, but total mortality remained high enough to preclude the start of a recovery prior to 2014. More years of data will be necessary to determine if the improvement seen in 2014 is accurate and persists into the future. Maryland's fishery dependent and independent monitoring has shown both a decrease in mean adult age and low juvenile abundance. Despite current restrictive management measures, the depleted weakfish stock is unlikely to recover quickly without a decrease in natural mortality.<sup>1</sup> Prevailing theories for the increase in natural mortality are predation, competition and changes in climate, but no definitive cause has been determined.

#### Current Management Measures

Management measures implemented by ASMFC's Addendum IV required states to implement a 1 fish recreational creel limit and a 100 pound commercial trip bycatch limit, which translates to a 60% reduction in commercial and recreational exploitation. The Chesapeake Bay jurisdictions implemented new restrictions in 2010 to meet or exceed the ASMFC requirements on harvest and bycatch. In Maryland, the recreational creel limit was decreased to one fish and commercial bycatch limits were implemented. These restrictions continued through 2015.

Maryland DNR conducts fishery dependent and fishery independent monitoring for important recreational and commercial fish species. Adult weakfish are sampled from pound nets. Maryland is required to provide biological data to ASMFC from the commercial catch based on per metric ton of commercial landings. Based on preliminary landings, Maryland was required to provide 14 lengths and 9 age samples for 2015 (and met the requirement). Juvenile fish are sampled from Maryland's Chesapeake Bay and Coastal Bays. Juvenile weakfish mean catch per hectare was higher in the 1990s and reached lows in 2008 and 2012. There was an increase in juvenile weakfish production in both the Bay and Coastal Bays in 2013 and 2014 but remained below the long-term mean. In 2015, the trawl and beach seine relative abundance indices were significantly below the grand mean.

#### Fisheries

Both estimated recreational harvest and commercial landings of weakfish decreased in the early 2000s to very low values (Figures 1 & 2). Harvest estimates and landings values have remained at historically low levels. The preliminary recreational harvest estimates in 2015 were 2,750 fish in Maryland and 4,174 fish in Virginia.<sup>3</sup> Many of the recent year values for both state have had high proportional standard error (PSE), indicating these estimates are imprecise. The declining commercial landings trend began in 1999. Maryland and Virginia's 2014 commercial

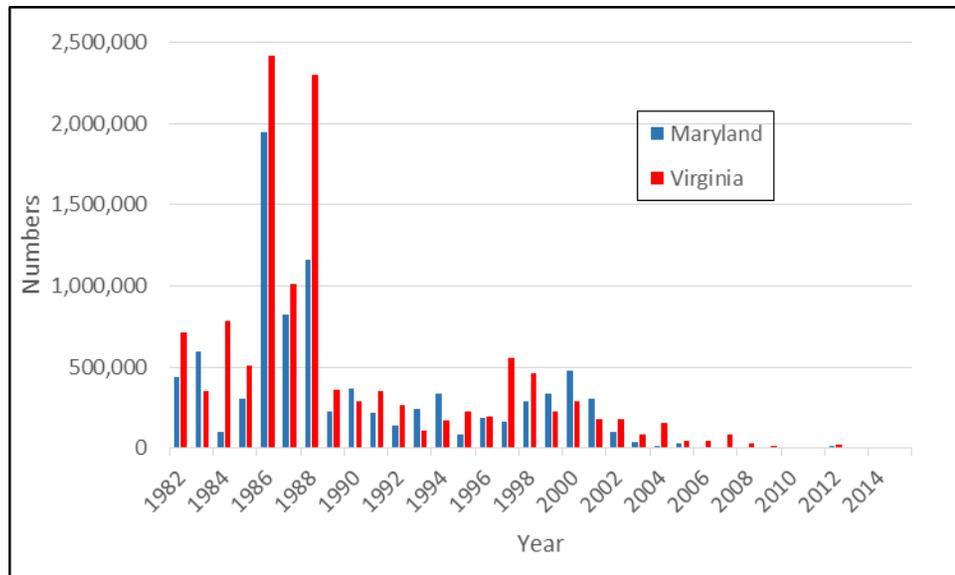
landings were 2,175 and 22,450 lbs<sup>4</sup>, respectively. Landings values for the past five years are the lowest on record for both states for the entire NMFS time series (1950-2014)<sup>4</sup>

