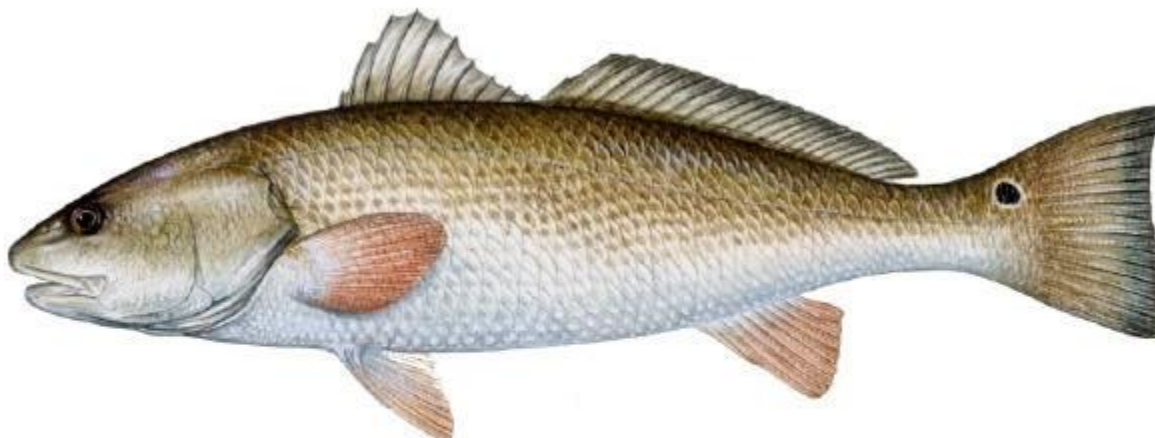


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2015 Review of the Chesapeake Bay Red Drum
Fishery Management Plan



Maryland Department of Natural Resources

Fisheries Service

Tawes State Office Building

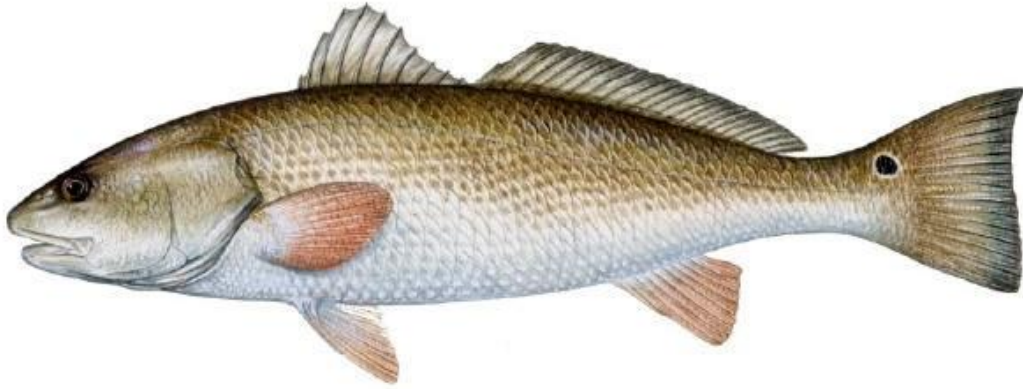
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**2015 Review of the
Chesapeake Bay Red Drum Fishery Management Plan**



October 2015

Plan Review Team

Fishery Management Plans Program Staff
Chesapeake Finfish Program Staff
Analysis and Assessment Program Staff
Sport Fisheries Advisory Commission
Tidal Fisheries Advisory Commission

Approved by:

Dave Blazer
Director, Fisheries Service

Table of Contents

Acronyms	3
Summary	4
Status of the Fishery Management Plan	4
Status of the Stock	6
Status of the Fishery	6
Status of Chesapeake Red Drum FMP Strategies	7
Fisheries Allocation Policy	8
Conclusion	10
References	11
Figures	12
FMP Implementation Table	14

Acronyms

ASMFC	Atlantic States Marine Fisheries Commission
F	Fishing Mortality
FMP	Fishery Management Plan
FS	Fisheries Service
MRIP	Marine Recreational Information Program
NMFS	National Marine Fisheries Service
PPT	Parts per Thousand
PRFC	Potomac River Fisheries Commission
PRT	Plan Review Team
PSE	Proportional Standard Error
SAFMC	South Atlantic Fishery Management Council
SAV	Submerged Aquatic Vegetation
SCA	Statistical Catch-At-Age
SEDAR	Southeast Data, Assessment, and Review
SEFSC	Southeast Fisheries Science Center
SFAC	Sport Fisheries Advisory Commission
SS3	Stock Synthesis 3
sSPR	Static Spawning Potential Ratio
TFAC	Tidal Fisheries Advisory Commission

