

Fishery Management Plans

2022-2024

Natural Resources § 4-215

Prepared by

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Table of Contents

Fishery Management Plans i

Table of Contents ii

Overview..... 1

Section 1. American Eel (*Anguilla rostrata*) 8

Section 2. Atlantic Croaker (*Micropogonias undulatus*) 13

Section 3. Atlantic Menhaden (*Brevoortia tyrannus*) 17

Section 4. Black Drum (*Pogonias cromis*) 20

Section 5. Black Sea Bass (*Centropristis striata*)..... 23

Section 6. Blue Crab (*Callinectes sapidus*), Chesapeake Bay 26

Section 7. Blue Crab (*Callinectes sapidus*), Coastal Bays 31

Section 8. Bluefish (*Pomatomus saltatrix*) 34

Section 9. Brook Trout (*Salvelinus fontinalis*)..... 37

Section 10. Maryland Tidewater Catfish Species 41

Section 11. Cownose Ray (*Rhinoptera bonasus*)..... 47

Section 12. Eastern Oyster (*Crassostrea virginica*)..... 49

Section 13. Hard Clam (*Mercenaria mercenaria*), Coastal Bays 55

Section 14. Horseshoe Crab (*Limulus polyphemus*)..... 59

Section 15. Largemouth Bass (*Micropterus nigricans*) 62

Section 16. Red Drum (*Sciaenops ocellatus*)..... 66

Section 17. Scup (*Stenotomus chrysops*) 69

Section 18. Shad and River Herring..... 72

Section 19. Spanish Mackerel (*Scomberomorus maculatus*) and King Mackerel
(*Scomberomorus cavalla*) 79

Section 20. Spot (*Leiostomus xanthurus*)..... 82

Section 21. Spotted Seatrout (*Cynoscion nebulosus*)..... 86

Section 22. Striped Bass (*Morone saxatilis*) 89

Section 23. Summer Flounder (*Paralichthys dentatus*) 95

Section 24. Tautog (*Tautoga onitis*) 98

Section 25. Weakfish (*Cynoscion regalis*)..... 102

Section 26. White Perch (*Morone americana*)..... 105

Section 27. Yellow Perch (*Perca flavescens*) 108

Section 28. Pilot Programs..... 111

Appendix..... 117

Fishery Management Plan Legislative Report 2022-2024

Overview

This document addresses the requirement to regularly report on the status of each managed stock in the Chesapeake Bay and its tidal tributaries, the Atlantic Ocean, and the Atlantic Coastal Bays and their tributaries, as required under Natural Resources Article, §4-215, Annotated Code of Maryland (NR §4-215). The report consists of species-specific narratives that contain information on each fishery management plan (FMP) background, stock status, management measures, the fisheries, and priorities/concerns. For species managed in cooperation with the Atlantic States Marine Fisheries Commission (ASMFC), the Maryland Department of Natural Resources (MDNR) is required to submit annual compliance reports that document implementation of the interstate FMP management strategies and actions. Compliance reports are provided as appendices to those sections.

Introduction

Fishery management plans serve as a framework for conserving and widely using fisheries resources. An FMP includes objectives that direct the implementation of conservation and management measures for a single species or group of species. When developing these objectives, the managing body works with fishing community members, scientists, and other interested and impacted parties to review biological, technical, and socio-economic data for the species. This process ensures fishery resources are equitably and sustainably used.

While freshwater fish generally reside within the state, many coastal fish migrate between habitats within estuaries and along the Atlantic coast. To coordinate management across these interstate distributions, the Chesapeake Bay jurisdictions developed regional FMPs for the watershed, ASMFC developed interstate FMPs for the coast, and the Mid-Atlantic Fishery Management Council (MAFMC) developed federal FMPs for the ocean. The Chesapeake Bay FMPs were developed under the 1987 Chesapeake Bay Agreement and the 1992 amendments for several species. They provide a framework for the watershed jurisdictions to generate compatible, coordinated management measures. By including ecosystem-based considerations, interactions among species, habitat, land use, and socioeconomic factors in the FMPs, they are part of the decision-making process and balance sustainable fishery yields with conservation goals. The Chesapeake Bay FMPs also outline how the jurisdictions will implement ASMFC coastal compliance requirements and identify any additional issues specific to the Chesapeake Bay region. The ASMFC developed FMPs for species occupying state waters (0-3 miles offshore), while the MAFMC developed FMPs for coastal migratory species mainly found in the Exclusive Economic Zone (3-200 miles offshore). Some species are managed jointly by both bodies. The ASMFC requires the states to prepare annual compliance reports to ensure they are implementing the coastwide management requirements stated in the FMP. Maryland reports on the following species: American eel, Atlantic croaker, Atlantic menhaden, Atlantic striped bass, Atlantic sturgeon, black drum, black sea

bass, bluefish, horseshoe crab, Spanish mackerel, red drum, shad and herring, scup, spot, spotted seatrout, summer flounder, tautog, and weakfish. Additional information on stock status and fishery management measures for these migratory fish species can be found at asmfc.org and mafmc.org.

The Maryland Atlantic Coastal Bays FMPs outline how species are managed in the Coastal Bays. The Coastal Bays FMPs were developed to complement the larger Comprehensive Coastal Management Plan. The Maryland-specific FMPs (blue crabs, brook trout, catfish, hard clams, largemouth bass, oysters, white perch, and yellow perch) provide a framework for managing species in Maryland's inland and tidal waters.

Natural Resource Article, §4-215, Annotated Code of Maryland states that MDNR shall prepare FMPs for a list of species. Once a plan has been developed and adopted, it may be incorporated by reference into the Code of Maryland Regulations (COMAR). A 2010 legislative bill gave MDNR authority to create FMPs without the need to annually amend NR §4-215 to add new species to the list of managed species. The statute requires MDNR to address overfishing when data shows that it is an issue. The MDNR also consults with the Tidal and Sport Fisheries Advisory Commissions, the Oyster Advisory Commission, and the Aquaculture Coordinating Council (TFAC, SFAC, OAC, and ACC, respectively) for their input when developing management strategies and actions.

Twenty-one FMPs have been adopted by MDNR in accordance with NR §4-215. Fishery management plans are reviewed and updated on a regular basis to maintain effective management strategies that reflect the changing needs of fishery resources based on recommendations from species-specific biologists, FMP staff, and advisory bodies. Currently, the process for reviewing FMPs is the annual legislative report. The MDNR staff rely on requests from the TFAC and SFAC members regarding which plans may require a more in-depth review.

During 2017, cownose rays were added to the list of species for the development of an FMP. The original timeline for completion was December 2018, but it was extended to December 2020, subject to funding (2019 Md. Laws, Chap. 343). A Cownose Ray Workgroup was formed in October 2017. The FMP strategies and actions have been developed with the workgroup and the plan is being edited so that a draft can be released for public comment.

If new approaches to managing fisheries are identified by MDNR or the advisory bodies, COMAR 08.02.01.10 allows them to be evaluated through pilot programs. The active pilot programs during 2022-2024 were the Reporting Pilot, Shrimp Pilot, and Finfish Trotline Pilot. A more specific summary can be found in Section 28 of this report.

Fish Habitat and Land Conservation

The MDNR has identified land development as one of the major threats to fish habitat. However, Maryland's fisheries managers do not have authority to regulate land use. To address this challenge, MDNR has been working with local governments, environmental organizations, state agencies, and the Chesapeake Bay Program on fish habitat. The central message about fish habitat is "land conservation = fish conservation." The primary means of conveying this message is through reviewing county and town comprehensive growth plans and outreach to environmental organizations, through which MDNR can relay how growth-induced changes in the watershed affect fish habitat and other aquatic resources and advise on the limits of development. Land use is ultimately the purview of local governments (i.e., counties and towns) and compliance with MDNR recommendations is voluntary. Additionally, environmental organizations can engage in the local political processes that influence development. Individual project permits are evaluated through the environmental review process.

The MDNR Fisheries Ecosystem Assessment Division has investigated the impact of watershed development on fish habitat and fisheries productivity in Maryland's portion of the Chesapeake Bay watershed since 2003. This work is funded by federal aid to sportfishing. Information about the division, annual reports, and other publications can be found at dnr.maryland.gov/fisheries/pages/fhep/index.aspx.

In general, habitat deterioration should manifest itself as reduced survival of sensitive life stages of fish (usually eggs or larvae) or limitation on use of habitat for juveniles and adults. In either case, habitat stress would be reflected by dynamics of critical life stages (abundance, spatial and temporal distribution, survival, growth condition, etc.). Development is measured as the percentage of impervious surface (IS) or counts of structures per hectare (C/ha) in a watershed. As development increases, fish diversity declines and game and commercial species become less abundant. A target level of rural development, 5% IS or ≤ 0.31 C/ha (1 structure per 8.5 acres), supports desirable production and habitat needed for Chesapeake Bay fisheries. After reaching a threshold level of early suburban development, 10% IS or 0.84 C/ha (1 structure per 3 acres), increasingly intractable fishery problems related to habitat occur. Beyond 15% IS or 1.51 C/ha (1 structure per 1.5 acres), severe degradation and low production are expected. Forested and agricultural watersheds have more productive fish habitats than suburban and urban ones. Maryland's portion of the Chesapeake Bay watershed was very close to the suburban threshold in 2023.

Anadromous Fish Spawning Stream Ichthyoplankton

Herring are the most far-ranging and sensitive of the anadromous fish species encountered. The proportion of samples with alewife, blueback herring, or hickory shad eggs and/or larvae (P_{herr}) provided a reasonably precise estimate of nontidal and tidal spawning stream habitat occupation based on encounter rate. Regression analyses indicated significant and logical relationships among P_{herr} and C/ha

consistent with the hypothesis that development was detrimental to stream spawning. Predicted P_{herr} declined by 50% over the range of observed C/ha (0.07-1.52). Salt pollution in anadromous fish spawning streams, measured by conductivity, increased with development. In developing watersheds, declines in P_{herr} suggest other stressors accompanied increasing conductivity.

Estuarine Yellow Perch

Annual L_p , the proportion of tows containing yellow perch larvae during a standard time period and where larvae would be expected, provides a cost-effective measure of the product of egg production and survival through the early postlarval stage. Estimates of L_p were made for brackish and tidal-fresh subestuaries based on a time-series of surveys from subestuaries with rural to urban watersheds stretching back to 1963. A full range of L_p values occurred in subestuaries with agricultural watersheds and a forest cover classification in a watershed was associated with higher L_p (median $L_p = 0.74$) than agriculture (median $L_p = 0.50$) or development (median $L_p = 0.35$), but these differences may have also reflected dynamics unique to brackish or tidal-fresh subestuaries since all but one agricultural watershed had brackish subestuaries, and nearly all forested watersheds had tidal-fresh subestuaries. Regardless of salinity type, the lowest levels of L_p were found in subestuaries with suburban to urban watersheds.

Summer Estuarine Fish Community Sampling

Correlation analyses of bottom dissolved oxygen (DO) and development in subestuaries sampled since 2003 indicated that bottom DO responded differently depending on salinity classification. Additionally, occupation of bottom channel habitat by fish was influenced by watershed development and subestuary salinity type. In mesohaline (i.e., moderate salinity) subestuaries, mean summer bottom DO declined with development, averaging below the threshold of 3.0 mg/L. Below the threshold, occupation of bottom channel habitat by fish diminishes. In oligohaline and tidal-fresh estuaries (i.e., low or no salinity), mean bottom DO did not decline and the extent of bottom habitat that can be occupied by fish did not diminish with development. In these subestuaries, episodes of abnormally low abundance of fish or fish kills occurred, but they were not related to chronic low DO. Surface DO did not exhibit noticeable change with development for all three salinity types.

Chesapeake Bay Program

The MDNR also coordinates with the Chesapeake Bay Program to implement the 2014 Chesapeake Watershed Agreement. The agreement defines goals and outcomes to restore and protect the Chesapeake Bay. The goals address sustainable fisheries, vital habitats, water quality, toxic contaminants, healthy watersheds, stewardship, land conservation, public access, environmental literacy, and climate resiliency. These goal categories led to the development of specific outcomes, and to the development of management strategies that outline what steps to take to achieve the outcomes. These outcomes are centered around achieving the total maximum daily

load (TMDL) of key pollutants. Reducing nutrient and sediment load is expected to improve oxygen and water clarity levels to meet the water quality standards and in turn support fish, shellfish, and other living resources. Of particular importance to nontidal and tidal fish habitat are the brook trout, fish habitat, oyster, stream health, and wetlands outcomes. The partners of the Chesapeake Bay Program regularly review implementation progress on their 2-year work plans that contain specific actions to achieve each outcome. For outcomes that have not been achieved, new work plans were developed for 2022 to 2024. The most recent information on the work plans is available at chesapeakeprogress.com. In 2023, the Scientific and Technical Advisory Committee published A Comprehensive Evaluation of System Response report that evaluates the current and historical progress towards meeting the TMDL and water quality standards and suggests how progress can be accelerated. This report was published in preparation for the 2025 deadline for achieving the outcomes. The full report is available at chesapeake.org/stac/wp-content/uploads/2023/05/CESR-Final-update.pdf

The ecosystem work conducted within Fishing and Boating Services (FABS) and in collaboration with MDNR's partners helps inform conservation and restoration of freshwater and coastal habitats. Both conservation and restoration are critical strategies for promoting resilient fisheries as environmental conditions shift due to climate change.

Climate Change

Changing environmental conditions, especially due to climate change, is an emergent issue for fisheries management. In the Mid-Atlantic, priority climate impacts include warming temperatures, sea level rise, greater fluctuation in precipitation patterns and storms, and ocean acidification. This suite of environmental parameters has the potential to present both challenges and opportunities for fishery resources. Ecological concerns include changes to finfish and shellfish life history and stock dynamics, impaired water quality, and habitat loss. Socioeconomic concerns include a potentially shifting composition of available species in Maryland waters, reduced access due to hot or stormy conditions, and damage to shoreside infrastructure.

Governance concerns include changes to stock dynamics, maintaining monitoring programs, and implementing regulations in an appropriate timeframe. Given these potential impacts, it is essential that MDNR utilizes an adaptive management approach to support sustainable fisheries when facing uncertainty in both the environment and fishery response.

From 2022 to 2024, FABS conducted a review of projected climate change impacts and developed strategies that build adaptation and resilience in the fishery management system. These strategies are synthesized in a Climate-Ready Fisheries Planning Menu, which addresses fisheries from ecological, socioeconomic, and governance perspectives. Key recommendations are: 1) monitor changes to fish species, 2) integrate fisheries data with habitat and ecosystem data, 3) build resilient fishing infrastructure, 4) ensure safe and reliable public access to the water, 5) utilize

climate data to inform adaptive management, and 6) encourage diversification of fishing activities. A short-term focus area is incorporating climate adaptation into FMP management goals. The planning menu can serve as a prioritization tool by highlighting opportunities for FABS and MDNR to assess internal programs and how the agency can support external partnerships. It is designed to synergize with statewide and regional initiatives as well as coastwide partnerships. The planning menu can be accessed at mddnr.info/Climate-Ready-Fisheries-Planning-Menu.

The MDNR is the chair of the Maryland Commission on Climate Change's Adaptation and Resiliency Working Group (ARWG). The ARWG is a partnership of state agencies and academic institutions that supports Maryland in reducing climate change vulnerability and providing tools for adaptation. In 2024, the ARWG published its Next Generation Adaptation Plan (NextGen), a 10-year roadmap to climate resilience that encompasses multiple sectors including water resources, human health, natural resources, ecosystems, and infrastructure. Staff from FABS participated in prioritizing strategies and developing milestones. NextGen will guide FABS staff in collaborating across MDNR and with state partners on cross-sector topics like habitat conservation and restoration and water quality. NextGen can be accessed via the ARWG website mde.maryland.gov/programs/air/ClimateChange/MCCC/Pages/ARWG.aspx.

Staff from FABS also participate in interjurisdictional climate resilience initiatives through the Chesapeake Bay Program's Climate Resiliency Workgroup (CRWG). The CRWG implements the Chesapeake Bay Watershed Agreement's goal for climate resiliency and corresponding outcomes for monitoring and assessment and adaptation. The partnership supported a series of workshops that culminated in a comprehensive understanding of rising water temperatures in the nontidal and tidal portions of the watershed. The 2022 Rising Watershed and Bay Temperatures – Ecological Implication and Management Responses report addresses the impacts to key fish species and habitats and makes management recommendations that can guide adaptation and resilience efforts moving forward. The CRWG will continue to synthesize climate monitoring and projection data, conserve and restore habitat, and coordinate with federal, state, and local governments and non-governmental organizations. The workshop report is available at chesapeake.org/stac/events/session-2-rising-watershed-and-bay-water-temperatures-e2-80-94ecological-implications-and-management-responses/. Information on the CRWG is available at chesapeakebay.net/who/group/climate-change-workgroup.