### Issues/Concerns

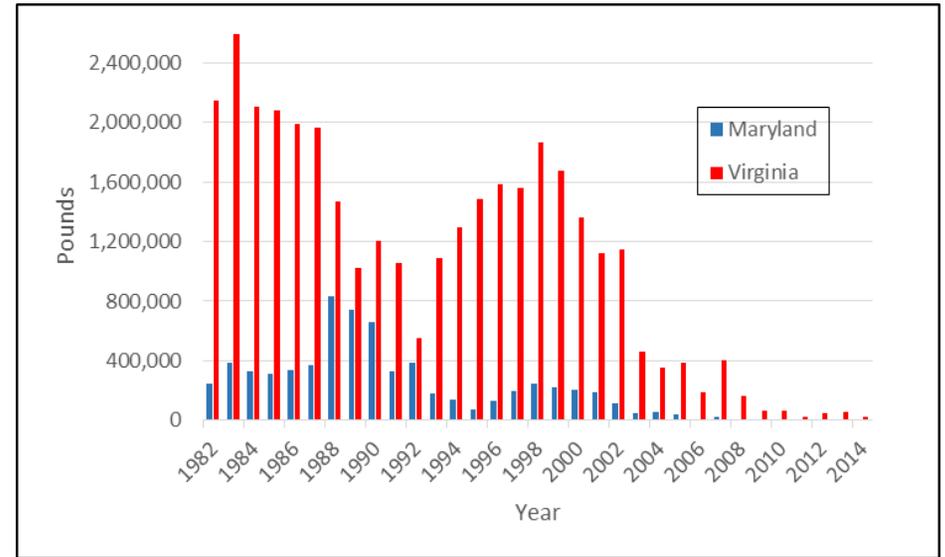
Factors such as predation, competition, and environmental changes, have increased natural mortality and appear to have a stronger influence on weakfish stock dynamics than harvest. Production of weakfish juveniles has not led to increased adult biomass.<sup>1</sup>

The ASMFC weakfish plan review team has reported its recommendations for management, biological research, social and economic research, and habitat studies.<sup>2</sup> Biological research recommendations were listed under high, medium, and low priorities. High priority recommendations include increased observer coverage to quantify discards, quantify trawl bycatch, stock identification and movements, evaluation of predation with a multispecies model, analysis of the spawner-recruit relationship and monitor weakfish diet over a broad regional scale.

**Figure 1. Maryland and Virginia estimated recreational weakfish harvest in numbers, 1982-2015.<sup>3</sup> (2015 values are preliminary).**



**Figure 2. Maryland and Virginia commercial weakfish landings, 1981-2014.<sup>4</sup>**



### References

- <sup>1</sup> ASMFC personal communication May 2016. Stock assessment documents not yet finalized.
- <sup>2</sup> ASMFC. 2015. 2014 Review of the Atlantic States Marine Fisheries Commission Fishery Management Plan for Weakfish (*Cynoscion regalis*) 2014 Fishing Year. Arlington, VA 21p.
- <sup>3</sup> Personal communication from the National Marine Fisheries Service, Marine Recreational Information Program, Fisheries Statistics Division May 13, 2016.
- <sup>4</sup> Personal communication from the National Marine Fisheries Service, Commercial Fisheries Statistics, Fisheries Statistics Division May 13, 2016.