Summary

The 1993 Chesapeake Bay Red Drum Fishery Management Plan was reviewed by the Fisheries Service Plan Review Team in September, 2015. The goal and objectives of the plan provide a framework for managing red drum (*Sciaenops ocellatus*) in the Chesapeake Bay. The plan contains strategies and actions to address overfishing that occurred in the 1990s including juvenile bycatch; stock assessment and research needs, particularly on mortality rates and movement of adults at the limits of their distribution; catch and effort statistics; and habitat considerations including water quality. Based on the 2009 coastal stock assessment, overfishing is not occurring. However, only general conclusions about the status of the stock can be provided due to data limitations. Stock biomass cannot be reliably estimated at this time. A benchmark stock assessment is currently in progress for the Atlantic coast. The Fisheries Service Plan Review Team concurs that annual updates to the plan's implementation table are an appropriate way to track progress on meeting the plan objectives, strategies and actions. Maryland is currently in compliance with the Atlantic States Marine Fisheries Commission (ASMFC) guidelines and requirements, and submits an annual compliance report to ASMFC.¹ Since Maryland is at or near the northern and inland limit of distribution for red drum, their occurrences in Maryland waters are highly variable. The limited abundance results in few opportunities to collect data. The Fisheries Service Plan Review Team concluded that the Chesapeake Bay Red Drum Fishery Management Plan is an appropriate framework for managing red drum in Maryland and recommends no further action unless the results of the ASMFC stock assessment indicate additional actions are necessary.

Status of the Fishery Management Plan (FMP)

Date of FMP Approval:	1993
Amendments:	None
FMP Review Dates:	1994, 2000, 2001, 2002-2004, 2015
FMP updates	2007 – present

Fishery management plans provide a framework for how a fishery resource will be managed based on a species life history, habitat, ecosystem considerations, fishery utilization and the goals and objectives for fisheries and the stock. Over time, the status of a resource can change and new issues arise. Strategies and actions within a plan need to be periodically reviewed and evaluated to ensure the management framework is still appropriate or amended/revised to address significant changes.

In September, 2015, a Fisheries Service Plan Review Team (FS PRT) was convened to review the 1993 Chesapeake Bay Red Drum FMP. The FS PRT was comprised of staff from the FMP Program (Nancy Butowski, Rick Morin), Estuarine and Marine Fisheries Division Chesapeake Finfish Program (Harry Rickabaugh, Genine Lipkey), and Analysis and Assessment Program (Angela Giuliano). Additional staff from Fisheries Service participated in the FMP review as well as members of the Sport Fisheries Advisory Commission (SFAC) and the Tidal Fisheries Advisory Commission (TFAC) (*Note: This draft does not yet incorporate input from SFAC or TFAC as their review is in progress.*)

The goal of the 1993 Chesapeake Bay Red Drum FMP is to:

Enhance and perpetuate red drum stocks in the Chesapeake Bay and its tributaries, and throughout their Atlantic coast range, so as to generate optimum long-term ecological, social and economic benefits from their commercial and recreational harvest and utilization over time.

The objectives of the 1993 Chesapeake Bay Red Drum FMP established to meet this goal, are:

1. Follow guidelines established by the Atlantic States Marine Fisheries Commission, the South-Atlantic Fishery Management Council and the Mid-Atlantic Fishery Management Council for coastwide management of red drum stocks and make Bay regulatory actions compatible where possible.
2. Promote protection of the resource by maintaining a clear distinction between conservation goals and allocation issues.
3. Maintain red drum spawning stocks at a size which provides a 30% spawning stock biomass per recruit by allowing a 30% escapement rate of juveniles to the adult stock (ASMFC redefined optimum yield in 1998 from 30% SSBR to 40% static spawning potential ratio (sSPR)).
4. Determine the effects of environmental factors on year-class strength.
5. Promote the cooperative interstate collection of economic, social and biological data required to effectively monitor and assess management efforts relative to the overall goal.
6. Improve collection of catch and standardized effort statistics in the red drum fisheries.
7. Promote fair allocation of allowable harvest among various components of the fishery.
8. Continue to provide guidance for the development of water quality goals and habitat protection necessary to protect the red drum population within the Bay and state coastal waters.

Status of the Stock

There is no red drum stock assessment for the Chesapeake Bay. The red drum stock assessment is derived from the Atlantic coastal assessment. The coastal stock was considered to be overfished in the 1980's and 1990's and management measures were taken to reduce fishing mortality. The species is managed as two stocks. The northern stock is defined as that from North Carolina to New Jersey and the southern stock from Florida to South Carolina.

The results of the 2009 ASMFC stock assessment indicated that the stocks were relatively stable as far as could be determined with data limitations, and that overfishing was likely not occurring.¹ The threshold and target are escapement rates that provide a 30% and 40% static spawning potential ratio (sSPR), respectively. The static spawning potential ratio is based on female biomass and egg production. An sSPR below 30% indicates that overfishing is occurring. The average sSPR has exceeded the overfishing threshold since 1994 with one exception in 2002 and the northern stock has been above the target since 1996.