The National Marine Fisheries Service (NMFS), the Regional Management Councils, and ASMFC are leading the forefront on climate-ready fisheries. The Climate Science Strategy (2015) and Northeast Regional Action Plan (2023) detail a set of high-level, interrelated objectives that provide a framework for federally managed fisheries. For a more targeted approach, NMFS, the three U.S. East Coast Fishery Management Councils, and ASMFC coordinated a two-year East Coast Climate Change Scenario Planning initiative. Through this exercise, representatives from the management bodies and member states prioritized three management themes that apply across future scenarios and highlight areas for building fishery

resilience: 1) cross-jurisdictional governance and management, 2) managing under increased uncertainty, and 3) data sources and partnerships. The initiative also produced a Potential Action Menu (updated 2024) that will guide development of management priorities. These themes will continue to guide MDNR as the agency prioritizes strategies and transitions into implementation. Information on the scenario planning initiative is available at mafmc.org/climate-change-scenario-planning.

Fishery Statistics

The commercial fishery from Maryland waters encompasses more than 30 different species. Licensed commercial harvesters are required to submit trip level harvest information to MDNR in accordance with COMAR 08.02.13.06. The harvest data informs management decisions for each fishery. The list of species harvested are provided in Tables 2, 3, and 4.

Recreational data is an important component in assessing the status of fishery stocks. Recreational fishing data is collected by NMFS through the Marine Recreational Information Program (MRIP). Starting in 1979, a Coastal Household Telephone Survey (CHTS) was used to collect data, but it became less effective over time due to methodology and the large decline in household landline use. A piloted and peer reviewed Fishing Effort Survey (FES) replaced the CHTS in 2018. This new mail-based method revealed that the CHTS did not accurately capture the total estimated fishing effort at the time. As a result, the FES effort appeared 3x higher from private boats and 5x higher from shore. From 2016 to 2017, NMFS developed a calibration model to convert the underestimated historical effort to the new FES estimates. In 2023, NMFS published the results from a pilot study to identify potential sources of bias in the FES methodology. They are continuing to develop the improved FES design for peer review and calibrating the historical data. The existing FES data is still acceptable for use in stock assessments until the newly calibrated dataset is available and may result in changes to management measures. Additional information is available at fisheries.noaa.gov/recreational-fishing-data/fishing-effort-survey-research-and-improvements#why-we-made-the-change-to-a-mail-survey-from-a-telephone-survey.

Through the Modern Fish Act, NMFS funds the Access Point Angler Intercept Survey (AP AIS) which is an improved recreational data survey that estimates the amount of fish recreationally harvested and released along the Atlantic Coast. AP AIS conducted 1,072 site assignments in 2022 and 1,053 in both 2023 and 2024. At each site assignment, individuals that were recreationally fishing were intercepted and interviewed, when agreeable, collecting information on fishing harvest, release

and effort. Further information can be found at: fisheries.noaa.gov/recreational-fishing-data/access-point-angler-intercept-survey-glance.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ACC	Aquaculture Coordinating Council
ARWG	Adaptation and Resiliency Working Group of the Maryland Commission on Climate Change
AP AIS	Access Point Angler Intercept Survey
ASMFC	Atlantic States Marine Fisheries Commission
C/ha	Counts of Structures Per Hectare
CHTS	Coastal Household Telephone Survey
CRWG	Climate Resiliency Working Group of the Chesapeake Bay Program
DO	Dissolved Oxygen
FABS	Fishing and Boating Services
FES	Fishing Effort Survey
FMP	Fishery Management Plan
IS	Impervious Surface
L _p	Proportion of tows containing yellow perch larvae during a standard time period and where larvae would be expected
MAFMC	Mid-Atlantic Fishery Management Council
MRIP	Marine Recreational Information Program
MDNR	Maryland Department of Natural Resources
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OAC	Oyster Advisory Commission
P _{herr}	Proportion of samples with shad/herring eggs and/or larvae
SAV	Submerged Aquatic Vegetation
SFAC	Sport Fisheries Advisory Commission
TFAC	Tidal Fisheries Advisory Commission
TMDL	Total Maximum Daily Load [of pollutants]

Tables

Table 2. List of finfish and shellfish species reported as being harvested commercially during 2022.

Species Name (A-G)	Species Name (H-S)	Species Name (S-W)
AMBER JACKS	HAKE - ATLANTIC - RED OR WHITE	SHARK - DOGFISH - SPINY
BASS - STRIPED	HERRING - RIVER	SHARK - HAMMERHEAD
BLUEFISH	HORSESHOE CRAB (MALE)	SHARK - SHARPNOSE
BONITO	JACK CREVALLE	SHARK - SHORTFIN
BUTTERFISH	JOHN DORY	SHARK - SPINNER
CARP	KINGFISH	SHARK - THRESHER
CATFISH - BLUE	LOBSTER - AMERICAN	SHEEPSHEAD - ATLANTIC
CATFISH - BULLHEAD	MACKEREL - ATLANTIC	SKATE
CATFISH - CHANNEL	MACKEREL - SPANISH	SNAKEHEAD - NORTHERN
CATFISH - FLATHEAD	MENHADEN - ATLANTIC	SPADEFISH
CATFISH - UNCLASSIFIED	MINNOWS	SPOT
CLAM - RAZOR	MONKFISH	SQUID
CLAM - SOFT	MULLET - BLACK OR SILVER	SUNFISH OR BLUEGILLS
COBIA	OCEAN POUT	SWORDFISH
CONCHES	OPAH	TAUTOG
CRAB - BLUE	OYSTER - EASTERN	TILEFISH - BLUELINE
CRAB - JONAH	PERCH - OCEAN	TILEFISH - GOLDEN
CRAB - RED	PERCH - WHITE	TOADFISH
CRAPPIE	PERCH - YELLOW	TRIGGER FISHES
CROAKER	POMFRETS	TUNA - ALBACORE
CUNNER	PORGY	TUNA - BIGEYE
CUTLASS FISH	PUFFER - NORTHERN	TUNA - BLACKFIN
DOLPHINFISH	RAY - COWNOSE	TUNA - BLUEFIN
DRUM - BLACK	RIBBONFISH	TUNA - LITTLE
DRUM - RED	SCALLOP - SEA	TUNA - YELLOWFIN
EEL - COMMON	SEA BASS - BLACK	TURTLE - SNAPPING
EEL - CONGER	SEA TROUT - GRAY	WAHOO
FLOUNDER - PLAICE	SEA TROUT - SPOTTED	WHELK - CHANNEL
FLOUNDER - SUMMER	SHAD - GIZZARD	WHELK - KNOBBED
GARFISH	SHAD - UNCLASSIFIED	WHITING
GRUNTS	SHARK - DOGFISH - SMOOTH	

Table 3. List of finfish and shellfish species reported as being harvested commercially during 2023.

Species Name (A-G)	Species Name (A-S)	Species Name (S-W)
AMBER JACKS	HAKE - ATLANTIC - RED OR WHITE	SHARK - BULL
BASS - SMALLMOUTH	HARVESTFISH	SHARK - DOGFISH - SMOOTH
BASS - STRIPED	HERRING - SEA	SHARK - DOGFISH - SPINY
BLUEFISH	HORSESHOE CRAB (MALE)	SHARK - HAMMERHEAD
BONITO	JACK CREVALLE	SHARK - SHARPNOSE
BUTTERFISH	KINGFISH	SHARK - SPINNER
CARP	LIZARD FISH	SHARK - THRESHER
CATFISH - BLUE	LOBSTER - AMERICAN	SHARK - TIGER
CATFISH - BULLHEAD	MACKEREL - ATLANTIC	SHEEPSHEAD - ATLANTIC
CATFISH - CHANNEL	MACKEREL - KING AND CERO	SKATE
CATFISH - FLATHEAD	MACKEREL - SPANISH	SNAKEHEAD - NORTHERN
CATFISH - WHITE	MENHADEN - ATLANTIC	SPADEFISH
CATFISH - UNCLASSIFIED	MINNOWS	SPOT
CLAM - RAZOR	MONKFISH	SQUID
CLAM - SOFT	MULLET - BLACK OR SILVER	SUNFISH OR BLUEGILLS
COBIA	MULLET - STRIPED	SWORDFISH
CONCHES	OPAH	TAUTOG
CRAB - BLUE	OYSTER - EASTERN	TILEFISH - BLUELINE
CRAB - JONAH	PERCH - WHITE	TILEFISH - GOLDEN
CRAB - RED	PERCH - YELLOW	TILEFISH - UNCLASSIFIED
CRAPPIE	POMFRETS	TOADFISH
CROAKER	POMPANO	TRIGGER FISHES
DOLPHINFISH	PORGY	TUNA - ALBACORE
DRUM - BLACK	PUFFER - NORTHERN	TUNA - BIGEYE
DRUM - RED	RAY - COWNOSE	TUNA - BLUEFIN
EEL - COMMON	RIBBONFISH	TUNA - LITTLE
EEL - CONGER	SCALLOP - SEA	TUNA - YELLOWFIN
FLOUNDER - PLAICE	SEA BASS - BLACK	TURTLE - SNAPPING
FLOUNDER - SUMMER	SEA TROUT - GRAY	WAHOO
FLOUNDER - WINTER	SEA TROUT - SPOTTED	WHELK - CHANNEL
GARFISH	SHAD - GIZZARD	WHELK - KNOBBED
	SHARK - BLACKTIP	WHITING - UNCLASSIFIED

Table 4. List of finfish and shellfish species reported as being harvested commercially during 2024.

Species Name (A-F)	Species Name (G-S)	Species Name (S-W)
AMBER JACKS	GARFISH	SHARK - DOGFISH - SMOOTH
BASS - SMALLMOUTH	HAKE - ATLANTIC - RED OR WHITE	SHARK - DOGFISH - SPINY
BASS - STRIPED	HERRING - RIVER	SHARK - HAMMERHEAD
BLUEFISH	HORSESHOE CRAB (MALE)	SHARK - SHARPNOSE
BONITO	JOHN DORY	SHARK - SPINNER
BUTTERFISH	KINGFISH	SHARK - THRESHER
CARP	LOBSTER - AMERICAN	SHEEPSHEAD - ATLANTIC
CATFISH - BLUE	MACKEREL - ATLANTIC	SHRIMP - ATLANTIC
CATFISH - BULLHEAD	MACKEREL - SPANISH	SKATE
CATFISH - CHANNEL	MENHADEN - ATLANTIC	SNAKEHEAD - NORTHERN
CATFISH - FLATHEAD	MINNOWS	SPOT
CATFISH - WHITE	MONKFISH	SQUID
CLAM - RAZOR	MULLET - BLACK OR SILVER	SUNFISH OR BLUEGILLS
CLAM - SOFT	MULLET - STRIPED	SWELLFISH
COBIA	OPAH	SWORDFISH
CONCHES	OYSTER - EASTERN	TAUTOG
CRAB - BLUE	PERCH - WHITE	TILEFISH - BLUELINE
CRAB - JONAH	PERCH - YELLOW	TILEFISH - GOLDEN
CRAB - RED	POMFRETS	TILEFISH - UNCLASSIFIED
CRAPPIE	PORGY	TRIGGER FISHES
CROAKER	RAY - COWNOSE	TUNA - BIGEYE
CUSK	RIBBONFISH	TUNA - BLUEFIN
DOLPHINFISH	SCALLOP - SEA	TUNA - LITTLE
DRUM - BLACK	SEA BASS - BLACK	TUNA - SKIP JACK
DRUM - RED	SEA ROBIN	TUNA - YELLOWFIN
EEL - COMMON	SEA TROUT - GRAY	TURTLE - SNAPPING
EEL - CONGER	SEA TROUT - SPOTTED	WHELK - CHANNEL
FLOUNDER - GREY SOLE	SHAD - GIZZARD	WHELK - KNOBBED
FLOUNDER - SUMMER	SHAD - UNCLASSIFIED	WHITING - UNCLASSIFIED
FLOUNDER - WINTER	SHARK - BLACKTIP	

Section 1. American Eel (*Anguilla rostrata*)

American eels have a unique life history strategy. American eels are catadromous, spending most of their life in freshwater or estuarine environments, like Maryland's Chesapeake Bay. Eels migrate to spawn in the Sargasso Sea (east of the Bahamas and south of Bermuda) and their larvae (called leptocephali) are carried by currents for approximately one year along the entire Atlantic coast from Central America to Greenland. As the larvae approach the continental shelf, they transform into glass eels, which actively swim to coastal areas. After approximately 2 months, the glass eels become pigmented and are referred to as elvers. The elvers either remain in estuaries or continue their migration to rivers and streams. They continue to grow into larger, immature yellow eels and spend most of their life at this stage. Their final stage of life occurs when yellow eels become sexually mature and transform into silver eels. Mature silver eels then migrate back to the Sargasso Sea to spawn and die. Silver eels range in age from 3 to 15 years in Maryland and can live up to 30 years in the northernmost latitudes. American eels are part of one panmictic population, defined as a single-breeding population with random mating. They occur in a broader array of habitats than any other fish species. Their complex life history makes the American eel population difficult to assess and a challenge to manage.

American eels provide a unique ecosystem service as they are a primary host for freshwater mussel larvae and are the primary means of mussel dispersal within a river or stream.¹ Mussels provide important ecological services as water filters in freshwater. Providing fish passage so American eels can move into freshwater habitat will facilitate the rebuilding of freshwater mussel populations.

American eel is considered a significant commercial species, with multiple life stages being harvested for food and bait. The commercial yellow eel fishery is concentrated among the Mid-Atlantic states and eels are primarily harvested for the international food market. Elvers (also referred to as pencil eels) are a popular bait for commercial and recreational fishing. Landings of American eel in the United States have declined since record landings were recorded in the 1970s and 1980s.

Fishery Management Plans

A Chesapeake Bay American Eel Fishery Management Plan (CBAE FMP) was adopted in 1991. The goal of the CBAE FMP is to manage the American eel population in the Chesapeake Bay and its tributaries so that harvest does not exceed the natural capacity of the population to maintain its size from year to year. The CBAE FMP was reviewed in 2014. The Plan Review Team concluded that the CBAE FMP management framework is still appropriate for managing the population in the Chesapeake Bay and Coastal Bays but recommended the development of an amendment. In 2016, Amendment 1 to the CBAE FMP was incorporated into Maryland regulations. This amendment formally adopts the guidelines and management requirements established by the Atlantic States Marine Fisheries Commission (ASMFC). It also updates the status of the eel resource and provides a framework for managing and monitoring the eel fishery in Maryland waters.

The ASMFC manages American eel as a coastwide stock from Maine to Florida. The ASMFC adopted an Interstate Fishery Management Plan (FMP) for American Eel in 1999.² The goal is to conserve and protect the American eel resource to ensure its continued role in the ecosystem while providing the opportunity for its commercial, recreational, scientific, and educational use. The ASMFC developed the FMP to address data needs and to assess other information indicating the decline of some segments of the American eel population. Jurisdictions are required to implement fishery-independent young of year (YOY) monitoring surveys and complete an annual compliance report.

Since the interstate FMP was developed, seven addenda have been adopted since 2006. Addendum I (2006) to the interstate FMP required implementation of a commercial licensing and reporting system for American eel fisheries to collect catch and effort data.³ Addendum II (2008) recommended stronger regulatory language by state and federal agencies to improve upstream and downstream passage at dams, particularly for emigrating silver eels.⁴ Addendum III (2013) and Addendum IV (2014) were adopted with the goal of reducing mortality of glass (Maine and South Carolina only), yellow, and silver eels.^{5,6} Addendum III management measures included an increase in the commercial minimum size, gear restrictions, seasonal closure, and recreational size and creel limits.⁵ Addendum IV established a coastwide commercial catch cap for the yellow eel fishery, triggers for the implementation of state-by-state commercial quotas, and a quota for the glass eel fishery.⁶ Addendum V (2018), implemented in 2019, increased the yellow eel commercial cap to correct the historical harvest, established a new management trigger, and removed state quotas.⁷ Provisions for the aquaculture of glass eels were slightly modified; the limit for glass eel harvest for use in domestic aquaculture activities with an approved state management plan is 200 pounds.⁷ Addendum VI (2024), beginning in 2025, will maintain the commercial quota for Maine's glass eel fishery for three years (2025 to 2027).⁸ Addendum VII (2024) established five management strategies: (1) a new coastwide cap of 518,281 pounds using a new management tool (I_{TARGET}), (2) maintained the response for exceeding the coastwide cap, (3) timeframe for the yellow eel provisions, (4) annual YOY abundance survey, and (5) *de minimis* status.⁹ The I_{TARGET} , an index-based method that provides management advice based on abundance indices and catch information through 2020, is based on three parameters: the reference period, the multiplier, and the threshold.⁹ Actions will be triggered when the coastwide cap is exceeded by 10% in two consecutive years. Only those states that harvest more than 1% of the total yellow eel landings will have to adjust their management measures if the trigger is met.⁹ There is no sunset date for the coastwide cap established in Addendum VII, rather, the coastwide landings cap will remain for three years (2025 to 2027).⁹ States are not required to collect YOY length and pigment data, though they may continue to collect biological data voluntarily.⁹ *De minimis* status is based on the average landings from the previous three years of landings. A state can be considered *de minimis* if the average landings are less than 1% of the coastwide landings.⁹

The Maryland Department of Natural Resources (MDNR) is required to submit annual compliance reports to ASMFC. Included in this FMP report are the American

eel compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the American eel FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2024/11/AmericanEelFMPReview2022FY.pdf
asmfc.org/wp-content/uploads/2024/11/AmericanEelFMPReviewFY2023.pdf
asmfc.org/wp-content/uploads/2025/11/AmericanEelFMPReview2024FY.pdf.