<b>2003 Chesapeake Bay Program Weakfish Fishery Management Plan Implementation</b> (updated 7/16)			
<b>Section</b>	<b>Action</b>	<b>Implementation</b>	<b>Comments</b>
<p><b>Stock Status</b> Management Strategy: CBP jurisdictions will adopt biological reference points (BRPs) that reflect the most current status of the weakfish stock. As data becomes available on multi-species interactions and ecological considerations such as species interactions, food webs, bycatch, biodiversity and habitat, the BRPs should be modified accordingly.</p>	<p><u>Action 1.1</u> MD, PRFC (Potomac River Fisheries Commission) and VA will adopt the Atlantic States Marine Fisheries Commission's (ASMFC) recommendations for the coast wide management of weakfish</p>	<p>Annually reviewed and adjusted if necessary</p>	<p><b>The ASMFC conducted a peer reviewed stock assessment in 2015 that indicated the stock is depleted and has been since 2002. The biomass decline is the result of increasing natural mortality while F remains low. Size and age structure of the stock has decreased. New stock assessment and new total mortality based BRPs were approved, May 2016. Total mortality was between the target and threshold in 2014 (the terminal year of the model) after being above both for 13 years. Stock biomass is still very low and will require several years of low total mortality to recover.</b></p>
	<p><u>Action 1.2</u> In order to achieve the fishing target rates defined by the adopted BRPs, CBP jurisdictions will utilize a combination of size limits and possession limits, and/or seasons or areas to manage the commercial and recreational fishery in state waters.</p>	<p>Annually</p>	<p>ASMFC Addendum IV to Amendment 4 of the weakfish FMP requires that the recreational creel does not exceed 1 fish/person/day in the CBP jurisdictions. Commercial landings must be limited to 100 pounds per vessel, day or trip, whichever is the longer period of time for directed fisheries and bycatch must be limited to 100 pounds per vessel, per day or trip for all non-directed fisheries. The finfish trawl fishery allowance for undersized fish must be reduced to 100 fish. The CBP jurisdictions are in compliance; all met the recreational harvest restrictions and met or exceeded the commercial harvest restrictions. The requirements have remained in effect since 2010.</p>
<p><b>The Fishery Management Strategy:</b> The CBP jurisdictions will regulate the commercial and recreational fishery based on the most recent status of the stock and the established fishing targets.</p>	<p><u>Action 2.1</u> The CBP jurisdictions will consider regional differences when determining state allocation issues and regulations.</p>	<p>As necessary</p>	<p>The Maryland Sport Fish Advisory Commission recommended a weakfish moratorium but no action was taken. Fishing mortality has been decreased over the years but there remains a significant amount of non-fishing mortality,</p>
	<p><u>Action 2.2</u> The CBP jurisdictions will consider the economic impacts of management measures on the fishery and promote</p>	<p>Dependent on the availability of economic data</p>	<p>Collection of economic data for the commercial fishery should include dockside values, the number of commercial vessels, the number of commercial fishermen, and the economic returns from the commercial fishery. Data collection for the recreational fishery</p>

<b>2003 Chesapeake Bay Program Weakfish Fishery Management Plan Implementation</b> (updated 7/16)			
<b>Section</b>	<b>Action</b>	<b>Implementation</b>	<b>Comments</b>
	the utilization of economic data in the management decision process.		should include the number of anglers, the number of directed trips, and angler expenditures. Detailed data collection will enable the development of bio-economic models that can estimate costs or benefits to consumers resulting from fishery regulations.
	<u>Action 2.3</u> The CBP jurisdictions continue to support the use of BRDs in non-directed fisheries and the appropriate mesh sizes in directed fisheries, to reduce the fishing mortality on small weakfish.	Annually	ASMFC Addendum III to Amendment 4 of the weakfish FMP aligns BRD certification requirements between state and federal waters along with the SAFMC shrimp bycatch reduction device requirements.
<b>The Fishery</b> Research and Monitoring: The CBP jurisdictions will continue to monitor the biological characteristics of the weakfish stock in the Chesapeake Bay and coordinate monitoring activities within the Bay and the Atlantic coast.	<u>Action 3.1</u> The CBP jurisdictions will continue fishery dependent sampling and improve catch data. Economic information from the recreational and commercial fisheries will also be reviewed.	Continue	Monitoring data provides information on abundance, age structure, and growth parameters. Addendum I to Amendment 4 to ASMFC's Weakfish FMP stipulates that states must collect otolith ages and fish lengths based on each states landing values, to provide data for coast wide stock assessments. <b>In 2015, otoliths were removed from 21 weakfish during the MD pound net sampling in Chesapeake Bay, and only ages 1 and 2 were present.</b>
	<u>Action 3.2</u> The CBP jurisdictions will conduct fishery independent sampling and collect data on abundance, age structure and recruitment.	Continue	Weakfish juvenile abundance from the Maryland Blue Crab Trawl Survey in Pocomoke and Tangier sounds generally increased from 1989 to 1996, remained at relatively high levels through 2001, then generally decreased from 2003 to 2008, and have remained moderate to low. <b>The Chesapeake Bay juvenile geometric mean in 2015 was similar to 2013 and 2014 values and remained below the time series mean.</b> A second JI index s generated from the Coastal Bay Trawl survey. <b>The geometric mean from this survey decreased in 2015 and was ranked 23<sup>th</sup> among the 27 years surveyed.</b>
	<u>Action 3.3</u> CBP jurisdictions will continue to coordinate state activities with the Atlantic Coast Cooperative Statistics Program (ACCSP).	Continue	The ACCSP Coordinating Council approved the Atlantic States Fisheries Data Collection Standards document in May, 2012. This document will be used to direct partner data collection.
	<u>Action 3.4</u> The CBP jurisdictions will begin to	On-going	Data from the ChesMMAF Survey, CHESFIMS (2001-2006) projects may be used to evaluate species interactions and