In preparation for the 2015 benchmark stock assessment, the ASMFC South Atlantic Management Board approved the terms of reference and began coastwide data compilation in 2014. The benchmark stock assessment was scheduled for a 2015 review by the Southeast Data, Assessment, and Review (SEDAR). This assessment used a new model to assess coastal red drum stocks. In order to improve upon the previous stock assessment's statistical-catch-at-age (SCA) model (2009) which was hampered by data limitations, the stock assessment subcommittee used the Stock Synthesis 3 model (SS3). This model was reviewed at SEDAR 44 (Charleston, SC, August 2015) and documents related to the assessment and its review can be found on the SEDAR website:

<http://sedarweb.org/sedar-44-stock-assessment-report-atlantic-red-drum>

Following comments from the peer review process, the stock assessment subcommittee is continuing its work on the model. It will undergo another review process and then be finalized for management use with an anticipated approval in spring 2016.

Status of the Fishery

In Maryland waters, commercial fishermen may harvest up to five red drum 18" or greater but less than 25" total length per day. The commercial red drum harvest in Maryland is reported to the National Marine Fisheries Service (NMFS). Maryland's harvest is much smaller than harvest from Virginia.² The 2014 preliminary commercial red drum harvest was 298 pounds with 220 pounds harvested from the Maryland coast (Figure 1).

Red drum are important to recreational fishermen but the catch in Maryland is highly sporadic. The large 2012 recreational catch is noteworthy and highly unusual (Figure 2). Recreational fishermen may not take red drum less than 18" nor greater than 27" total length and have a limit of one red drum per day. The Marine Recreational Information Program (MRIP) estimated

Maryland recreational harvest as zero in 2014 with releases estimated at 273 fish (Figure 3). High proportional standard errors (between 46 and 101), an indication of imprecise estimates, are associated with Maryland's recreational red drum estimates. The MRIP estimates are commonly lower than harvest reports from charter boats. Charter boat log books for Maryland indicate a total of 95 red drum caught and 51 harvested in 2014.¹ The 2014 harvest is higher than the 20 year average but lower than 2012 and 2013 harvests (Figure 4).

Status of Chesapeake Bay Red Drum FMP Strategies and Actions

Fishery Management Plans describe problem areas, strategies and actions to reach the FMP goals. The 1993 Chesapeake Bay Red Drum FMP listed three problem areas.

- 1. Overfishing.** Overfishing is no longer a problem for the red drum resource but maximum and minimum size limits and creel limits are still an effective method to achieve and maintain harvest at the target level. The jurisdictions have maintained maximum and minimum size limits to maintain fishing mortality below the overfishing definition. Maryland, Virginia and Potomac River Fisheries Commission (PRFC) all have 18" minimum total length limits for both the recreational and commercial fisheries. In Maryland, recreational fishermen are limited to one fish between 18" and 27" maximum total length. Commercial fishermen in Maryland are limited to five fish within the slot limit of 18-25" total length. Virginia allows recreational fishermen to take three fish within a slot limit of 18-26" total length. Commercial fishermen in Virginia are limited to five fish within the slot limit of 18-25" total length. The PRFC has a slot limit of 18-25" total length and a possession limit of five fish for both recreational and commercial fishermen.

The bycatch of juvenile red drum has not been an issue in Maryland waters because juveniles are infrequently encountered.

- 2. Stock Assessment and Research Needs.** Although ASMFC has recommended that states implement tagging programs, the number of red drum seen in Maryland state waters is insufficient for any meaningful tagging effort or fishery-independent surveys. Maryland continues to sample red drum from pound nets when available. Maryland continues to supplement MRIP estimates with charter boat log data.
- 3. Habitat and Water Quality.** The 2014 Chesapeake Watershed Agreement established water quality and SAV goals. SAV beds are important habitat for juvenile red drum. The Chesapeake Bay Program SAV outcome seeks to achieve a goal of 185,000 acres by 2025, with an interim targets of 90,000 acres by 2017. A summary of the agreement can be viewed at the following link:

<http://www.chesapeakebay.net/documents/ChesapeakeBayWatershedAgreementFINAL.pdf>

The ASMFC's Red Drum FMP, adopted in 1984 to protect the spawning stock, was amended in 1991 to achieve optimal yield and again in 2002 to require compliance with recreational fishing mortality targets. Addendum I to Amendment 2 was approved in 2013 to address habitat needs and concerns. Addendum I describes spawning habitat and habitat of eggs and larvae, juveniles, subadults, and adults. Habitats used by the different life stages include tidal freshwater wetlands, estuarine wetlands, tidal creeks and marshes, submerged aquatic vegetation, oyster reefs and shell banks, ocean high salinity surf zone, hard bottom, and natural and artificial reefs.