Stock Status

Chesapeake Bay biological reference points for American eel have not been established and stock status in the Chesapeake Bay remains unknown. However, based on fishery-dependent and fishery-independent surveys completed under the Maryland Eel Population Study, yellow eel indices of abundance have indicated positive trends and increases in relative abundance since the late 1990s. The index developed from the YOY glass eel survey in Maryland's Coastal Bays has indicated stable abundance since survey inception in 2000. In addition, Maryland commercial American eel landings have been considerably more stable than total Atlantic coast landings. Since 2010, more than 60% of the total Atlantic coast landings were from Maryland. Since 2019, commercial pot effort and harvest substantially declined while the relative abundance trends increased in Maryland's portion of the Chesapeake Bay.¹⁰

The ASMFC conducted a benchmark stock assessment for American eel in 2012. Data from the Atlantic coast indicated varying trends in regional yellow eel abundance indices. For example, abundance decreased in the Hudson River and South Atlantic indices, no trends were evident in the Delaware Bay/Mid-Atlantic Coastal Bay indices, and abundance has been relatively stable in the Chesapeake Bay. The stock assessment models identified declines in abundance for YOY (elver) and yellow-phase American eels. The prevalence of declining indices resulted in a determination that the coastal American eel stock is depleted. The depleted status is attributed to the synergistic effect of harvest pressure, reduced habitat availability (river/stream blockages), increased habitat impairment (pollution), introduction of a swim bladder parasite, and climate change.¹¹ A stock assessment update was completed in 2017. Neither reference points nor stock status could be quantitatively determined. Despite stability in coastwide landings and the Mid-Atlantic eel population, significant downward trends were noted in the Hudson River indices and a few South Atlantic indices. The trend analysis supported the conclusion that the American eel population had not improved since 2012.

A stock assessment update was completed in 2023. Landings varied among states, but overall the yellow eel population remained depleted and was at lower levels than those reported in the 2012 and 2017 stock assessments.¹² The 2023 stock assessment explored further approaches for assessing the American eel population, but the

American eel stock is considered data poor.¹² Neither reference points nor stock status could be quantitatively determined for the benchmark assessment or stock assessment updates. However, the prevalence of declining indices of abundance for glass eels and yellow eels resulted in a determination that the coastal American eel stock was depleted in all three assessments. Data from the Atlantic coast indicated that trends in regional yellow eel abundance indices have been variable. For example, abundance decreased in the Hudson River and South Atlantic indices, while abundance remained relatively stable in the Delaware Bay/Mid-Atlantic Coastal Bay and Chesapeake Bay indices. The depleted status is attributed to the synergistic effect of harvest pressure, reduced habitat availability (river/stream blockages), increased habitat impairment (pollution), introduction of a swim bladder parasite, and climate change.¹¹ The 2023 stock assessment update indicated that the yellow eel population remained depleted and was at lower levels than those reported in the 2012 and 2017 stock assessments.¹² The 2023 stock assessment explored further approaches for assessing the American eel population, but the American eel stock is considered data poor.¹² To date, climate change considerations have not been included in stock assessments. However, updated information suggests that North Atlantic Ocean currents and habitats are changing. Physical oceanographic processes have been linked to the abundance and recruitment of juvenile American eels, making them vulnerable to climate change.¹³

The U.S. Fish and Wildlife Service (USFWS) conducted an in-depth status review of eels. The 12-month finding (October 2015) concluded that the American eel resource is stable and does not need protection under the Endangered Species Act (ESA).¹⁴

Current Management Measures

American eel regulations are in the Code of Maryland Regulations 08.02.05.08.¹⁵ Glass eel and elver fisheries are prohibited in Maryland. In 2014, the commercial and recreational minimum size limit increased from 6 inches to 9 inches. There is no harvest limit for the commercial fishery, but beginning January 1, 2014, there was a seasonal closure instituted from September 1 to December 31 for all gears except spears and baited eel pots. The recreational creel limit is 25 eels per person per day. As of January 1, 2017, eel pots are required to have a minimum mesh size of ½ inch x ½ inch.

Under Addendum VII (2024) to the interstate FMP, the yellow eel coastwide catch cap decreased to 518,281 pounds in response to the continued depleted status of yellow eels found by the 2023 benchmark stock assessment. Management actions will be triggered when the coastwide cap is exceeded by 10% in two consecutive years, requiring adjustment of management measures by only those states that harvested more than 1% of the total yellow eel landings. A workgroup, formed by American Eel Management Board members, developed an overage policy that defined the process to equitably reduce landings back to the cap, if and when it occurs. This policy obtained final approval from the Management Board in May 2024 and is included as an appendix in Addendum VII.⁹

Maryland conducts both fishery-dependent and fishery-independent annual surveys. Fishery-dependent surveys focus on landings from the commercial eel pot fishery, which are monitored and subsampled for biological data. Fishery-independent monitoring includes a yellow eel pot survey in the Sassafras River established in 2006 and a YOY survey in the Coastal Bays established in 2000. Yellow eels are subsampled for sex and age determination and the prevalence of the swim bladder parasite *Anguillicolla crassus*. The average prevalence rate of parasites among Chesapeake Bay eels was 52% from 2004 to 2023.¹⁰ The effect of the parasite on yellow and silver eel life history stages is unknown.

The MDNR Fish Passage Program added eels to its list of targeted species many years ago. Blockage removal projects take into consideration whether eels would benefit from implementing a proposed project.¹⁶ The ASMFC published the Proceedings of a Workshop on American Eel Passage Technologies (July 2013). The workshop participants agreed that traditional fish passage structures (fishways and fish lifts) are ineffective at passing juvenile eels and specialized eel passage structures are necessary. The removal of Bloede Dam in 2018, the third dam removed on the Patapsco River since 2010, has increased the use of the upstream eel ladder at Daniels Dam from an average of 28 eels per year (2014 to 2018) to 13,650 eels per year (2019 to 2024).¹⁷ In 2024, the Daniels Dam eel ladder was rebuilt and redesigned in the late winter through early spring. Issues occurred with the new design, therefore passing fewer eels in 2024 than the previous two years.¹⁶ There were no additional dam removals or fish passage projects in 2024.¹⁶ In 2025, an eel ladder will be constructed at Eden Mill Dam on Deer Creek.¹⁶

The Maryland Fishery

The commercial eel pot fishery has accounted for over 95% of Maryland eel harvest since catch and effort information was required to be reported in 1992. The remaining 5% of harvest was reported by commercial crabbers catching eels for trotline bait utilizing eel pots. The total reported commercial eel harvest for Maryland in 2023 was 137,684 pounds.¹⁸ A total of 135,266 pounds were reported on finfish reporting forms and 2,418 pounds were reported for personal use on the crab reporting forms.¹⁸ Harvest in 2023 decreased by 27% from 2022 and remained below the time series mean of 377,480 pounds for five consecutive years (Figure 1). The fishery, which experienced lower demand and poor market conditions in 2019, was significantly impacted by the COVID-19 pandemic, and the export market has yet to recover. The substantial drop in recent harvest over the last five years is believed to be market driven.¹⁹ Harvest is not expected to increase significantly in the near future due to market constraints.

From 2010 to 2022, Maryland accounted for more than half of the total Atlantic coastwide harvest, ranging from 57% (2022) to 71% (2021).^{18,20} In 2023, Maryland landings declined slightly to 46% of the coastwide harvest. Three states, Maryland, Virginia, and New Jersey, accounted for 80% of the Atlantic coastwide harvest in 2023.²¹

Recreational harvest data for American eels is not available from the Marine Recreational Information Program because of lack of data.²¹ Consequently, the recreational harvest of eel is negligible.

Management Priorities and Concerns

In 2010, USFWS received a petition to list the eel as a threatened species under the ESA which was followed by a lawsuit in 2012. After an in-depth review, in 2015 the USFWS concluded that the American eel resource was stable and did not warrant protection under the ESA. In 2024, the USFWS once again received a petition to list the American eel under the Convention on International Trade in Endangered Species of Wild Fauna and Flora Appendix II. In November 2024, ASMFC provided comments to USFWS against the potential listing. The decision is currently under review.

In the same year USFWS received the first petition, the European Union limited the trade of European eels to within the European Union only. This greatly increased the demand for glass eels to support the Asian aquaculture market. The only legal glass eel fisheries along the Atlantic coast are in the states of Maine and South Carolina.¹² In 2012, the estimated value of the coastal glass eel fishery was \$40 million when the price per pound exceeded \$2,000. In 2014, prices temporarily dropped to between \$400 and \$650 per pound, but from 2015 to 2024 prices commonly returned to \$2,000 per pound and in 2019 reached an all-time high of \$3,000 per pound. In 2020, prices dropped again to approximately \$525 per pound due to COVID-19 market disruptions but have since rebounded. High economic value for glass eels makes them a prime target for poaching and illegal activities.¹² In 2019 and 2020, ASMFC granted North Carolina and Maine aquaculture harvester permits that would allow the harvest of 200 pounds of glass eels. In 2021, only Maine applied and was granted the harvester permit. Under Addendum IV, other states may submit proposals to harvest glass eels for aquaculture purposes.⁶ Addendum VI (2024), maintained the commercial quota for Maine's glass eel fishery for three years (2025 to 2027).⁸

A multi-jurisdiction and multi-year undercover operation by USFWS into the illegal trafficking of elvers and glass eels, in violation of the Lacey Act, resulted in twenty guilty pleas through 2018. The guilty pleas accounted for more than \$7 million worth of illegal glass eel sales in various East Coast states.²²

Stream and river blockages continue to reduce American eel access to significant amounts of historic habitat. Downstream movement of yellow and silver eels is particularly problematic at hydropower structures where mortality can be as high as 100%. The USFWS monitors eel abundance at the Conowingo Dam, the first major obstruction to eel passage on the Susquehanna River. From 2008 to 2016, a seasonal elver ladder was operated at the dam to capture and transport eels upstream. Over 800,000 eels were released at more than 40 stocking sites throughout the Susquehanna River watershed.²³ Starting in 2017, and in accordance with the Federal Energy Regulatory Commission (FERC), a license was issued for the Muddy Run Pump Station, where Exelon is responsible for the collection and transport of

American eels from the base of the Conowingo Dam and from the Octoraro Creek.²⁴ From 2017 to 2023, a combined total of 1,647,867 eels from the Conowingo Dam and the Octoraro Creek eel facility were transported and released at ten designated locations in the Susquehanna River watershed.²⁵

Invasive species can cause ecological and/or economic harm to the environment. Maryland's invasive fishes, particularly blue catfish and Northern snakehead *Channa argus* (also known as Chesapeake Channa in Maryland), have expanded their range into all major river systems of Maryland's tidal portion of the Chesapeake Bay. Northern snakeheads have also established populations in several non-tidal habitats. They pose a significant threat to the ecosystem because of their rapidly increasing populations and capacity to consume significant amounts of native species. Although gut analysis has indicated eels are not a primary food source for blue catfish and Northern snakehead, they have been found in stomach contents of each.^{26,27} A MDNR diet study in the Patuxent River found eels made up only 6.3% of blue catfish diet.²⁶ Increased predation on eels among invasive fish would lead to increases in natural mortality.

Figures

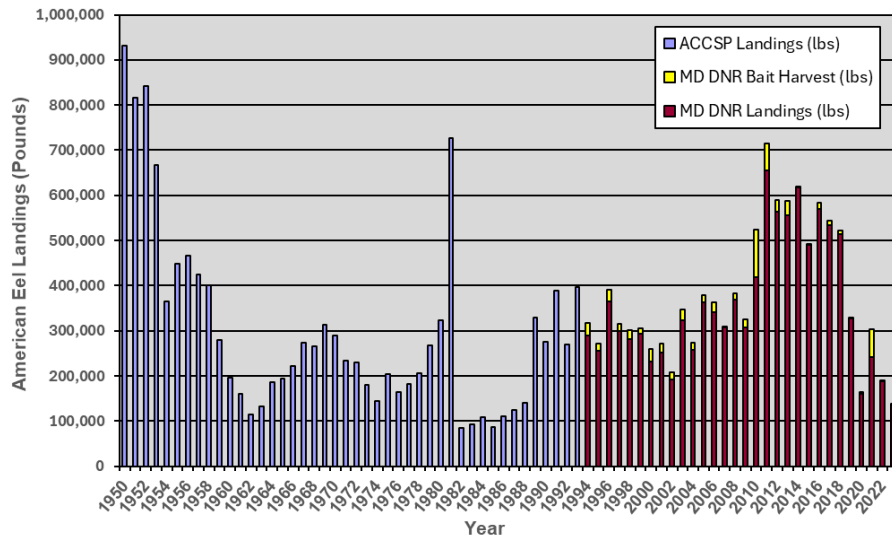


Figure 1. American eel commercial landings in Maryland, 1950 to 2023. Data for the years 1950 to 1993 obtained from the Atlantic Coastal Cooperative Statistics Program.²⁰ Data for years 1994 to 2023 was provided by the MDNR, Fishing and Boating Services landings database (MDNR 2024; Accessed November 2024).¹⁸

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBAE FMP	Chesapeake Bay American Eel Fishery Management Plan
ESA	Endangered Species Act
FERC	Federal Energy Regulatory Commission
MDNR	Maryland Department of Natural Resources
USFWS	United States Fish and Wildlife Service
YOY	Young of Year

Section 2. Atlantic Croaker (*Micropogonias undulatus*)

The Atlantic croaker is a member of the drum family, reaching 14 to 18 inches in length. They spend warmer months in Atlantic coast estuaries, and migrate in fall and winter out into the open ocean where they spawn. They are most common from New Jersey through Florida, with distribution moving south in the winter and north in the spring. Young of year Atlantic croakers drift into estuaries, including the Chesapeake Bay, from September through January where food and cover from predators are more abundant. This species is a popular sport fish and food fish and supports commercial and recreational fisheries in Maryland when available.

Fishery Management Plans

Atlantic croakers are managed by the Maryland Department of Natural Resources (MDNR) and the Atlantic States Marine Fisheries Commission (ASMFC). The ASMFC adopted an Interstate Fishery Management Plan for Atlantic Croaker in 1987. The main purpose of the fishery management plan (FMP) was to decrease the number of small fish caught as bycatch in the coastal shrimp trawl fishery. Amendment 1 to the interstate FMP was adopted in November 2005 and replaced the original FMP. The amendment established a spawning stock biomass target and threshold.¹ Addendum I to Amendment 1 (2010) modified the management area and biological reference points (BRPs).² Addendum II (2014) established a precautionary management framework using the Traffic Light Approach (TLA),³ and Addendum III (2020) modified the TLA and stated what management action would be required if the TLA were to trip.⁴

The Chesapeake Bay Atlantic Croaker and Spot Fishery Management Plan (CBCS FMP) was adopted in 1991. The FMP's goal is to "Protect the Atlantic croaker and spot resource in the Chesapeake Bay, its tributaries, and coastal waters, while providing the greatest long term ecological, economic, and social benefits from their usage over time." To accomplish this goal, management strategies were developed to prohibit the harvest of small fish (age-1 and younger) of both species and to recommend monitoring and research programs for stock assessments and habitat needs.

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the Atlantic croaker compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the Atlantic croaker FMP, respectively, are available at:
asmfc.org/wp-content/uploads/2025/01/Croaker_FY2022_FMP_Review.pdf
asmfc.org/wp-content/uploads/2025/01/a_Croaker_2024_FMP_Review_Final.pdf
asmfc.org/wp-content/uploads/2025/08/AtlCroaker_FY2024_FMP_Review.pdf.