<b>2003 Chesapeake Bay Program Weakfish Fishery Management Plan Implementation</b> (updated 7/16)			
<b>Section</b>	<b>Action</b>	<b>Implementation</b>	<b>Comments</b>
<p><b>Habitat</b> Management Strategy: CBP jurisdictions will monitor and regulate activities which may be harmful to weakfish habitat.</p>	<p>collect and examine stomach contents data and examine the effects of environmental variables upon weakfish growth rates. Activities, which contribute to the degradation and or loss of habitat types that weakfish utilize throughout their life history stages will be monitored and regulated by CBP jurisdictions.</p>	<p>On-going Revised in 2014</p> <p>2014</p>	<p>relationships. Results and trends can then be incorporated into CBP fishery management plans. ASMFC weakfish stock assessment (2006) incorporated a striped bass predator function allowing weakfish stock decline to be modeled. CBP jurisdictions support the commitments of the Chesapeake Bay 2000 Agreement. These activities include reducing the discharge of toxic pollutants or excessive nutrients into the Chesapeake Bay and its tributaries, interruption or changes in water discharge patterns, deposition of solid waste, sewage sludge or industrial waste into Bay (which may lead to anoxic conditions), rapid coastal development, unregulated agricultural practices, net coastal wetland loss, or the dredging of contaminated sub-aqueous soils.</p> <p>The CBP developed a Watershed Agreement (2014) with new and updated habitat outcomes. For more information see: <a href="http://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf">http://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf</a></p>
	<p><u>Action 4.1</u> The CBP jurisdictions will monitor and regulate land-based activities and water-based activities that may negatively impact Chesapeake Bay water quality and weakfish spawning, rearing and foraging areas.</p>	<p>Continue</p>	<p>The MD DNR water quality protection database focuses on watershed lands that are most important for improving water quality.</p>
	<p><u>Action 4.2</u> The CBP jurisdictions will monitor important weakfish forage species to insure that activities, such as directed fisheries or incidental bycatch in non-directed fisheries, do not adversely affect abundance. These managed species, which serve as forage for weakfish include Atlantic croaker, spot, Atlantic menhaden, and blue crab. If fishing activities are contributing to higher F's on forage species, additional</p>	<p>Continue</p> <p>2014 On-going</p>	<p>Data from the ChesMMAF, CHESFIMS (2001-2006), and the MD Winter Trawl Survey will provide data on important forage species for weakfish. The CHESFIMS survey was discontinued after 2005 and a modified year in 2006 due to lack of funding.</p> <p>The CBP developed a Watershed Agreement (2104) with new forage species outcome. For more information see: <a href="http://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf">http://www.chesapeakebay.net/documents/FINAL_Ches_Bay_Watershed_Agreement.withsignatures-HIres.pdf</a></p>

<b>2003 Chesapeake Bay Program Weakfish Fishery Management Plan Implementation</b> (updated 7/16)			
<b>Section</b>	<b>Action</b>	<b>Implementation</b>	<b>Comments</b>
<b>Ecosystem Interactions Management Strategy:</b>	management measures may be necessary.		
	<u>Action 4.3</u> The CBP jurisdictions will monitor the abundance of weakfish forage species that are not managed under CBP FMPs, such as bay anchovies, and Atlantic silversides, using on-going monitoring and surveys.	Continue	The MD Estuarine Juvenile Finfish Survey and VIMS Juvenile Abundance Monitoring Surveys (formerly known as the VIMS Trawl Survey and the VIMS Juvenile Seine Survey) will continue to monitor the abundance of important, non-managed forage species in the Chesapeake Bay.
	<u>Action 4.4</u> The CBP jurisdictions will continue to identify predator/prey interactions, both inter- and intraspecies competition and other interactions that might affect the management of weakfish. As multispecies interactions are evaluated and quantified, biological reference points and management strategies may be adjusted.	On-going  2014 Continue	Data from the ChesMMA, CHESFIMS (2001-2006), and the MD Winter Trawl Survey will be collected and analyzed by CBP jurisdictions to identify possible inter-and intra-species relationships. ASMFC weakfish TC incorporated a striped bass predator function into the 2006 weakfish stock assessment to model the weakfish stock decline since 1998. No new recommendations have been developed.  The CB Watershed Agreement (2014) has a forage species outcome that will evaluate predator/prey interactions. <b>A forage management strategy was developed in 2014/2015 and a biennial work plan was developed for 2016 and 2017.</b> The work plan includes actions to identify important forage species, evaluate a process for developing indicators and develop a process to manage for key predators.