Fisheries Allocation Policy

The Department of Natural Resources Fisheries Allocation Policy went into effect on September 1, 2012. The policy requires FMPs to address the allocation among resource users and provides guidelines and procedures for review.

As stated by the Allocation Policy, overarching factors are to be considered in allocation decisions. These factors are linked to FMP objectives and are addressed to the extent supported by available information. The overarching factors include:

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

Among the Allocation Policy procedures are triggers for an allocation review. In accordance with policy, the pre-assessment of triggers is reviewed internally by FS PRT and shared with the SFAC and TFAC. Triggers listed by the policy with a summarized assessment are as follows:

- Initial development or revision of a FMP;

Pre-assessment: The FS PRT concluded that the existing FMP continues to be an acceptable framework for managing red drum and does not recommend an amendment or revision. Annual updates of the FMP are sufficient for tracking management actions and addressing any new issues. The Bay jurisdictions are required to follow the management measures set forth by the ASMFC and the South Atlantic Fishery Management Council (SAFMC).

- Significant shift in fisheries harvest;

Pre-assessment: There are no defined allocation criteria for the commercial and recreational red drum fisheries. In addition, there were no requests from stakeholders to define an allocation for

the Maryland portion of the Chesapeake Bay. In Maryland, both recreational and commercial landings are sporadic and generally at low levels. Years of higher recreational harvest generally correspond with higher commercial harvest with little evidence of a shift in trends between these fisheries. Harvest of red drum within Chesapeake Bay is unpredictable, although harvests tend to increase in years of low flow and high salinity.

- Population shifts of target or non-target species;

Pre-assessment: Red drum are migratory along the Atlantic Coast and utilize estuarine areas such as Maryland waters. While red drum were more abundant in the Maryland portion of the Chesapeake Bay during 2012, they are usually present for only a few months from mid-summer to fall. In the fall, red drum migrate to the southern Atlantic coast. Although 2012 was a year of unusually high catches of red drum in Chesapeake Bay, there is currently no evidence that this high catch represents a permanent shift in distribution. The high catches corresponded to a year of low freshwater flow and high coastal red drum abundance.

- Threatened and endangered species issues;

Pre-assessment: Red drum are caught by the commercial fishery primarily in pound nets and gill nets in the Chesapeake Bay and by hook & line by the recreational fishery. They are usually caught as bycatch by both commercial and recreational fishermen, although there is some directed recreational effort. There are no known threatened and endangered species interactions with directed red drum fisheries in Maryland. It is possible, though not highly likely, that the same gear types in which red drum are seen as bycatch might also catch threatened and endangered species.

- Changing social patterns & values;

Red drum are of far greater importance to the fisheries in North Carolina than to fisheries in other states that compose the Northern stock. Red drum are among the most popular recreational species targeted by surf fishermen in North Carolina and Virginia.

There is an increasing trend of catch & release with many recreational fisheries, including red drum. Coastwide, the catch & release has increased from an estimated 4% in 1982 to over 80% in recent years. The MRIP estimates, including those for catch & release, are available for both Maryland and Virginia but the estimates are imprecise.

- Ecosystem needs;

Temperature and salinity are the prime factors that influence red drum distribution. The species prefer warm temperatures and salinity above 15ppt.³ The primary prey of adults and juveniles are small to moderate-sized crustaceans and fish.³ Increased water temperatures due to climate change have the potential to shift the population distribution northward. The overall potential consequences of climate change on red drum have not been discussed and are unknown. Sea level rise may affect habitat for early life stages and rising water temperatures could affect distribution and abundance of all life stages. Addendum I to Amendment 2 of the ASMFC Red Drum FMP describes the present condition of habitats, habitat of concern, ecosystem considerations, and threats to habitat. Since red drum habitat requirements vary with life stage, the threats to habitat and ecosystem considerations should be of prime importance.

- Market dynamics;

Red drum are sometimes available locally as fresh product. Red drum are available elsewhere along the coast as fresh product and it is a popular dish in restaurants.

- Management resources;

Management resources directed towards red drum are low in Maryland, commensurate with their inconsistent presence and abundance in Maryland waters. However, biological monitoring for red drum will continue from commercial pound nets as they are available.

- New data;

Maryland-specific data are lacking for red drum. Only one red drum was collected from pound net sampling in 2014. ¹ In only three of 22 years of sampling have more than 20 red drum been collected. The highest numbers of red drum were collected from pound nets in 2012 (n=458) and none of the samples were of legal size for the commercial fishery (455 were less than 18" minimum size and three exceeded the 25" maximum commercial total length limit). ⁴ There is no fishery independent monitoring in Maryland.