Stock Status

Atlantic croaker is considered a single stock along the Atlantic coast. The 2017 ASMFC benchmark stock assessment was presented to the ASMFC South Atlantic Board in May 2017.⁵ The assessment was not endorsed for management use by an independent peer review, but the review panel agreed with the Stock Assessment Subcommittee that immediate management action was not required. The review panel also recommended the continued use of the TLA until an improved assessment could be completed. The TLA tracks recreational and commercial landings and fishery-independent indices of abundance by region, which are split into the Mid-Atlantic and South Atlantic at the border of North Carolina and Virginia. Analysis of the revised TLA (Addendum III) for 2020 tripped management action and initiated the first coastwide management requirements for Atlantic croaker. The TLA was run annually through 2024 using data through the previous year, with the exception of 2023. The proportion of red was above the 30% trigger level in each update in the Mid-Atlantic region, while fishery-independent indices have improved in the South Atlantic region. Harvest levels have remained low in both regions.

A Benchmark Stock Assessment was initiated in 2023 but has been delayed due to loss of modelling personnel on two separate occasions. Work resumed in January of 2025. During model development, trends by region and between removals and independent indices are different enough to make the models not converge (unsuccessful model run) and/or produce unrealistic results, much like the failed 2017 assessment. Some of these issues may be driven by fishery differences between the Mid-Atlantic and South Atlantic regions, and/or the portion of the stock some fishery independent indices are tracking. Stock structure and applicability of various indices to a coastwide or regional stock structure are being reevaluated to try and resolve these issues.

Current Management Measures

A set of BRPs were established for Atlantic croaker in the mid-Atlantic region in 2005. The BRPs were revised in Addendum I (2011)¹ following the 2010 ASMFC stock assessment and applied to the Atlantic coastal stock. The BRPs set targets for fishing mortality (F) and spawning stock biomass (SSB) and are ratio-based. For the threshold, if $F/F_{MSY}=1$, overfishing is occurring. If $SSB/(SSB_{MSY} (1-M))=1$, the coastal stock is overfished. The stock was not overfished or experiencing overfishing following the 2011 stock assessment. As mentioned previously, the 2017 stock assessment did not pass peer review, so the established BRPs cannot be evaluated, and stock status is unknown.⁵

The Sciaenids Management Board decided to use the modified TLA⁴ to monitor stock condition and trigger management action until a peer reviewed stock assessment was available. If either region crosses the moderate level of concern trigger level of 30% red or the significant level of concern trigger level of 60% red for three of the previous four years, then coastwide regulations are required. As mentioned in the stock status section, this occurred in 2020, requiring all non de

minimis status states without a season or size limit in place to implement a 50-fish recreational bag limit and a 1% reduction to the previous 10 year average commercial harvest in 2021. Maryland already had a commercial season of March 16 to December 31, a recreational bag limit of 25 fish per day, and a size limit of 9 inches, so no further action was needed.

Addendum III (2020) requires that management measures remain in place for at least three years and can only be removed if neither region is still triggered at either level.⁴ The 2024 TLA evaluation determined that the Mid-Atlantic region remains triggered at the 30% red level, so current management measures must remain in place.

The Maryland Fishery

Both commercial landings and estimated recreational harvest declined in the mid 2010s (Figures 1 and 2), and have remained low since. Commercial landings have been cyclical in Maryland with periods of high landings and periods of very low landings. The 2022, 2023, and 2024 commercial landings were 4,360 pounds, 4,242 pounds, and 14,993 pounds, respectively. These values were well below the 1950 to 2024 average of 477,449 pounds per year. The recreational harvest estimates for 2022, 2023, and 2024 were 55,408 fish, 151,628 fish, and 143,921 fish, respectively, and were also well below the 1981 to 2024 time series mean of 1,146,312 fish per year.⁶ Recreational release estimates, which are primarily comprised of fish under the 9-inch size limit, also declined in the mid 2010s, but have been more variable over the past five years (Figure 3). The 2022, 2023, and 2024 release estimates of 1,537,746 fish, 2,939,081 fish, and 3,259,427 fish, respectively, increased each year, and were above the long-term mean of 2,482,006 fish in 2023 and 2024.⁶

Increased recreational releases are likely due to higher juvenile abundance in Maryland's portion of the Chesapeake Bay, as indicated by the juvenile index derived from the Blue Crab Trawl Survey. The index is the geometric catch per tow from sites sampled in Pocomoke Sound, Tangier Sound, and the Patuxent River. The juvenile index was below average for all but one year from 2009 to 2018, but four of the past six years have been above the long-term mean, including the second highest value of the time series in 2024. Unfortunately, the higher juvenile abundance has not led to higher adult availability in Maryland in subsequent years. Since spawning occurs on the continental shelf, primarily outside of Maryland waters, adults are not obligated to return to complete their life cycle. It is currently unclear if the juveniles are not surviving to older ages, or if they are utilizing coastal waters outside of Maryland once reaching adulthood.

Management Priorities and Concerns

An area of concern is the low coastwide harvest levels that have persisted since the mid 2010s. Both commercial and recreational fishermen have commented that this trend is due to lack of availability and not due to a decrease in effort because the species is becoming less desirable. Recent juvenile production appears to have increased, but to date has not led to increased adult availability to fishermen. The

2017 stock assessment was not endorsed for management use, so the stock is currently being managed using the TLA, which is a data poor approach that does not provide harvest levels needed for recovery. The 2025 stock assessment will hopefully provide a more robust stock status determination. Atlantic croakers are not only harvested as a target of recreational fishermen, but are also a bycatch of other fisheries. The bycatch of juvenile Atlantic croakers from shrimp trawls is very high in southern states, even after mandated bycatch reductions devices were required beginning in 2005.

Figures

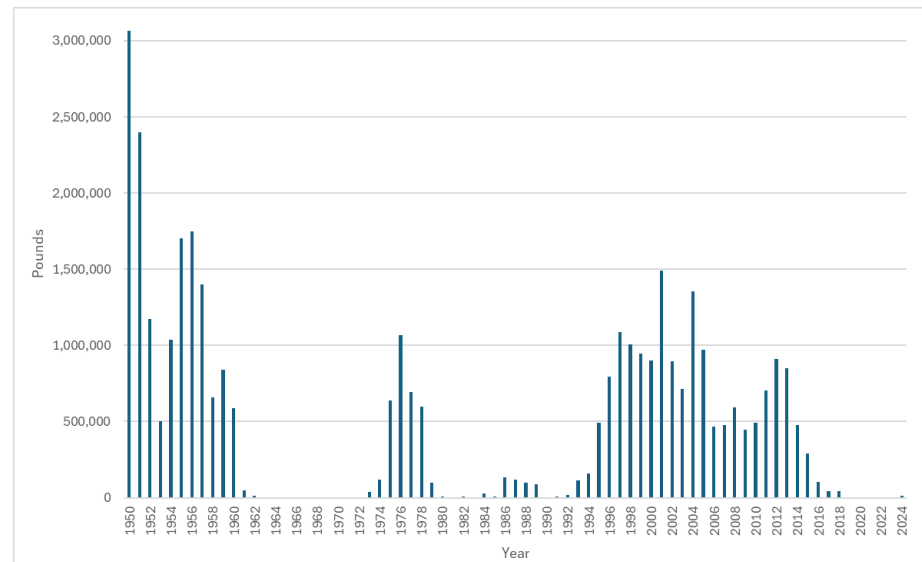


Figure 1. Maryland Atlantic croaker commercial landings in pounds, 1950 to 2024.

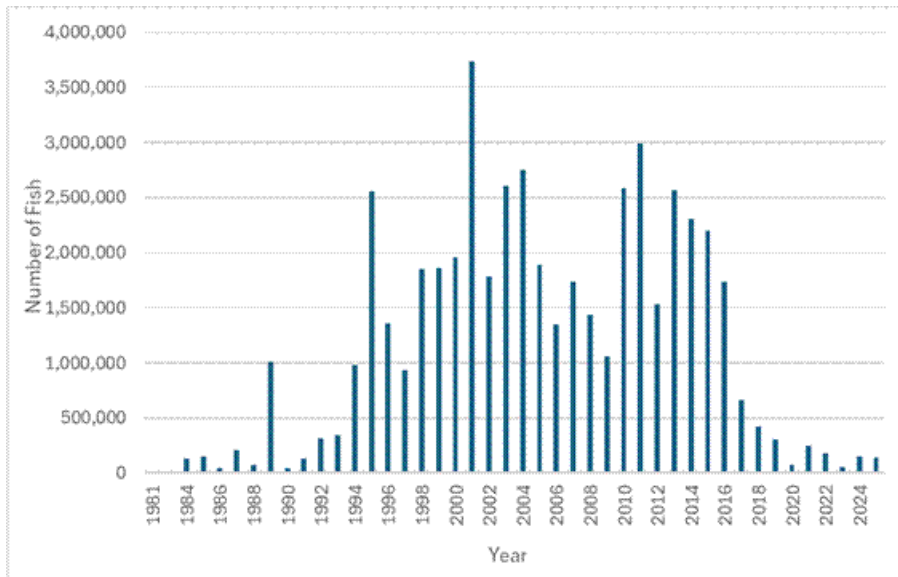


Figure 2. Maryland recreational harvest estimates in numbers of fish, 1981 to 2024.

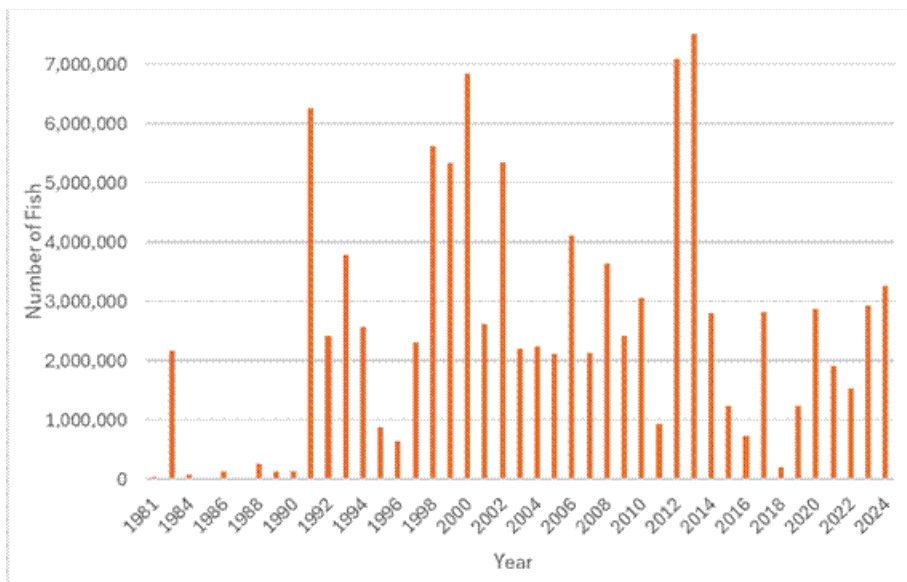


Figure 3. Maryland recreational release estimates in numbers of fish, 1981 to 2024.

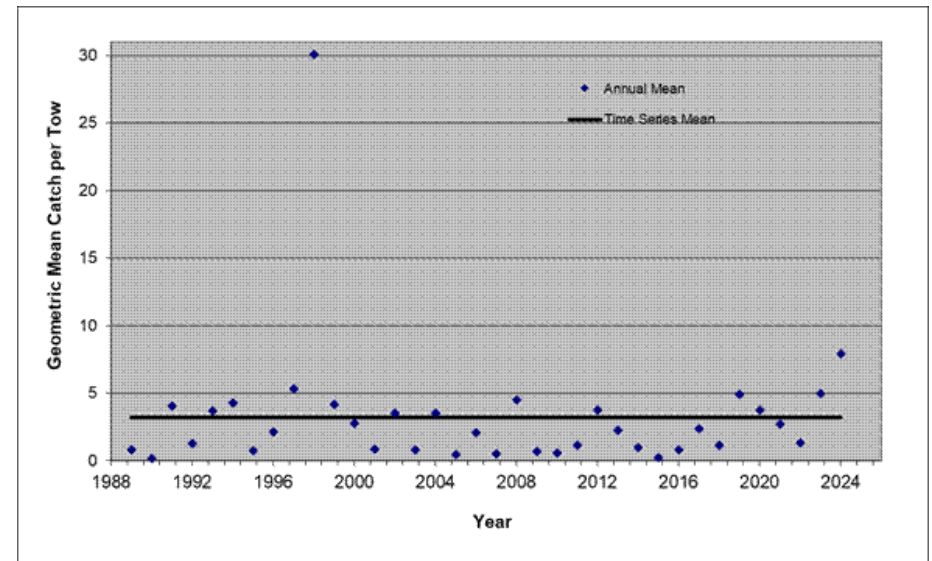


Figure 4. Atlantic croaker juvenile catch per tow index from the Maryland Blue Crab Trawl Survey, 1989 to 2024.

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5. Atlantic States Marine Fisheries Commission. 2017. Atlantic Croaker 2017 stock assessment peer review report. Atlantic States Marine Fisheries Commission, Arlington, VA. asmfc.org/wp-content/uploads/2025/01/AtlCroaker2017StockAssessmentPeerReviewReport.pdf

[content/uploads/2025/01/AtlCroakerAssessmentPeerReviewReport_May2017.pdf](#)

6. Personal communication from the National Marine Fisheries Service, Marine Recreational Information Program, Fisheries Statistics Division. June 13, 2025.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
BRP	Biological Reference Point
CBCS FMP	The Chesapeake Bay Atlantic Croaker and Spot Fishery Management Plan
F	Fishing Mortality
FMP	Fishery Management Plan
M	Natural Mortality
MDNR	Maryland Department of Natural Resources
MSY	Maximum Sustainable Yield
SSB	Spawning Stock Biomass
TLA	Traffic Light Approach

Section 3. Atlantic Menhaden (*Brevoortia tyrannus*)

Atlantic menhaden are an important forage fish species that migrates along the entire U.S. Atlantic coast. Menhaden generally move northward and inshore in the spring and summer and move southward and offshore in the fall and winter. This species is caught commercially in large numbers as bait for other fisheries in most middle and northern Atlantic states, and in lesser volumes in the southern Atlantic states. In Maryland, Atlantic menhaden are an important bait used in the blue crab fishery and an important prey species for striped bass. The majority of the coastwide harvest is taken by the commercial reduction fishery based at the mouth of the Chesapeake Bay in Virginia. These fish are processed into fish oil and fish meal.

Fishery Management Plans

Atlantic menhaden is managed coastwide through the Atlantic States Marine Fisheries Commission (ASMFC), which adopted an Interstate Fisheries Management Plan (FMP) for Atlantic Menhaden in 1981. The plan was replaced by Amendment 1 in 2001, by Amendment 2 in 2012, and by Amendment 3 in 2017. The stock is currently managed under Amendment 3 (2017) and Addendum 1 (2022) to Amendment 3.^{1,2} Information on past ASMFC FMPs is available at: asmfc.org/species/atlantic-menhaden/?query-10-category=management-plan.

Amendment 3 established a baseline quota of 0.5% of the total allowable catch (TAC) for each state, with the remainder of each state's quota being derived from 2009 to 2011 landings. It also allowed for the changing of reference points through Atlantic Menhaden Management Board action in part to allow for the establishment of ecological reference points (ERPs) once they were ready for implementation. Addendum 1 reallocated commercial fishery quotas, using a more recent timeframe (2018, 2019, and 2021) to match current fishery conditions, adjusted the minimum quota to reduce the amount given to states with minimal to no harvest in recent years, and removed purse seines as a gear under the incidental and small scale fishery provision. These actions were primarily in response to a shift in landings to more northern states that led to a mismatch in allocation and fishery needs. Amendment 3 carries over many key aspects of previous Atlantic menhaden FMPs including: (1) an annual cap on the Chesapeake Bay reduction fishery established in 2006, (2) a coastwide commercial TAC established in 2013, (3) an episodic events set aside of 1% of the TAC for northern states that typically see more variable Atlantic menhaden availability, and (4) an incidental catch and small scale fishery provision that allows for limited harvest after a state fishery closes to avoid unitized dead discards.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the Atlantic menhaden compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the Atlantic menhaden FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/AtlMenhadenFMPReview_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/AtlMenhadenFMPReview_FY2023.pdf
asmfc.org/wp-content/uploads/2026/01/AtlMenhadenFMPReview_FY2024.pdf.