**Acronyms:**

ASMFC = Atlantic States Marine Fisheries Commission  
 BRD = bycatch reduction device  
 BRPs = biological reference points  
 CHESFIMS = Chesapeake Bay Fishery Independent Multispecies Fisheries Survey  
 ChesMMA = Chesapeake Bay Multispecies Monitoring and Assessment Program  
 CBP = Chesapeake Bay Program  
 F = mortality due to fishing  
 FMP = fishery management plan  
 PRFC = Potomac River Fisheries Commission  
 PSE = Proportional Standard Error  
 SAFMC = South Atlantic Fishery Management Council  
 SSB = spawning stock biomass

TC = technical committee  
 VIMS = Virginia Institute of Marine Science  
 YOY = young of the year fish

## **b) Spotted Seatrout Notes:**

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Fishery Management Plan (FMP) for Spotted Seatrout in 1984 for states from Maryland to Florida. An Omnibus Amendment (2011) was developed to bring spotted seatrout under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (1993) and the ASMFC charter (1995). A corrected version of the omnibus amendment with Technical Addendum 1a was adopted on February 9, 2012.<sup>1</sup> The omnibus amendment includes recommended measures to protect the spotted seatrout spawning stock and requires a coastal minimum length limit.

The spotted seatrout was included in the 1990 Bay Program Chesapeake Bay *Weakfish and Spotted Seatrout Fishery Management Plan*. The management plan was revised in 2003 to include only weakfish. Since 1990, there has been no new management plan for spotted seatrout but updates have been completed on a regular basis. The 1990 FMP was reviewed by the Maryland DNR Fisheries Service (FS) Weakfish and Spotted Seatrout FMP Plan Review Team (PRT) in 2012/2013. A report was presented to the Sportfisheries and Tidal Fisheries Advisory Commissions. The Tidal Fisheries Advisory Commission recommended no action but the Sport Fisheries Advisory Commission recommended that the Maryland DNR FS consider raising the minimum size limit and decreasing the creel limit. Maryland increased the commercial size limits, decreased the recreation creel limit and instituted a daily commercial catch limit in 2013.

### **Stock Status**

A coast-wide stock assessment of spotted seatrout has not been completed because this species is considered to be largely non-migratory. State assessments have been completed on local stocks (NC, SC, GA, FL) with state-by-state variability and no regional trend. ASMFC has not recommended a coastal stock assessment because of lack of biological and fisheries data. The lack of a stock assessment makes it difficult to implement an effective management framework. .

## **Fisheries**

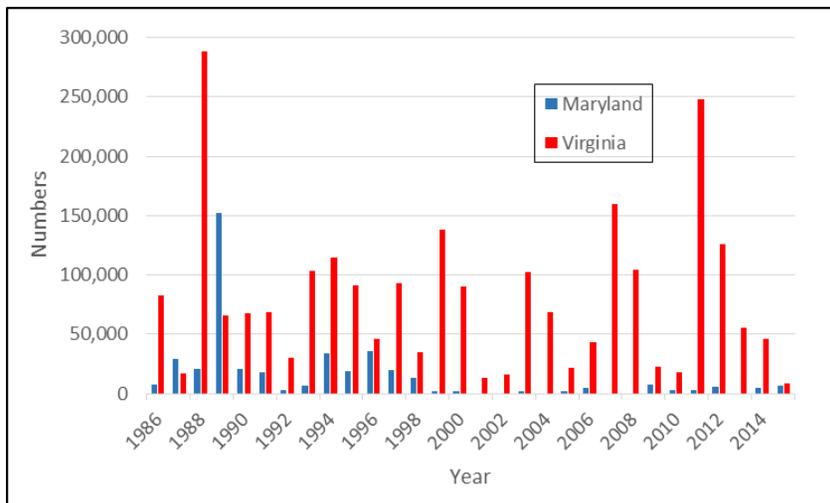
The Marine Recreational Information Program (MRIP) estimated that Maryland recreational harvest has ranged from zero to 7,933 fish from 2005 to 2015, with higher catches occurring in the late 1980s and mid 1990s (Figure 3). Most estimates have a high proportional standard error (PSE) value which indicates the estimates are highly uncertain in most years. Catch-and-release estimates in the past 10 years have ranged from 2,331 to 107,017 fish per year, but have been highly variable with no trend and very high PSE values. The Virginia recreational harvest estimates have been consistently higher than Maryland's with lower PSE values and ranged from 8,880 to 247,736 fish per year from 2005 to 2015, and 2015 was the lowest value of the time series. The 2015 values are preliminary for both states. Release estimates for Virginia over the same time period have ranged from 82,935 to 1,214,620 fish per year. Maryland commercial landings since 1982 have been less than 2,000 pounds most years, except for a peak in landings from 1996 to 2002, when landings averaged 20,515 pounds per year (Figure 4). Virginia's commercial landings have averaged 23,094 pounds per year since 1982, but experienced an unusually large peak in 2012 with 116,768 pounds reported.