Conclusion

The FS PRT concluded that the 1993 Chesapeake Bay Red Drum FMP is an appropriate framework to manage red drum in Maryland's portion of the Chesapeake Bay and its tributaries. Continued fishery dependent monitoring, compliance with ASMFC state requirements, and support of the 2014 Chesapeake Watershed Agreement's water quality and submerged aquatic vegetation (SAV) outcomes are recommended.

References:

¹ Lipkey, G.K. 2015. Maryland Red Drum (*Sciaenops ocellatus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2014. Maryland Department of Natural Resources, Fisheries Service, Annapolis, Maryland.

² Personal communication from the National Marine Fisheries Service. Fisheries Statistics Division. June 25, 2015.

³ Murdy, E.O., R.S. Birdsong, J.A. Musick, 1997. Fishes of the Chesapeake Bay. Smithsonian Institution Press. 324p.

⁴ Rickabaugh, H.W. 2013. Maryland Red Drum (*Sciaenops ocellatus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2012. Maryland Department of Natural Resources, Fisheries Service, Annapolis, Maryland.

Figure 1. Commercial red drum landings reported to Maryland DNR, 1980-2014 ¹.

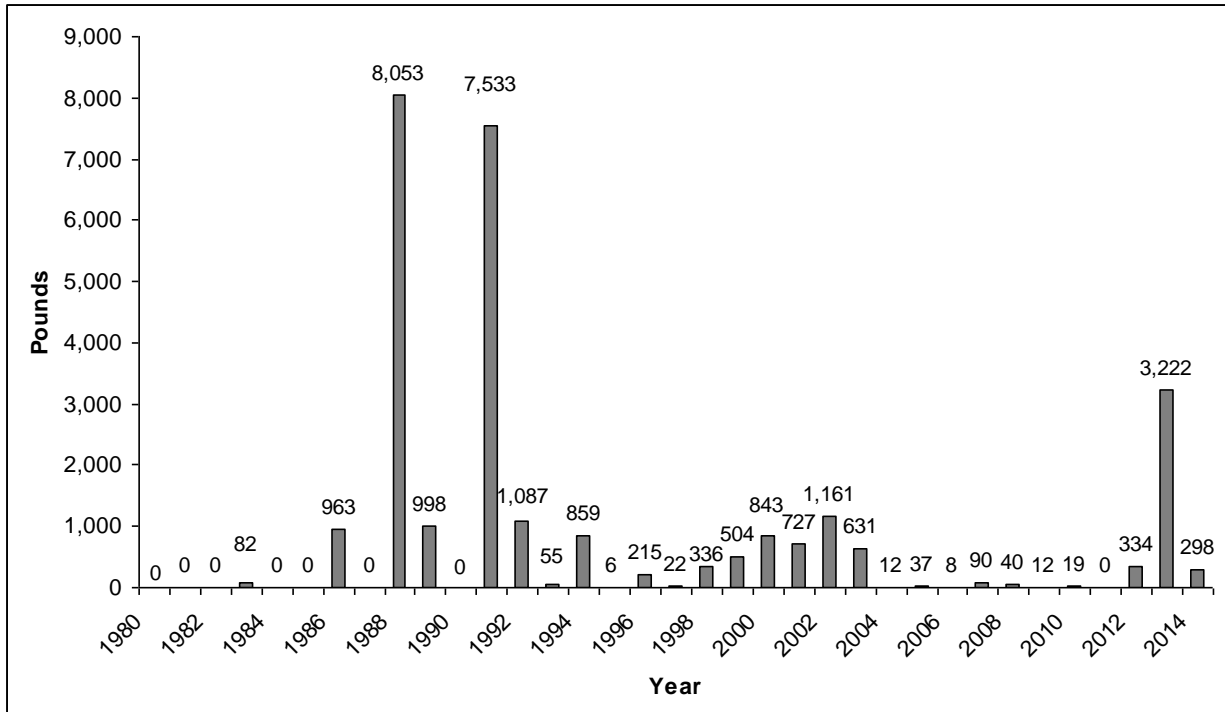


Figure 2. MRIP harvest estimates for red drum in Maryland, 1981-2014 ¹.