Stock Status

The coastal Atlantic menhaden stock has been assessed several times by ASMFC since 1999. Biological reference points (BRPs) were established in 2001 and updated in 2004. Peer reviewed benchmark assessments were conducted in 2010 and in 2014, and corresponding updates to each stock assessment were completed in 2012 and 2017, respectively. The 2012 assessment update found the stock to be overfished, which triggered Amendment 2 and the first coastwide management measures. The 2014 benchmark assessment addressed several issues and recommendations from the previous peer reviewed assessment. The 2014 benchmark assessment, and the 2017 update of that assessment, concluded that the Atlantic menhaden resource was not overfished. Information on these past assessments is available at:

asmfc.org/species/atlantic-menhaden/?query-10-category=stock-assessment.

The most recent benchmark stock assessment was completed in 2019 (data through 2017) and consisted of a traditional single species model and an ERP model, which were to be used in conjunction with one another to determine stock status.^{3,4} The Management Board accepted the results of the assessments for management use in February of 2020. The 2020 assessment determined that the menhaden stock is not overfished, and overfishing is not occurring. Total instantaneous fishing mortality (F) was estimated at 0.16, below the ERP threshold of 0.57 and below the ERP target of 0.19. The ERP model takes into account the role of menhaden as prey for several key predatory species, as well as the abundance of Atlantic herring, another key prey of those species, and results in lower target and threshold values than the single species model. Details of the 2019 assessment can be found on the ASMFC webpage (asmfc.org) under Atlantic Menhaden fisheries management. An update of the 2020 single species model was completed in 2022 (data through 2021) and found that the stock remained in a not overfished or overfishing occurring condition.⁵ A single species assessment update and an ERP model benchmark assessment are scheduled for completion in late 2025.

Current Management Measures

The coastal overfishing designation in 2013 resulted in management measures to reduce harvest by 20%, as compared to the average harvest from 2009 to 2011. Based on the 2010 BRPs, a total allowable catch (TAC) of 170,800 metric tons (mt) (376,549,574 pounds) was calculated for the Atlantic states for 2013. The coastal TAC was allocated state-by-state based on average state landings (2009 to 2011). Maryland's 2014 quota was 1.37% of the TAC, which was 5,116,874 pounds. The TAC was increased by the Management Board twice prior to Amendment 3, but the

percent allocation of the TAC by state did not change, leading to increased allocation for each jurisdiction. The increased TAC and allocation changes of Amendment 3 resulted in more significant changes to the jurisdictional quotas for 2018 through 2020. Maryland's quota percentage was 1.89% and the corresponding pounds allotted was 8,901,558 pounds. In late 2020, the Management Board reduced the TAC by 10% for 2021 after receiving requested projection analysis from the Atlantic Menhaden Technical Committee using the new ERPs. The TAC was increased by approximately 20% for the 2023 through 2025 fishing years, following an increase in estimated stock size from the 2022 stock assessment. Addendum 1 was also approved in 2022 and adjusted the time frame used for state-by-state allocations to 2018, 2019, and 2021. This lowered Maryland's quota percentage to 1.17% of the coastwide TAC, when coupled with the increase in the TAC made Maryland's 2022 to 2025 quota 5,947,886 pounds.

The coastwide commercial menhaden fishery is composed of two different components: the reduction fishery (fish caught by purse seines and processed for fish oil/fish meal) and the bait fishery (fish for other commercial and recreational fisheries such as the blue crab fishery). Purse seining, the predominant gear type for harvesting menhaden in the coastwide bait fishery, is not allowed in the Maryland portion of the Chesapeake Bay, but Virginia does allow purse seining in the Lower Bay. Omega Protein has a menhaden reduction plant in Reedville, Virginia, which is the only active menhaden reduction factory on the Atlantic coast. The ASMFC Addendum II to Amendment I (2006) established a harvest cap (109,020 mt or 240,347,958 pounds) for the reduction fishery in the Chesapeake Bay. With the adoption of Amendment 2, the harvest cap was reduced by 20% to 87,216 mt (192,278,367 pounds) based on the average landings from 2001 to 2005. The Chesapeake Bay reduction fishery harvest cap was reduced further in Amendment 3 to 51,000 mt (112,435,754 pounds).

The Maryland Fishery

Maryland commercial landings in 2022, 2023, and 2024 were 3,402,327 pounds, 2,001,500 pounds, and 586,388 pounds, respectively (Figure 1). The majority of Maryland's Atlantic menhaden harvest is from the Chesapeake Bay. Maryland has not approached catching its ASMFC allotted quota since 2016. The 1950 to 2024 mean annual harvest was 4,922,189 pounds per year. Catches from 2000 to 2016 were generally higher, averaging 7,033,558 pounds per year, but landings from 2017 to 2024 have been below the long term mean and averaged 2,612,778 pounds per year. Landings were lower in the 1950s, generally increased through the 1960s and 1970s, and were more stable at higher levels in the 1980s before declining sharply in the early 1990s. The landings increased again in the early 2000s and remained relatively high through the mid 2010s before declining once again. This cyclic pattern may indicate shifts in migratory patterns in Atlantic menhaden that make the proportion of the stock moving into the Chesapeake Bay vary over time.

A juvenile index derived from Maryland's Estuarine Juvenile Finfish Survey has been calculated since 1959. The geometric mean catch per seine haul was very low

early in the time series, but highest in the mid 1970s and early 1980s. The index declined to low levels by the mid 1990s and remained relatively low through 2022 (Figure 2). The 2023 and 2024 values increased to the highest values since 1990.

Management Priorities and Concerns

Menhaden have a unique role in the Chesapeake Bay ecosystem as both a primary filter feeder and an important forage species for top predators (e.g., striped bass, bluefish, osprey, etc.). The change to using ERPs should benefit the Atlantic menhaden stock and the predators that rely on them. Atlantic menhaden support a major commercial fishery, which is the Chesapeake Bay's largest fishery by weight. Consequently, they are an economically important species.

The ASMFC recommends two ways to improve the menhaden stock assessments: development of a coastwide fishery-independent survey to assess adult abundance at age and better estimates of natural mortality by age-class.

Recent landings in Maryland have continued to decline. Consequently, fishermen who use Atlantic menhaden as bait, primarily for the commercial crab pot fishery, have to pay higher prices to acquire Atlantic menhaden from other states. The reduced landings may be due to a shift in migratory patterns of the species, since landings, and presumably abundance, have increased substantially in New England states in recent years. This pattern has occurred in the past, but warming ocean waters could influence adult Atlantic menhaden overwintering and migration patterns into the future, which could reduce prey availability for other import recreational and commercial fish species, as well as other predatory species, in Maryland.

Figures

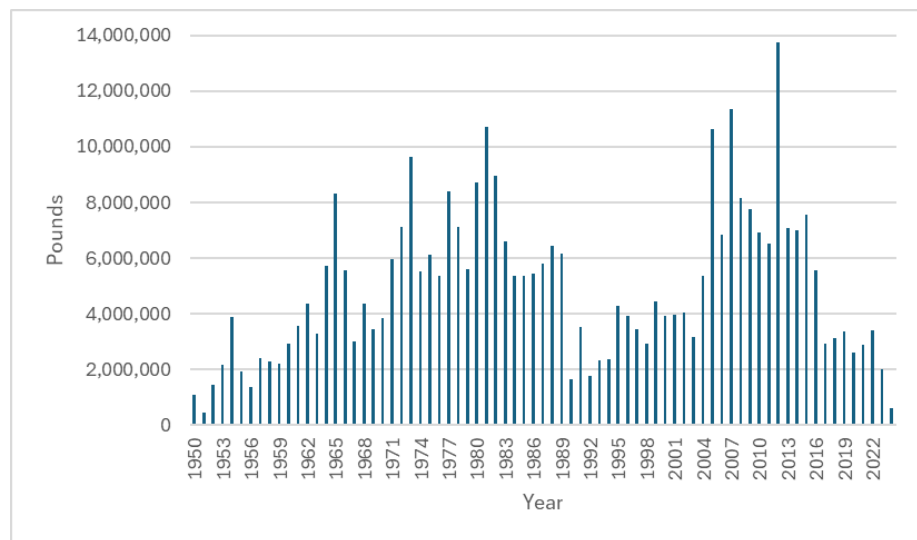


Figure 1. Maryland commercial landings from Maryland's mandatory reporting system (1980 to present) and historical federal landings reports (1950 to 1979).

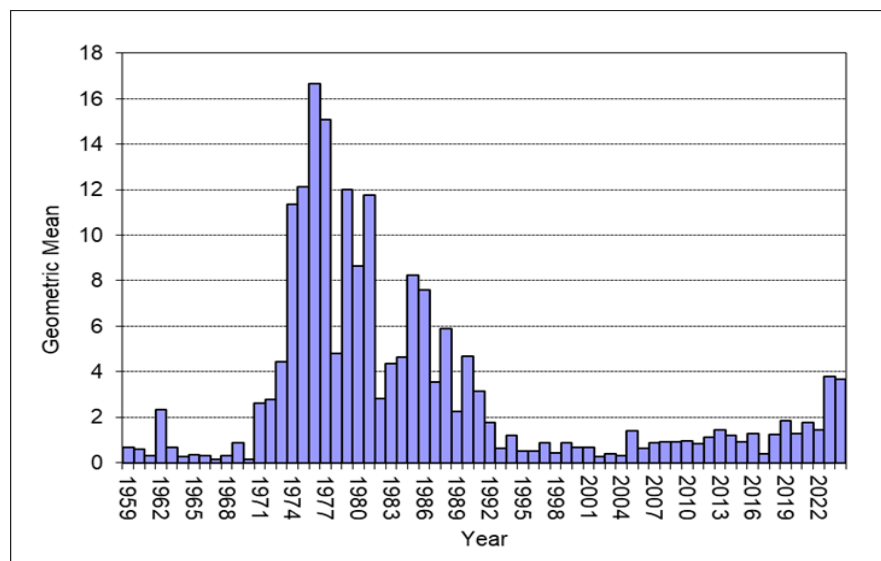


Figure 2. Maryland Atlantic menhaden juvenile geometric mean catch per seine haul from the Estuarine Juvenile Finfish Survey, 1959 to 2024.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
BRP	Biological Reference Point
ERP	Ecological Reference Point
FMP	Fishery Management Plan
mt	Metric Ton
TAC	Total Allowable Catch

Section 4. Black Drum (*Pogonias cromis*)

The black drum is the largest member of the drum family; individuals over 3 feet long and 40 pounds in weight are relatively common. Exceptional individuals can approach 100 pounds and over 5 feet in length. Larger black drum are often over 30 years old, with the oldest individuals exceeding 50 years old. They can be found all along the U.S. Atlantic coast, but are most common from Delaware Bay south. Adults migrate long distances, particularly during the spawning season. Females will mate at several locations in a single year. Black drum are a seasonal visitor to Maryland's portion of the Chesapeake Bay, providing recreational and commercial fishing opportunities primarily in the spring.

Fishery Management Plans

The Chesapeake Bay Black Drum Fishery Management Plan (CBBDFMP) was adopted in 1993 to address concerns about potential overfishing. The objectives of the plan include: (1) promoting coastwide coordination where possible, (2) promoting the protection of the resource through conservation goals and allocation; (3) maintaining the spawning stock to minimize recruitment failure, (4) promoting the collection of data, (5) promoting fair allocation, and (6) promoting water quality and habitat protection.

The Atlantic States Marine Fisheries Commission's (ASMFC) Interstate Fishery Management Plan for Black Drum (2013) was initiated because of increased recreational and commercial harvest, inconsistent coastwide regulations, unknown condition of the stock, and concerns about harvesting immature and breeding black drum.¹ All states were required to maintain their current level of restrictions on the black drum fishery, and to establish a maximum possession limit (January 1, 2014) and a minimum size limit of 14 inches (January 1, 2016). The Chesapeake Bay jurisdictions have implemented a more conservative 16-inch minimum size since the mid-1990s. Addendum I was approved by the Sciaenids Management Board in May 2018.² For Maryland, it established a 10 fish or less daily commercial harvest limit and a 28-inch total length minimum size limit.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the black drum compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the black drum FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/BlackDrumFMP_Review_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/BlackDrumFMP_Review_FY2023.pdf.

Stock Status

The first coastwide benchmark stock assessment for black drum was conducted in 2014 and approved for management use in 2015.³ The 2015 benchmark stock assessment used a Depletion Based – Stock Reduction Analysis and determined that the stock is not overfished and not experiencing overfishing. The assessment indicated that biomass was slowly decreasing but remained well above the level needed to sustain maximum sustainable yield. Tagging data, life history data, and genetic results using nuclear microsatellite markers all indicate that black drum make up a single U.S. Atlantic coast stock.

The most recent ASMFC benchmark stock assessment was peer reviewed and accepted for management use in 2023 using JABBA-Select, a surplus production model that uses a tuning index to incorporate environmental variables into the stock assessment.⁴ The inclusion of a tuning index was a suggestion of the 2015 stock assessment peer review panel. The assessment indicated the stock was not overfished, and overfishing was not occurring. Spawning stock biomass was estimated to have increased over most of the time series, then leveled off and slightly declined from 2018 to 2020, the terminal data year of the assessment. The Black Drum Technical Committee (TC) and the peer review panel recommended, and the Management Board approved, monitoring of indicator indices between assessments that could be used to trigger an earlier stock assessment if needed due to uncertainty levels within the assessment. The TC updated the board in 2023 (additional data for 2021 and 2022) and in 2024 (additional data for 2023) and most indicators were within the range of the terminal year of the assessment, indicating no advanced assessment timeline was needed. The TC also recommended, and the Management Board approved, performing the indicator update every two years and conducting the next benchmark assessment in 2028.

Current Management Measures

The interstate FMP required minimum size limits, catch limits, and a no relaxation of current regulations with its adoption in 2013. Maryland closed its Chesapeake Bay commercial black drum fishery in 1998 but retained a limited Atlantic coastal commercial fishery with a 1,500-pound annual limit and 16-inch minimum size limit. The ASMFC's adoption of Amendment I allowed the reopening of a limited Maryland Chesapeake Bay commercial fishery on February 25, 2019 with a 28-inch minimum size limit and a 10 fish per vessel per day catch limit. All other commercial regulations remained unchanged. Maryland allows a recreational harvest of one fish over 16 inches per angler per day.

The Maryland Fishery

Maryland commercial landings in 2022, 2023, and 2024 were relatively stable at 2,462, 2,097, and 1,883 pounds per year, respectively (Figure 1). During the 20 year period prior to the Chesapeake Bay closure (1978 to 1997) Maryland landings averaged 14,200 pounds per year. During the Chesapeake Bay closure time period

(1997 to 2018) landings averaged 505 pounds per year (from the Atlantic Coast and Coastal Bays). Since the reopening of the Chesapeake Bay commercial fishery, Maryland landings have averaged 3,343 pounds per year, indicating that the limited reopening has allowed for a modest increase in harvest that is restricted below reclosure levels.

Recreational harvest and release estimates have varied widely throughout the time period, with several years of zero harvest estimates.⁵ The recreational fishery in Maryland is primarily a short pulse seasonal spring fishery in the Chesapeake Bay, which makes intercepting anglers less likely and leads to high imprecision in the estimates, with nearly all of the annual estimates having a proportional standard error greater than 50. It is highly unlikely there have been any years without some black drum being caught in Maryland. There were no estimates of zero harvest or releases in the past 11 years, indicating catches may have become more consistent. However, the imprecision of the estimates makes drawing conclusions difficult.

Management Priorities and Concerns

In the Mid-Atlantic region, adult black drum make up the majority of harvested fish and reported dead discards, whereas in the South Atlantic, sub-adult black drum make up the majority of fishery removals. This trend is primarily due to smaller fish being less available in the more northern states, and younger fish being more desirable as a food fish. Removing both larger older adults and smaller younger fish does increase the risk of overfishing, but currently available data and stock assessment results do not indicate that overfishing is occurring.

The ASMFC released a fish habitat report that includes a section on black drum habitat by life stage, areas of particular concern, and threats to habitat.⁵ The habitat recommendations of particular importance to Maryland include minimizing wetland loss, promoting living shorelines, evaluating the role of submerged aquatic vegetation and other submerged structures, and continuing to support habitat restoration projects that enhance or restore bottom habitat. The full report is available at: asmfc.org/wp-content/uploads/2024/12/HMS14_AtlanticSciaenidHabitats_Winter2017.pdf.