### **Management Objectives and Measures:**

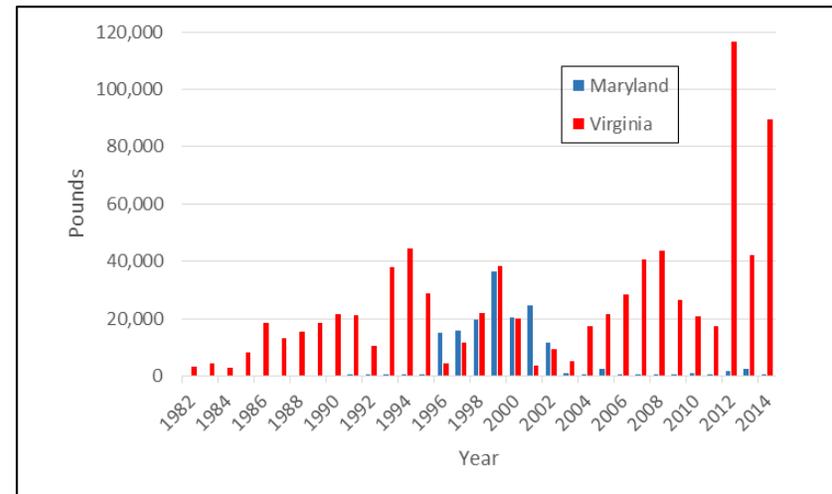
The ASFMC FMP requires a size limit of 12" minimum total length. All states have complied with this minimum. Net mesh sizes corresponding to this size limit for directed fisheries, data collection, and state stock assessments were also recommended. Maryland, Virginia and PRFC have 14" recreational size limits with a 4 fish creel limit in Maryland, a 5 fish creel limit in Virginia, and a 10 fish creel limit for the Potomac mainstem (PRFC). In Virginia there is a limit of only 1 fish over 24 inches, and Virginia closed its recreational fishery from March 1 through July 31, 2014 to protect the spawning stock following a winter kill. The Maryland commercial size limit is 14" with minimum 3-3/8 inches trawl and 3 inch stretched gill net meshes (the same mesh size restrictions apply to weakfish) and a 150 pound per trip harvest limit for all gear. The Virginia commercial hook & line fishery must adhere to the same size and bag limits as the Virginia recreational fishery. Virginia also has an annual commercial quota of 51,104 pounds and a size limit of 14 inches for all gears combined. PRFC has a 14 inch commercial size limit.

The ASMFC considered withdrawing its FMP for spotted seatrout, relinquishing management to the individual states in 2015. The relatively non-migratory nature of spotted seatrout and inability to conduct a coastwide stock assessment limit the ability of the ASMFC to properly manage this species. Action was postponed indefinitely, due to some states FMPs linking management authority to the ASMFC FMP. Once affected states rectify their management authority through their regulator process, the transfer of management authority from ASMFC to the states will be reconsidered.

**Figure 3. Estimated recreational harvest for spotted seatrout from Maryland and Virginia, 1986-2015.<sup>3</sup> (MRIP data: 2015 estimates are preliminary)**



**Figure 4. Commercial spotted seatrout landings from Maryland and Virginia, 1982-2014.<sup>2</sup> (NMFS data)**



**References:**

- <sup>1</sup> ASMFC. 2012. Fishery Management Report of the Atlantic States Marine Fisheries Commission. Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout. Approved February 9, 2012. 161 p.
- <sup>2</sup> Personal communication from the National Marine Fisheries Service, Commercial Fisheries Statistics, Fisheries Statistics Division May 13, 2015.
- <sup>3</sup> Personal communication from the National Marine Fisheries Service, Marine Recreational Information Program, Fisheries Statistics Division May 13, 2015.