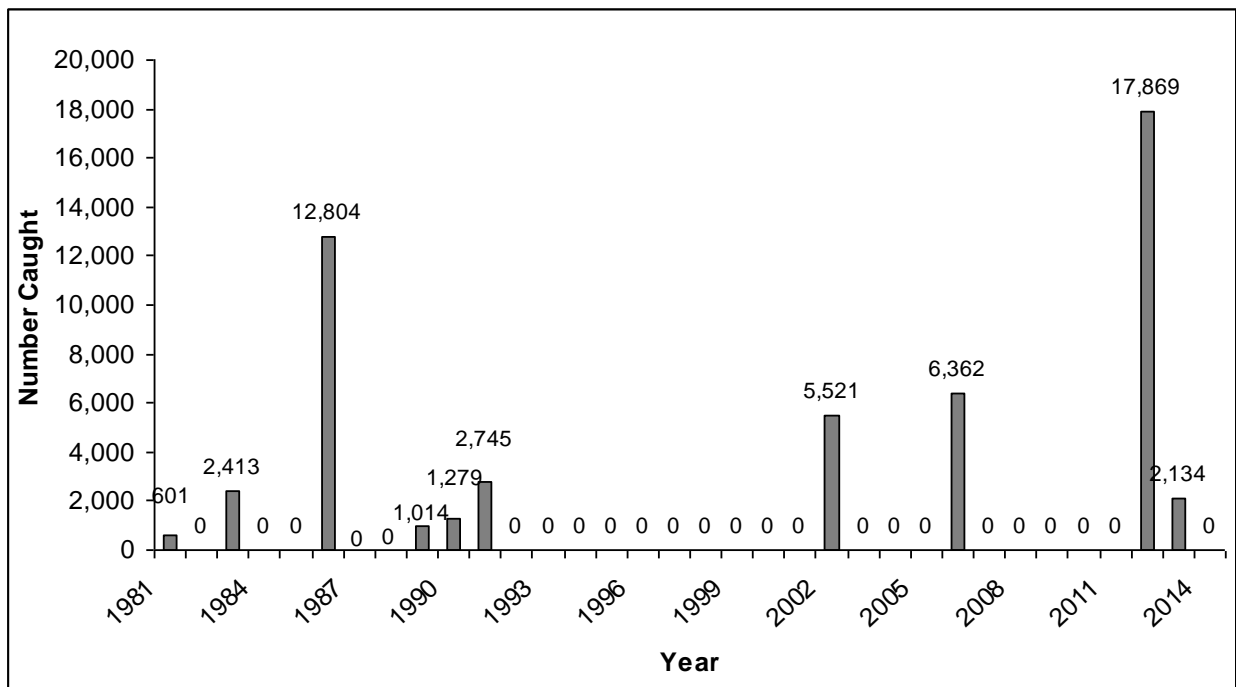


Figure 3. MRIP release estimates for red drum in Maryland, 1981-2014 ¹.