Figures

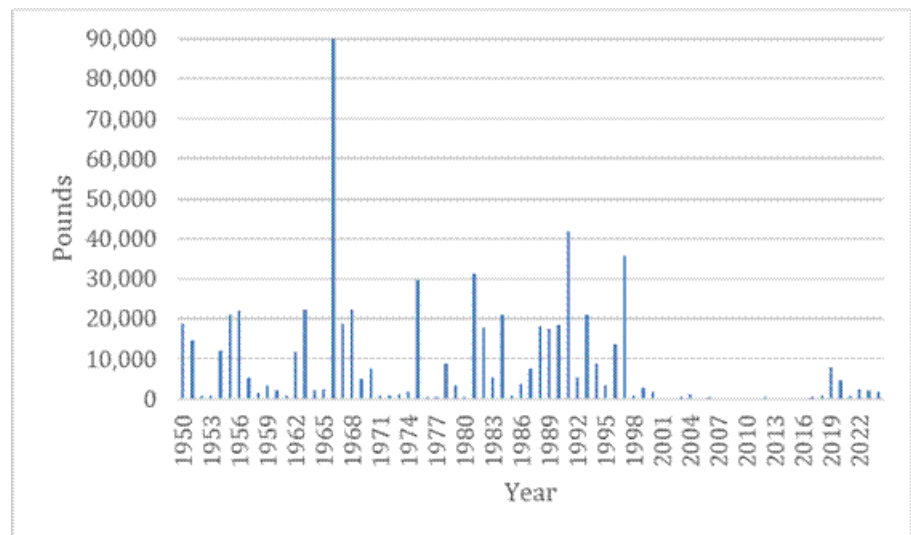


Figure 1. Maryland commercial black drum landings, 1950 to 2024.

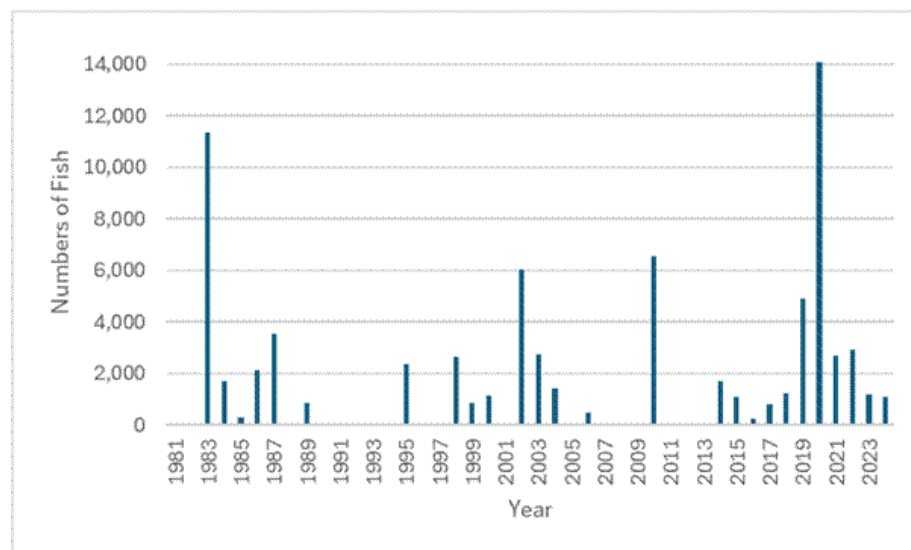


Figure 2. Maryland estimated recreational harvest of black drum in numbers, 1981 to 2024.

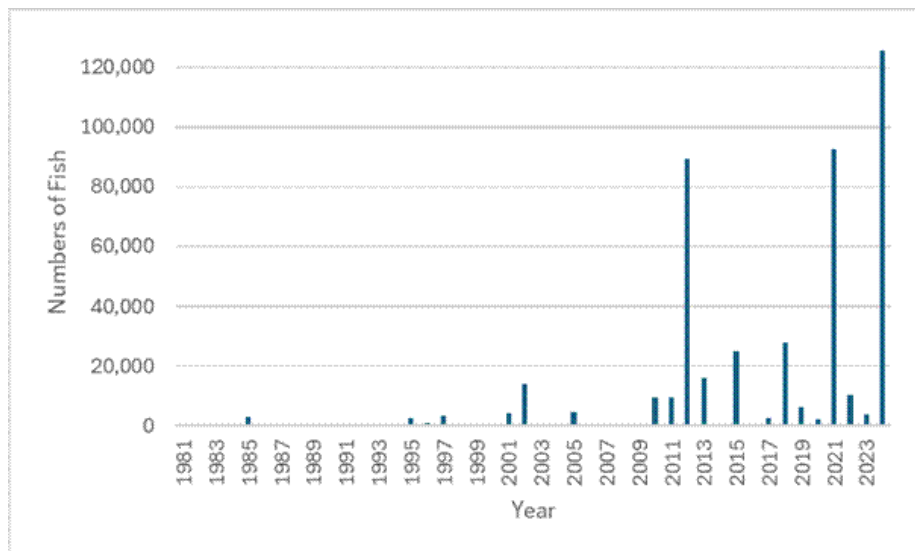


Figure 3. Maryland estimated recreational releases of black drum in numbers, 1981 to 2024.

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5. Personal communication from the National Marine Fisheries Service, Marine Recreational Information Program, Fisheries Statistics Division. June 25, 2025.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBBD FMP	Chesapeake Bay Black Drum Fishery Management Plan
FMP	Fisheries Management Plan
TC	Black Drum Technical Committee

Section 5. Black Sea Bass (*Centropristis striata*)

Black sea bass are prized reef fish found along the Atlantic coast from the Gulf of Maine to Florida, renowned for their vibrant appearance and importance to both commercial and recreational fisheries. Black sea bass is managed jointly by the Mid-Atlantic Fishery Management Council (MAFMC) in federal waters and the Atlantic States Marine Fisheries Commission (ASMFC) Summer Flounder, Scup and Black Sea Bass Management Board in state waters. Under the Interstate Fishery Management Plan, black sea bass fisheries employ quota systems, size and bag limits, and seasonal closures to ensure sustainable harvesting and protect spawning populations. Recent assessments show healthy populations along the coast. Adaptive management measures continue to support the species' resilience and long-term sustainability.

Fishery Management Plans

Black sea bass was incorporated as one component of the ASMFC and MAFMC joint management framework for summer flounder and scup in 1996, with a Black Sea Bass Fishery Management Plan. The joint interstate-federal fishery management plan (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 size, reduce landings, modify gear, and introduce a commercial quota system. Several ASMFC addenda, MAFMC frameworks, and amendments have been implemented to modify the overfishing mortality threshold and target exploitation rates and quota management.

Addenda IV (2001), VI (2002), and XVI (2005) improved upon the timeliness of developing and implementing management requirements. Framework 1 (2001) established a research set-aside quota. Amendment 13 (2002, 2003) was developed to reduce fishing mortality, improve yield, align and minimize jurisdictional regulations, and revise the commercial quota system. Addendum XII (2004) instituted state-by-state quota shares for the commercial fishery; Maryland's share was 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 the 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. Addenda XXVII (2016) through XXXII (2018) continued the use of adaptive regional management measures for the recreational fishery from 2016 through 2020. In 2022, Amendment 22 revised the commercial and recreational sector allocations for the species. Framework 17 established a new process for setting recreational bag, size, and season limits (i.e., recreational measures). This action also modified the recreational accountability

measures. In 2024, Amendment 23 modified the allocations of the commercial quota among the states of Maine through North Carolina and modified the commercial in-season closure regulations.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the black sea bass compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the black sea bass FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/BlackSeaBassFMPReview_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/BlackSeaBass_FMPReview_FY2023.pdf
asmfc.org/wp-content/uploads/2025/08/BlackSeaBassFMPReview_FY2024.pdf.

Stock Status

The Mid-Atlantic stock is not overfished and is not subject to overfishing, as reported by the 2024 management track assessment. The assessment of the black sea bass stock is a Level-2 2024 management track assessment which updates the 2023 research track assessment model using the Woods Hole Assessment Model (WHAM) framework to fit a spatially explicit model specified for two regions, north or south of Hudson Canyon. Prior to the 2023 research track, the last management track assessment for this stock was in 2021, using data through 2019 (NEFSC 2022). Spawning stock biomass (SSB) in 2023 was estimated to be 24,572 metric tons (mt) which is 219% of the biomass target (SSB proxy = 11,225 mt). The 2023 fully selected fishing mortality (F) was estimated to be 0.82 which is 77% of the overfishing threshold proxy (F_{MSY} proxy = 1.071). Age-1 recruitment in 2023 was estimated to be 60.2 million fish, above the 10-year average (2014 to 2023) of 39.2 million fish.¹

Current Management Measures

Annual acceptable biological catch coastwide is divided into a state-by-state commercial quota (45% of total allowable landings) and recreational harvest limit (55% of total allowable landings). Commercial state shares are recognized and monitored by ASMFC; the National Marine Fisheries Service does not recognize state shares.

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 over 20% of the quota. Overages are deducted from the following year's quota allocation. Quota

is allocated among four commercial sectors: 87% for pots, 11% for trawl, 1% for hook and line, and 1% for all other fishing gear. In recent years much of the pot allocation has been harvested by the trawl permit holders with quota transfers. Licensed commercial fishermen without a commercial black sea bass permit are limited to landing 50 pounds per day. The commercial fishery has an 11-inch minimum size limit.

In Maryland, almost all of the recreational black sea bass fishery occurs in federal waters. Since 2012, the Atlantic states have worked together to establish regional regulations to comply with ASMFC requirements. Since that time Maryland has been in a region with Delaware and Virginia for recreational black sea bass management. Maryland's recreational fishery in 2022 through 2024 was managed with a 13-inch minimum size limit (excluding the tail filament) and 15 fish per person per day creel limit. In 2022 the season was open from May 15 through December 11. In 2023 and 2024, the season was open from May 15 through September 30 and then reopened from October 10 through December 31.

The Maryland Fishery

A permit is required to commercially land more than 50 pounds of black sea bass per day in Maryland. In 2022 the commercial quota was 564,958 pounds and the harvest was 385,762 pounds. In 2023 the commercial quota was 381,149 pounds after adjustments and the harvest was 354,860 pounds. In 2024, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit and the commercial quota was 523,918 pounds. Maryland's preliminary 2024 commercial black sea bass harvest was 332,287 pounds (Figure 1).

Maryland's recreational black sea bass catch with percent standard error (PSE) was estimated in 2022 at 158,822 fish (PSE 25.8) with a total weight of 189,383 pounds (PSE 25.0); in 2023 at 213,270 fish (PSE 31.8) with a total weight of 293,693 pounds (PSE 33.5); and in 2024 at 152,566 fish (PSE 28.5) with a total weight of 205,481 pounds (PSE 32.5).²

Management Priorities and Concerns

Black sea bass population dynamics and tagging studies indicate that they have regional rather than coastwide migrations. Adult fish prefer habitats near structures such as reefs and shipwrecks and exhibit seasonal site fidelity, which is the tendency to return to a previously occupied location. In the Mid-Atlantic, black sea bass display site fidelity in the summer and migrate offshore to areas south of New Jersey in the winter. In contrast, adults in the South Atlantic do not migrate during the winter. As a result, regional management has been implemented and incorporated into the coastal management framework and is evaluated on a yearly basis.

Figures

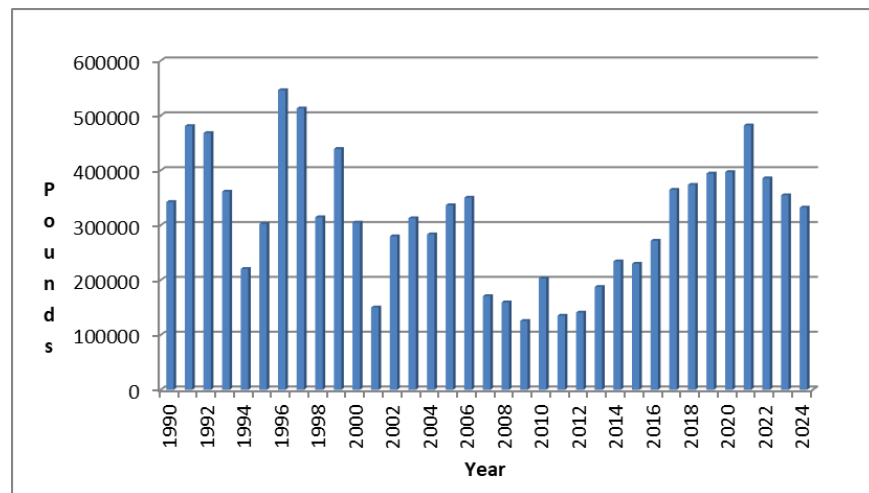


Figure 1. Black sea bass harvested by the commercial fishery in Maryland: 1990 to 2024. Data sourced from Maryland catch records and commercial logbooks.

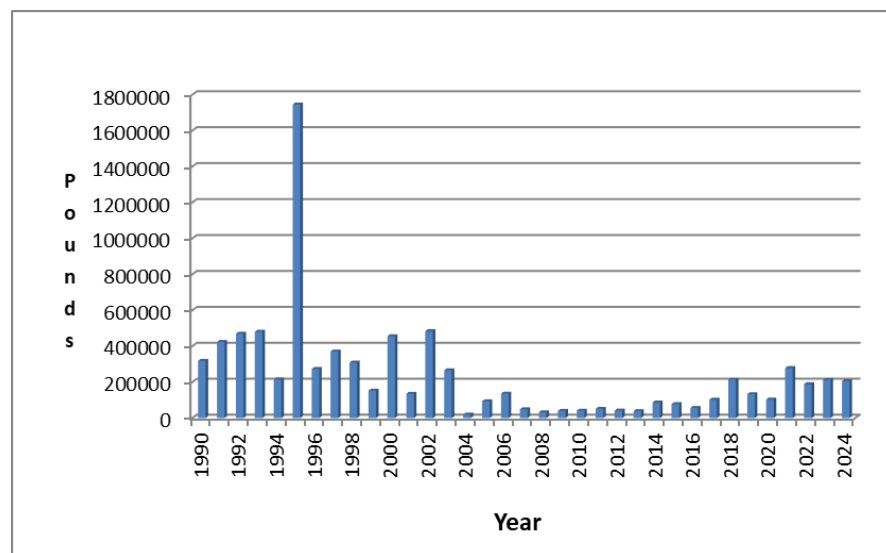


Figure 2. Estimated recreational harvest of black sea bass from Maryland: 1990 to 2024.²

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
F	Fishing Mortality
MAFMC	Mid-Atlantic Fishery Management Council
MSY	Maximum Sustainable Yield
mt	Metric Tons
PSE	Percent Standard Error
SSB	Spawning Stock Biomass
WHAM	Woods Hole Assessment Model

Section 6. Blue Crab (*Callinectes sapidus*), Chesapeake Bay

Blue crabs play a vital role in the Chesapeake Bay ecosystem. As a keystone species in the food web, the blue crab is prey for many critical species of finfish and predator to many benthic species such as mollusks and clams. In addition to performing an essential ecological function, the Chesapeake Bay blue crab population also supports vital commercial and recreational fisheries that provide economic support to many communities around the bay. The Chesapeake Bay population is managed separately from Maryland's Atlantic Coastal Bays population under the Chesapeake Bay Blue Crab Fishery Management Plan.

Fishery Management Plans

The Chesapeake Bay Program adopted a Blue Crab Fishery Management Plan (CBBC FMP) in 1989. The plan was revised in 1997 with the following objectives: (1) provide long-term protection for the blue crab stock, (2) maintain a stable stock size, and (3) establish quantitative targets (such as abundance, biomass, or other indices) and biological reference points (BRPs). In 2003, Amendment 1 to the 1997 CBBC FMP was adopted. The purpose of Amendment 1 was to formally adopt BRPs for managing the resource; to reaffirm strategies for reducing fishing effort; and to recognize the importance of biological monitoring, habitat protection, and ecosystem processes. Amendment 2 was developed in 2011 to formally adopt new female-specific reference points and to recognize the importance of fishery-independent and fishery-dependent monitoring. Amendment 2 was incorporated by reference into Maryland regulation in September 2012. The CBBC FMP and amendments will undergo an in-depth review to determine if an update is necessary based on the results of a new benchmark stock assessment in 2026.

Stock Status

The Chesapeake Bay blue crab stock is currently not overfished, and overfishing is not occurring. The last benchmark stock assessment, using survey data through 2010, was completed and peer reviewed in 2011.¹ The 2011 stock assessment used an integrated estimate of management reference points and stock status. Previous stock assessments did not directly link the two parameters. Since 2011, stock status has been monitored annually using empirical calculations of exploitation rate and abundance from the baywide winter dredge survey (WDS) in relation to the female specific BRPs from the 2011 assessment. In 2017, the Maryland Department of Natural Resources (MDNR) and the Virginia Marine Resource Commission decided to complete an assessment update with an additional six years of data added to the time series. The assessment update was completed using the same sex-specific catch multiple-survey model employed in the 2011 assessment and included the longer time period of data. The 2017 stock assessment update recommended revised targets and thresholds for the BRPs (i.e., adult female abundance and female exploitation rate), which the Chesapeake Bay jurisdictions formally adopted in November 2020. A new benchmark stock assessment is currently underway and should be completed in 2026.

The baywide WDS provides an annual estimate of over-wintering blue crab abundance by age and sex and is the primary indicator of blue crab stock status in the Chesapeake Bay. Blue crab data are also collected from trawl surveys conducted by MDNR and the Virginia Institute of Marine Science. The MDNR also conducts a voluntary cooperative data collection program to collect fishery-dependent size and sex composition data.

The Chesapeake Bay Stock Assessment Committee (CBSAC) annually reviews the results of the WDS and harvest data in relation to the BRPs to assess the status of the stock and to provide management advice. The adult female abundance BRP is based on the abundance of age 1+ female crabs (an index of the spawning stock) and is used to determine if the stock is overfished. The number of adult females decreased from 133 million crabs in 2024 to 108 million crabs in 2025, which is above the threshold of 72.5 million crabs but below the recommended target abundance of 196 million crabs. The female exploitation rate BRP is the percentage of female crabs (age-0+) removed from the stock and is used to determine if overfishing is occurring. In 2024, the female exploitation rate was 22%, which is below the target of 28%. Based on the female BRPs, the blue crab stock is not overfished, and overfishing is not occurring. The status of the stock from 2011 to 2025 based on the female-specific targets and thresholds can be found in Table 1.

Although there is no official BRP for male crab management, CBSAC recommended implementing a conservation trigger based on the male exploitation rate to ensure that male abundance does not drop to a critical level. The conservation trigger indicates that if the male exploitation rate exceeds 34%, the Chesapeake Bay jurisdictions should consider conservation measures for male crabs. The conservation trigger is based on the second highest exploitation value for males in the time series and does not represent a biologically significant parameter. The CBSAC recommended precautionary management measures after the male exploitation rate exceeded the trigger in 2021 and 2022.² In 2024, MDNR presented abundance criteria for determining the need for male management measures. The criteria were defined as a combined adult male and juvenile abundance of 220 million crabs and an adult male abundance of 40 million crabs. If either abundance criteria is not met, male management measures should be implemented. The 2024 estimate of male exploitation was 30%, which was below the conservation trigger. However, both abundance criteria for male management were not met in 2025, therefore, conservation measures will remain in place.

In addition to reviewing adult male and female abundance, CBSAC also monitors the WDS estimate of recruitment, which is the number of juvenile crabs (crabs less than 60 millimeters or 2.4 inches). Estimated juvenile abundance decreased from 138 million crabs in 2024 to 103 million crabs in 2025, which is the third lowest abundance in the time series.

Despite achieving female management objectives since 2008, the blue crab population has not produced a good year class in recent years, raising concerns about changing population dynamics in the Chesapeake Bay and the current stock

assessment model's ability to accurately estimate the population. This trend has prompted CBSAC to initiate the new benchmark stock assessment, which should be completed in 2026.

Current Management Measures

A control rule has been used to assess the status of the blue crab stock since 2001. Control rules describe a variable as a function of another variable that management can influence or have some control over.³ Determining the variables depends on the characteristics of the stock and the fishery. These variables are then used to develop definitions of BRPs (i.e., targets and thresholds). In developing a control rule, the selection of a target is risk-averse, even though it is expected that the target may be exceeded because of natural annual variability. Currently, the control rule for blue crabs is based on female spawning stock biomass (i.e., adult female abundance) and female exploitation.

In Maryland, catch limits and closed periods are implemented to maintain an allowable female harvest that is associated with the 28% exploitation target. The allowable female harvest changes with estimated annual abundance. The MDNR determines the allowable harvest and then develops a suite of management options designed to achieve, but not exceed, the allowable harvest. The crabbing industry provides input on which options would be preferable for the industry via the Blue Crab Industry Advisory Committee.

Commercial catch limits for mature females have remained the same since 2023. Male commercial catch limits were put in place for August and September of 2022, and the male season was shortened by two weeks, ending on November 30, 2022. Due to low abundance of adult male crabs and consecutive years of low juvenile abundance, these same male management measures were also implemented in 2023 and 2024, with a small change that suspended limits for Labor Day. Due to the abundance criteria for males and juveniles not being met, the same male management measures will be continuing in 2025.

In 2022, a conservation action was imposed on the recreational fishery that reduced daily bushel limits to one bushel per day, per boat. This action remained in place and will be continued in 2025. The changes to recreational crabbing regulations that went into effect in 2013 are still in place. Waterfront property owners must register their crab pots in order to use them from their pier. Anyone using collapsible traps or net rings must obtain a recreational license. A person can use a hand-line or dip net to catch crabs without a license. Refer to the MDNR webpage for more details: dnr.maryland.gov/fisheries/Pages/regulations/blue-crab.aspx.

In 2022, the time for harvesting crabs commercially from trotlines in April and October through December was changed to ½ hour before sunrise to 9 ½ hours after sunrise. In 2024, the lug was defined as a legal container for holding commercial harvest, and daily catch limits for lugs and barrels were included for harvesters using these alternative containers. In 2024, the daily recreational catch limit was redefined

as one bushel per day or six dozen crabs if using an alternative container. In addition, the coordinates identifying crab pot lines were updated.

The Maryland Fishery

As population levels change, maintaining the exploitation target may result in either an increase or a decrease in harvest. The initial 2024 baywide (Maryland, Virginia, and Potomac River) commercial harvest was approximately 42.5 million pounds (Figure 2). The percentage of females removed by harvest in 2024 was approximately 22%, which was below the recommended target of 28% and threshold of 37% (Table 1). Prior to 2008, recreational harvest was assumed to be approximately 8% of the total commercial harvest, but since the prohibition of recreational harvest of females, the estimated recreational harvest is now based on 8% of the commercial male harvest in Maryland. However, a more recent study has indicated that recreational harvest may be closer to 6.5% of total commercial harvest in Maryland.⁴ The harvest exploitation rate estimates are preliminary and may be updated when the harvest data are finalized.

Management Priorities and Concerns

Although management measures have successfully kept the exploitation of female crabs below the target and kept abundance above the threshold, conservation measures need to remain in place to ensure that the population remains stable. Large variations in the annual recruitment of blue crabs to the Chesapeake Bay are expected, as it is largely driven by environmental factors. Due to recruitment variability, overwintering mortality, and other environmental and ecological factors, the blue crab population is subject to high natural variability from year to year. These external population drivers emphasize the need to determine an appropriate margin of conservation to account for natural variability.

Providing timely and verifiable harvest data on a daily basis is the first step towards improving the blue crab management system. Since 2012, a pilot study led by an industry-based group has been utilizing new technology to accurately report commercial harvest data in a more timely fashion. This is a co-management approach between crab harvesters and MDNR. This electronic reporting program includes a “hail-in, hail out” protocol and random catch verification, which should provide improved and timely commercial harvest data.

Maryland has continued with a text messaging system to help watermen stay abreast of blue crab regulations and any seasonal changes that may occur. Watermen can subscribe to receive text message reminders a day or two before a regulation change goes into effect.

Latent effort refers to the number of people holding commercial fishing licenses that have not been actively harvesting crabs. Latent effort poses a risk to the blue crab population if unused effort were to enter the fishery. Maryland and Virginia were successful at reducing the number of people holding crabbing licenses through a

federally-funded license buy-back program in 2009 and 2010. The jurisdictions analyzed effort levels relative to abundance over time during 2017. At this point, effort has not changed in response to crab abundance, but the jurisdictions will continue to examine latent effort for any changes.

New methods for calculating recreational catch and effort are needed to fully characterize total removals by the fishery. The last surveys estimating recreational harvest were conducted in 2002 (Virginia) and 2011 (Maryland). A more recent tagging study by the Smithsonian Environmental Research Center has suggested that recreational harvest may be closer to 6.5% of the total commercial harvest in Maryland.³ The CBSAC has recommended conducting a recreational catch and effort survey, including recreational harvest from the Potomac River, to better understand baywide recreational harvest.

Blue crab abundance and management outcomes were developed as part of the Sustainable Fisheries Goal in the Chesapeake Bay Watershed Agreement (2014). The blue crab abundance outcome states: “Maintain a sustainable blue crab population based on a target of 196 million adult females. Refine population targets through 2025 based on best available science.” The blue crab management outcome states: “Manage for a stable and productive crab fishery, including working with the industry, recreational crabbers and other stakeholders to improve commercial and recreational harvest accountability.” The Chesapeake Bay jurisdictions developed a management strategy to achieve the outcomes and updated the work plan for 2024 and 2025, available at chesapeakeprogress.com/abundant-life/blue-crab-abundance/logic-action-plan.

The enforcement of commercial and recreational fishing regulations is critical to management success. In Maryland, the Natural Resource Police has successfully increased the total number of enforcement hours and in the past, initiated a targeted enforcement protocol through a program called “Don’t Get Pinched.” In addition, there have been increased penalties for offenses and improved judicial action.

There is concern over the interaction of blue crabs with non-native species of crabs, which include green, mitten, and Japanese shore crab. In 2006, Maryland adopted regulations that prohibit the transport of green or Japanese crabs. Maryland also adopted regulations to prohibit the import, transport, purchase, possession, sale, or resale of mitten crabs. The states have implemented education and outreach programs to highlight the problems associated with invasive species, and MDNR developed the Maryland Aquatic Nuisance Species Management Plan in 2016. There is concern about the impact of predation from the invasive blue catfish on the blue crab population. The MDNR has created an invasive species program that works with other departments, jurisdictions, and stakeholders to achieve a baywide solution for invasive species in the Chesapeake Bay.

Conclusion

The CBSAC recommends “continued precautionary management measures” considering that blue crab abundance and recruitment have remained low and that the male conservation trigger has been exceeded several times in recent years.⁵ In 2022, CBSAC conducted a Blue Crab Science Workshop to discuss environmental factors affecting blue crab population dynamics and potential enhancements to the stock assessment model. In 2023, CBSAC held a Blue Crab Assessment Data Workshop to identify potential data sources for the new benchmark stock assessment which should be completed in early 2026. Although steps have been made to improve harvest accountability and reporting for both the commercial and recreational fisheries, more improvements are needed. After recent years of below-average juvenile abundance and declines in both adult male and female abundances, the jurisdictions will continue to take precautionary management measures and make adjustments to ensure that harvest levels are commensurate with abundance indices.

Tables and Figures

Table 1. Female-specific biological reference points and status of the blue crab stock, 2011 to 2025. The 2025 exploitation fraction cannot be calculated until the harvest data are complete.

Reference Points	Target	Threshold	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Female-specific Exploitation Fraction	28%	37% (max)	24%	10%	23%	17%	15%	16%	21%	23%	17%	23%	29%	31%	25%	22%	TBD
Abundance (millions of female crabs)	196	72.5 (min)	190	97	147	68.5	101	194	254	147	191	141	158	97	152	133	108

Figures 1 and 2 are adapted from the 2025 Chesapeake Bay Blue Crab Advisory report. The exploitation fraction cannot be calculated until the 2025 harvest data are complete.

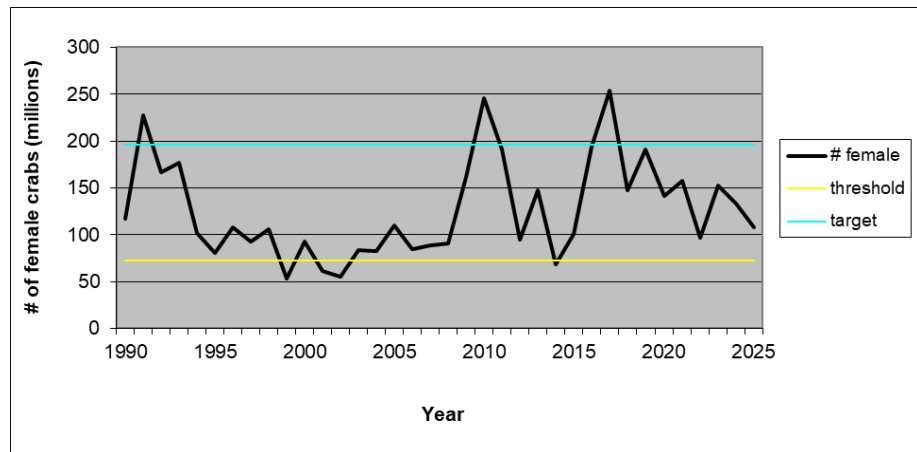


Figure 1. Estimated abundance of adult female crabs (age 1+) in Chesapeake Bay, 1990 to 2025.

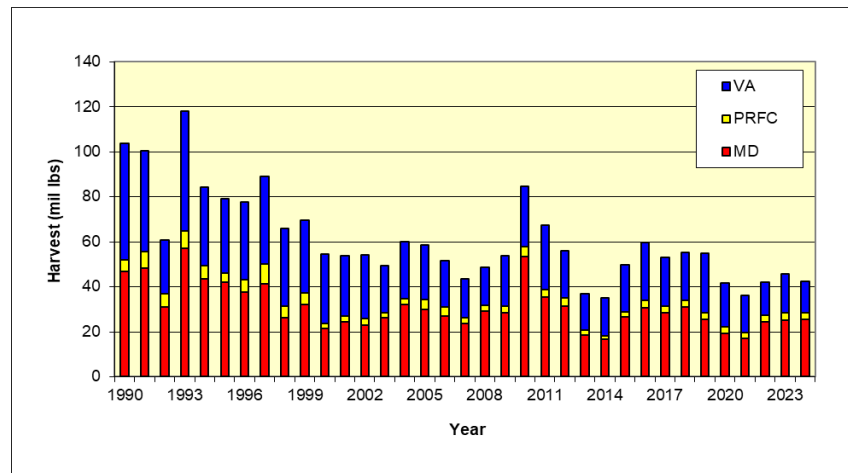


Figure 2. Chesapeake Bay Commercial Blue Crab Harvest, 1990 to 2024. Region abbreviations: VA = Virginia, PRFC = Potomac River Fisheries Commission, MD = Maryland.

References

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2. CBSAC (Chesapeake Bay Stock Assessment Committee). 2023 Chesapeake Bay blue crab advisory report. CBSAC, Annapolis, Maryland.
3. Restrepo, V., and J. Powers. 1999. Precautionary control rules in US fisheries management: specification and performance. ICES Journal of Marine Science 56:846-852.
4. Semmler, R. F. , M. B. Ogburn, R. Aguilar, E. W. North, M. L. Reaka, A. H. Hines. 2021. The influence of blue crab movement on mark-recapture estimates of recreational harvest and exploitation. Canadian Journal of Fisheries and Aquatic Sciences 78(4):371-385.
5. CBSAC (Chesapeake Bay Stock Assessment Committee). 2025 Chesapeake Bay blue crab advisory report. CBSAC, Annapolis, Maryland.

Acronyms

Table 2. Acronyms used in this section

Acronym	Term
BRP	Biological Reference Points
CBSAC	Chesapeake Bay Stock Assessment Committee
CBBC FMP	Chesapeake Bay Blue Crab Fishery Management Plan
MDNR	Maryland Department of Natural Resources
SAV	Submerged Aquatic Vegetation
WDS	Winter Dredge Survey

Additional Reports

Seagrass beds in near shore habitats provide essential habitat for blue crabs, especially during their post larval and juvenile stages. Submerged aquatic vegetation (SAV) provides critical shelter for many key species besides crabs and helps improve water clarity, add oxygen to the water, and reduce shoreline erosion. In 2023, there were an estimated 79,716 acres of SAV in the Chesapeake Bay, an increase of 8%. For a detailed description of current and historic status go to: vims.edu/research/units/programs/sav/reports/2023/.

Section 7. Blue Crab (*Callinectes sapidus*), Coastal Bays

Maryland's Atlantic Coastal Bays and their tributaries are a distinct and unique ecosystem. The Atlantic Coastal Bays blue crab population is managed separately from the Chesapeake Bay population under the Coastal Bays Blue Crab Fishery Management Plan (Coastal BCFMP), which identifies management measures to conserve the coastal blue crab population while protecting the ecological and socioeconomic value of the species.