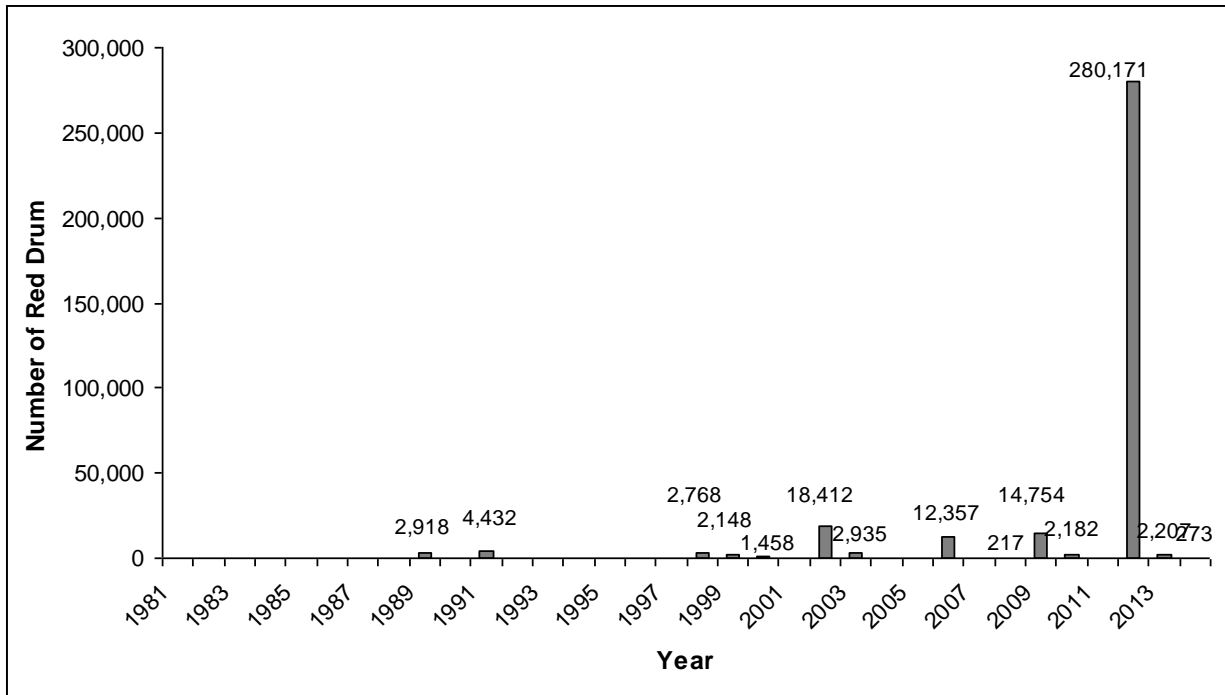
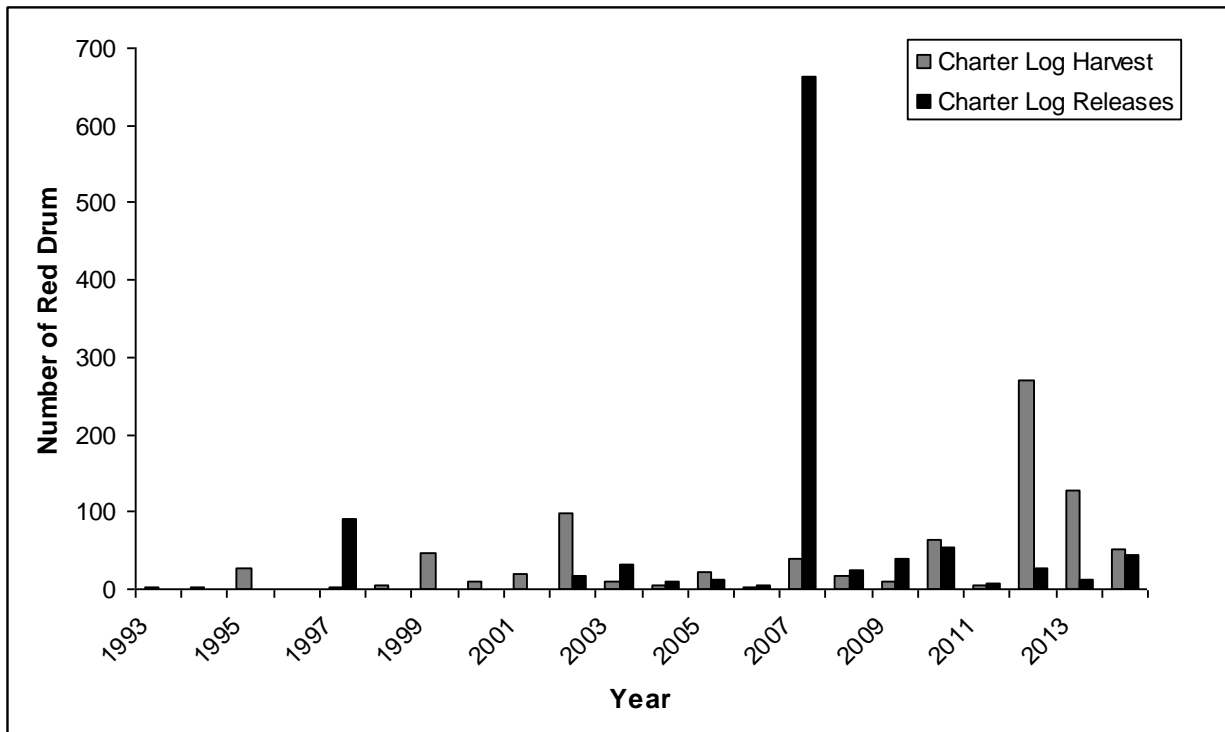


Figure 4. Red drum harvest and releases reported from Maryland's charter boat fishery in numbers, 1993-2014 ¹



1993 Chesapeake Bay and Atlantic Coast Red Drum Management Plan Implementation Table (updated 6/15)			
Section	Action	Date	Comments
1. Overfishing	1.1.1 Virginia will continue to enforce a 5 fish creel limit and an 18 inch minimum size limit with one fish over 27in in the recreational fishery.	1992 Modified in 2003 2010 2015	In compliance with coastal recommendations. VA adopted a slot limit and allows harvest of 18-26" TL red drum. A new possession limit of 3 fish has been adopted for both recreational and commercial harvest. The results of the 2009 ASMFC stock assessment indicate the resource is relatively stable and overfishing is not occurring. A coastal stock assessment is in progress and scheduled for completion in 2016.
	1.1.2 Maryland and the PRFC will implement a 5 fish creel limit and an 18 in minimum size limit with one fish over 27in in the recreational fishery	1994 Modified in 2003 Continue	In compliance with coastal recommendations. MD has a recreational size limit for red drum of 18-27" TL and a commercial size limit of 18-25"TL. The possession limit is 1 fish/day for the recreational fishery and 5 fish/day for the commercial fishery. PRFC has a size limit of 18-25" and a possession limit of 5 fish for both recreational and commercial harvest.
	1.2a Jurisdictions will investigate the potential for using bycatch reduction devices in nonselective fisheries	1992 Continue	The bycatch of immature red drum has not been a problem in Chesapeake Bay fisheries because small fish are infrequently encountered. Bycatch reduction devices that are currently in place should increase the escapement of juvenile red drum.
	1.2b Virginia and Maryland will work with the South Atlantic Fishery Management Council (SAFMC) and ASMFC to develop and require more efficient gear to reduce bycatch and/or discards.	1992 Continue	MD and VA appointed representatives to the ASMFC/SAFMC Red Drum Advisory Panel.
2. Stock Assessment and	2.1 Jurisdictions will support fecundity research and tagging studies to determine movements of juvenile red drum and	1993	The VA red drum tagging program is ongoing. The tagging program includes a fishery independent

Research Needs	develop juvenile indices. Maryland and Virginia will continue the Baywide trawl survey of estuarine finfish species and crabs.	Continue	study and a volunteer recreational study. Tag recapture data indicates a southward, late fall migration of juvenile red drum out of the Bay and along the Virginia coast. Future tag returns should provide information about the movements of these fish upon reaching sexual maturity. ChesMMAAP continues but the collection of red drum is not sufficient to guide any stock assessment. The Maryland Shoal Water (blue crab) Trawl Survey continues (data for fish and crabs). ASMFC has recommended that all states implement a tagging program for red drum. ASMFC has continued to facilitate standardized ageing protocols and consistency among laboratories.
	2.2 VMRC Stock Assessment Program will continue to collect biological data from commercial catches of red drum	1993 Ongoing	There is little fishery dependent information on larger, reproductive red drum and limited fishery-independent information (ASMFC). The large adults are primarily found offshore where fishing for red drum is prohibited.
	2.3a Jurisdictions will continue collecting commercial fisheries statistics.	Continue	Maryland's Chesapeake Bay red drum harvest remains insignificant, although the 2013 harvest was the largest since 2007. Virginia's commercial fishery reported 30,150 pounds of red drum harvested in 2013, the largest since 1983.
	2.3b Virginia will implement a limited and/or delayed entry program and a mandatory reporting system for commercial licenses.	1993 Continue	Implemented in January 1993.
	2.3c Virginia and Maryland will continue to supplement the Marine Recreational Statistics Program	Continue	In 2014, VA anglers received citations for 925 red drum over 46" in length that were caught and released which represented 18% of all

			<p>tournament entries.</p> <p>The MRIP has replaced MRFSS with refined estimates of recreational harvest and total catch. Proportional standard errors (PSE) have dropped below 50 in the past three years for VA, indicating that recreational red drum harvest estimates were more precise in VA's waters, the same is not true for MD.</p>
	2.3d Maryland will continue a sampling program using pound nets and trawls.	Continue	<p>Maryland conducts fishery dependent sampling from pound nets in the Chesapeake Bay. Twenty-one red drum were sampled in 2008 (mean 361mm TL, range 237-541mm TL). None were collected in 2009 and 2010 and only two were collected and released in 2011.³ In 2012, biologists sampled 458 red drum from pound nets: 455 were under the 18" minimum TL and 3 were over the 25" maximum TL size limit. Sixteen red drum were sampled in 2013 and 1 in 2014.</p>

<p>3. Habitat Issues</p>	<p>3.1 Jurisdictions will continue to set specific objectives for water quality goals and review management programs established under the Chesapeake 2000 agreement</p>	<p>Continue</p>	<p>New water quality and SAV goals were adopted by the Chesapeake Bay Program signatory states in 2014 as part of the Chesapeake Watershed Agreement. A summary of the agreement can be viewed at the following link http://www.chesapeakebay.net/documents/ChesapeakeBayWatershedAgreementFINAL.pdf</p> <p>SAV is important to the Chesapeake Bay for a number of reasons. SAV adds oxygen to the water, improves water quality, reduces shoreline erosion and provides shelter for many invertebrate and fish species. SAV beds are important juvenile red drum habitat. Short-term trends in SAV beds have been variable over the years but the overall long-term trend has increased from approximately 40,000 acres (1984) to approximately 76,000 acres in 2014. For more information on trends go to:</p> <p>http://www.chesapeakebay.net/indicators/indicator/bay_grass_abundance_baywide</p> <p>The SAV outcome in the 2014 Chesapeake Watershed Agreement is to achieve an ultimate goal of 185,000 acres. Progress towards the goal/outcome will be measured against a target of 90,000 acres by 2017 and 130,000 acres by 2025.⁷</p>
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Acronyms:

ASMFC – Atlantic States Marine Fisheries Commission

ChesMMAP - Chesapeake Bay Multispecies Monitoring and Assessment Program

MD – Maryland

MRFSS – Marine Recreational Fishery Statistics Survey

MRIP – Marine Recreational Information Program

PRFC – Potomac River Fisheries Commission

SAFMC – South Atlantic Fishery Management Council

SAV – Submerged Aquatic Vegetation

TL – Total Length

VA - Virginia