Fishery Management Plans

Development of the 2001 Coastal BCFMP was triggered by the Comprehensive and Conservation Management Plan (CCMP) which was adopted for Maryland's Coastal Bays in 1999. The CCMP recommended that the Maryland Department of Natural Resources (MDNR) address fishery issues specific to Maryland's Coastal Bays. To view the entire CCMP, go to the Maryland Coastal Bays National Estuary Program website at mdcoastalbays.org. The CCMP is reviewed and updated on a regular basis. A comprehensive review of the CCMP was completed in 2013 and resulted in updated goals, objectives, and actions. The plan was revised as the 2015-2025 Maryland Coastal Bays Comprehensive Conservation and Management Plan. The revised plan addresses water quality and the environmental health of estuaries around Ocean City and Assateague Island. The CCMP includes 4 additional plans, 15 goals, 33 challenges, and 222 actions. During the last plan review, the Coastal BCFMP was determined to still be an appropriate framework for managing the coastal blue crab fishery.

Stock Status

The MDNR Coastal Fisheries Program samples blue crabs as part of its trawl and beach seine surveys. Catch per unit effort (CPUE), calculated from both the trawl and beach seine surveys, indicate that the relative abundance of blue crabs has varied over time without any trends (Figures 1 and 2).

Recruitment of juveniles into the Coastal Bays is largely driven by environmental and hydrologic elements of the Atlantic Ocean. Although there is evidence that some internal recruitment is occurring, it is hypothesized that most of the juveniles that take up residence in Maryland's Coastal Bays are transported by ocean currents from the mouths of the Chesapeake and Delaware Bays. Changes in climate patterns could affect blue crab larval recruitment into the Coastal Bays.

While there is no area-specific stock assessment for blue crab in the Coastal Bays, the fishery-independent indices and the relative stability of the commercial harvest indicate a stable population.

Current Management Measures

The MDNR manages the Coastal Bays commercial blue crab fishery through daily catch limits (25 bushels/16 lugs/10 barrels per boat per day), season length (closed from November 1 through March 31), daily time restrictions, gear restrictions (no scrapes or dredges), limited entry, and other management strategies as necessary to control fishing effort. In 2024, the lug was defined as a legal container for holding commercial harvest, and daily catch limits for lugs and barrels were included for harvesters using these alternative containers. The geographic coordinates identifying crab pot lines were also updated in 2024.

The MDNR manages the recreational blue crab fishery in the Coastal Bays through daily catch limits (one bushel, or six dozen crabs if using an alternative container, per person per day and no more than two bushels, or 12 dozen crabs if using an alternative container, per boat per day), gear restrictions (no more than 600 feet of trotline per person or two 600-foot trotlines per boat; 10 collapsible traps or crab net rings per person or 25 traps or rings per boat), and season length (closed from January 1 through March 31). No license is required for recreational blue crab harvest. Waterfront property owners can use two crab pots off their dock or pier. The pots must be marked with the owner's name and address or MDNR identification number and must have 2 cull rings with required dimensions located in the exterior side panel or on the top panel of the pot. Landowners that use crab pots off their docks must also have a turtle excluder device (TED) attached to each entrance or funnel in the lower chamber constructed of wire or plastic, rectangular in shape, and not larger than 1 ¾ inches high by 4 ¾ inches long. A TED is required to keep terrapins from drowning in pots.¹ In 2024, the daily recreational catch limit was clarified to include six dozen crabs if using an alternative container.

In both the commercial and recreational fisheries, there are minimum size limits (5 inches for hard crabs, 3 1/2 inches for soft crabs, 3 1/4 inches for peeler crabs prior to July 15, and 3 1/2 inches for peeler crabs after July 15). There is no minimum size limit on mature female crabs, but the taking of sponge crabs is prohibited. Special regulations are in place for crabbing in Worcester County and may change annually. See the Code of Maryland Regulations (COMAR) for a complete list of restrictions.

The Maryland Fishery

Maryland's Coastal Bays support both commercial and recreational blue crab fisheries. The 2023 commercial harvest of hard, soft, and peeler crabs from the Coastal Bays was 0.7 million pounds, similar to 2022 (Figure 3). Annual commercial harvest of blue crabs from the Coastal Bays has ranged from 0.54-2.4 million pounds, with an average harvest of 1.2 million pounds per year. Crab pots accounted for 97% of the total commercial harvest in 2023.

The recreational fishery is primarily a small boat fishery due to limited public bulkhead, pier, and shoreline access. Recreational harvest of blue crabs in the Coastal Bays is undocumented. Estimates of recreational harvest from the

Chesapeake Bay are believed to be between 8% and 11% of the commercial harvest but whether this estimate is applicable to the Coastal Bays is unknown. No recreational crabbing surveys have been completed but recreational crabbers are able to participate in the Maryland Volunteer Angler Survey.

Providing timely and verifiable harvest data on a daily basis is the first step towards improving the blue crab management system. In 2012, MDNR implemented an electronic reporting pilot program for commercial blue crab harvest. This electronic harvest reporting program is currently available to harvesters in the Coastal Bays and participants of the volunteer program have been using this option to report blue crab harvest in this region.

Management Priorities and Concerns

A parasitic dinoflagellate, *Hematodinium sp.*, can cause mortality in blue crabs in the Coastal Bays. A 2010 to 2011 University of Maryland project found the presence of *Hematodinium sp.* in 9% of water and sediment samples. Studies conducted in 2005 and 2006 indicated that the number of infected crabs followed a seasonal pattern, increasing from late summer through December. Results indicated that salinity and water temperature are vital components for the proliferation of the parasite and associated mortality. The results of a paper published in 2018 indicated that the prevalence of parasitic infection in Maryland Coastal Bay blue crabs varied significantly by year.² Parasite prevalence and intensity typically peaked in summer. Juvenile crabs (< 20 millimeters [mm]) were more susceptible to parasite infection in the fall, medium-sized crabs (61 to 90 mm) were more susceptible to initial infection in the spring, and crabs > 60 mm were most likely to proliferate the parasite. There is still much that is unknown about *Hematodinium sp.* and its effects on the blue crab population in the Coastal Bays. The Virginia Institute of Marine Science and University of Maryland Eastern Shore are continuing to study the effects of *Hematodinium* on blue crabs. Available: vims.edu/research/units/programs/crustacean/research/hematodinium/eid_project/.

Viruses of all types have been documented in blue crabs, and it is likely that diseases can impact population dynamics. Recent advances in molecular and biotechnological tools have been utilized to assess the prevalence and intensity of diseases. More research is needed to quantify effects of disease on blue crab abundance in the Chesapeake Bay and Coastal Bays.

In eastern North America, green crabs have been shown to significantly reduce populations of shellfish including soft-shell clams, scallops, and hard clams. The federal Aquatic Nuisance Species Task Force developed a management plan for green crabs in 2002. The Maryland Aquatic Nuisance Species Management Plan was completed in November 2016 with the European green crab identified as a high priority species. Green crabs have not been prohibited as bait but are prohibited from being transported (COMAR 08.02.19.04).

To help address bycatch mortality of blue crabs from other fisheries and derelict gear, hydraulic clam dredging has been prohibited in Maryland's Coastal Bays since 2007 (Natural Resource Article, §4-1002, Annotated Code of Maryland) and the Maryland Coastal Bay's Program conducts an annual marine debris plunder event to remove ghost pots from the water.

Figures

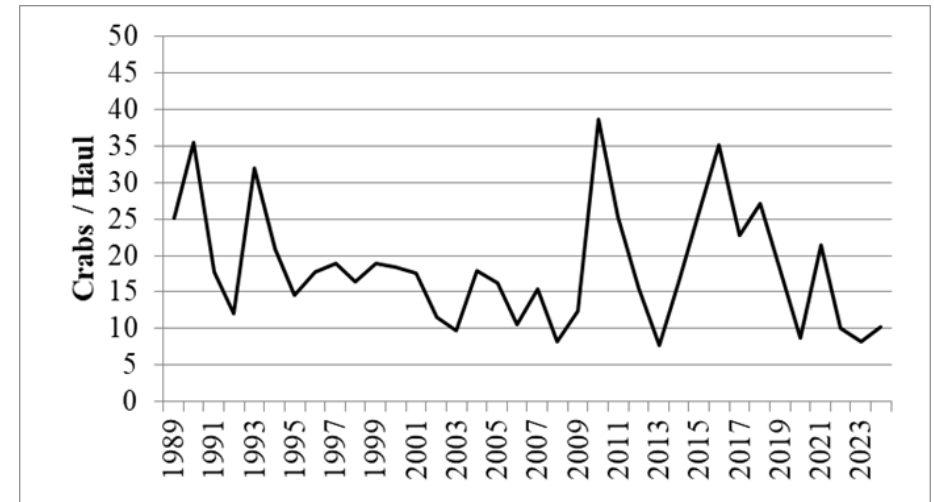


Figure 1. Maryland blue crab seine CPUE from the Coastal Bays Fisheries Investigations, 1989 to 2024.

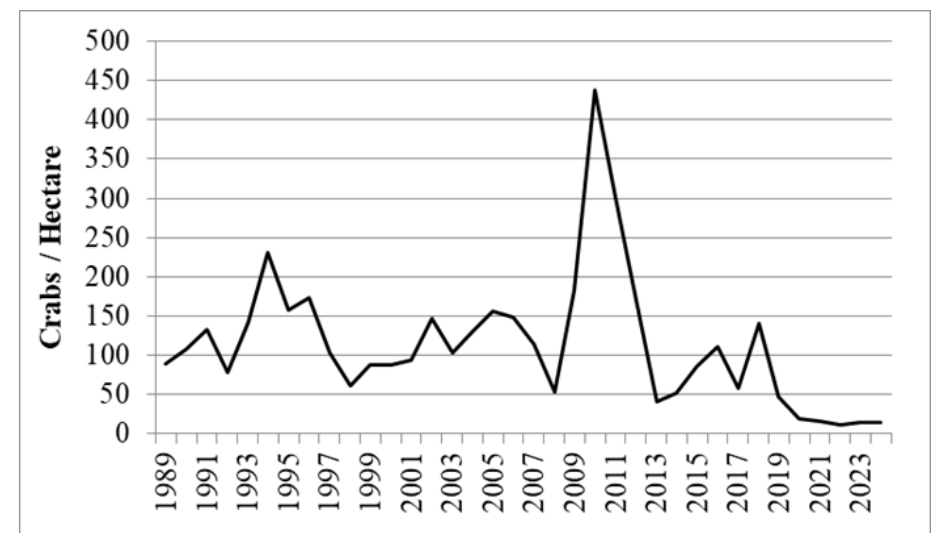


Figure 2. Maryland blue crab trawl CPUE from the Coastal Bays Fisheries Investigation, 1989 to 2024.

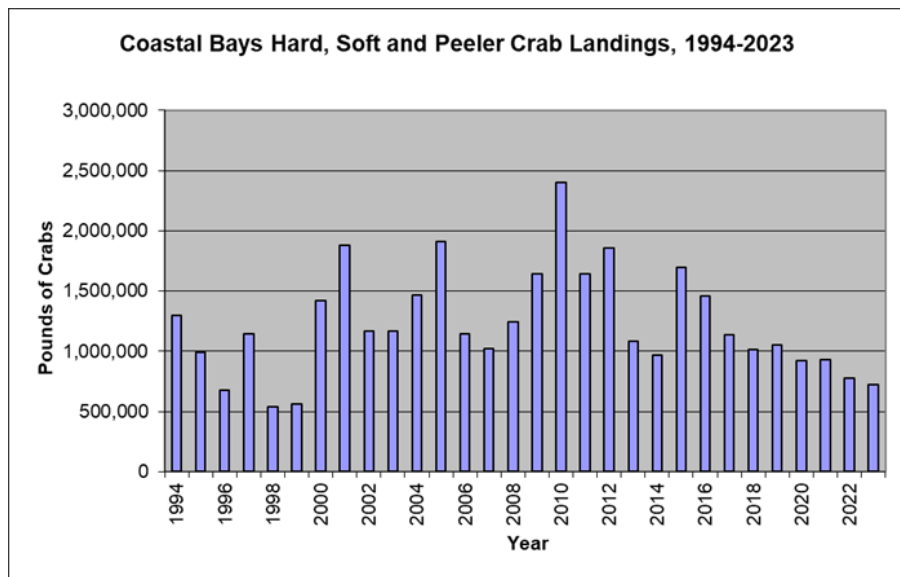


Figure 3. Total Maryland Coastal Bays Blue Crab commercial harvest in pounds, 1994 to 2023 (MD DNR data).

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
CCMP	Comprehensive and Conservation Management Plan
COMAR	Code of Maryland Regulations
BCFMP	Coastal Bays Blue Crab Fishery Management Plan
CPUE	Catch Per Unit Effort
MDNR	Maryland Department of Natural Resources
SAV	Submerged Aquatic Vegetation
TED	Turtle Excluder Device

Additional Reports

The status of the Coastal Bays is assessed through an environmental report card process. The 2023 report card score for Maryland's Coastal Bays was B-. Available: mdcoastalbays.org/app/uploads/2024/10/2023-Maryland-Coastal-Bays-Report-Card-Final_pages.pdf

Seagrass beds in Maryland's Coastal Bays appear to be an important area of primary habitat for fish and crabs. In 2023, submerged aquatic vegetation (SAV) in the coastal bays increased by 31%. Available: vims.edu/research/units/programs/sav/reports/2023/

Section 8. Bluefish (*Pomatomus saltatrix*)

Bluefish support important commercial and recreational fisheries, sought after by recreational anglers as much for sport as for food. They are a migratory, schooling species found throughout the world's coastal waters, except for the eastern Pacific. Bluefish are known for their aggressive feeding behavior and powerful fight when hooked, which often provides an exciting fishing experience. On the Atlantic coast of the United States, bluefish undertake extensive seasonal migrations from Florida to Maine. Spawning occurs at sea as the fish migrate northward beginning in spring. Young fish utilize nearshore waters and estuaries such as the Chesapeake Bay as nursery areas, where they prey voraciously on smaller fish and grow quickly.

Fishery Management Plans

The Chesapeake Bay Bluefish Fishery Management Plan (CBB FMP) was adopted in 1990 and amended in 2003. The CBB FMP Amendment 1 adopted the MAFMC and the ASMFC coastal overfishing definition and rebuilding schedule. The CBB FMP focused on monitoring the fishery and stock status. The amendment added habitat protection and predator/prey considerations.

Bluefish is managed jointly by the Atlantic States Marine Fisheries Commission (ASMFC) in state waters and the Mid-Atlantic Fishery Management Council (MAFMC) in federal waters. The 1989 joint interstate-federal fishery management plan (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 to be developed jointly by an interstate commission and regional fishery management council. Bluefish are currently managed under Amendments 1 and 2 and Addendum I to the FMP.

Amendment 1 was developed in 1998 to prevent recruitment overfishing, reduce fishing waste, improve cooperative management among states, maximize availability, and improve biological understanding of the species.¹ Addendum I (2012) mandated states responsible for 5% or more of the coastal harvest to increase collection of otoliths and length-at-age data. Maryland is exempt from the mandate.² Amendment 2 was adopted in 2021, initiating a seven year rebuilding plan to address the overfished status of the stock. The amendment revised allocations to states, allocations between commercial and recreational sectors, and reduced daily catch limits for recreational anglers.³

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the bluefish compliance reports for calendar years 2022, 2023, and 2024. All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the bluefish FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/Bluefish_FMPReview_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/Bluefish_FMPReview_FY2023.pdf
asmfc.org/wp-content/uploads/2025/08/Bluefish_FMPReview_FY2024.pdf

Stock Status

Bluefish is managed as a single coastal stock. Periodic stock assessment updates are conducted to estimate crucial population parameters such as spawning stock biomass (SSB), fishing mortality (F), and recruitment. A 2022 stock assessment, using data through 2021, found that the Atlantic bluefish stock was not overfished, and overfishing was not occurring. The most recent stock assessment completed in 2023 included updated data on commercial and recreational catch and fisheries independent indices of abundance through 2022. This assessment also concluded that the Atlantic bluefish stock is not overfished: SSB (116 million pounds) is above the threshold of 97 million pounds. Bluefish are not experiencing overfishing: F (0.152) is below the threshold of 0.239. Recruitment has been increasing since 2019 but remains below average.⁴ The next benchmark stock assessment is scheduled for 2025. A stock rebuilding plan will remain in effect until target levels of abundance are achieved.

Current Management Measures

Stock assessment updates and annual performance reviews are used to determine acceptable biological catch (ABC) and annual catch limits for commercial and recreational fisheries on the Atlantic Coast. As of 2022, 14% of the ABC is allocated to the commercial sector, and 86% is allocated to the recreational sector. The FMP allows for a portion of unused quota to be transferred between the sectors in some circumstances.

The commercial fishery is managed under state-specific quotas. State-specific allocations of the coastal commercial quota were revised by Amendment 2 to reflect historical landings data from 2009 to 2018. Maryland's previous allocation of 3% was reduced to 1.92%. The reduction will be phased in over seven years to reduce impact to the commercial fishing industry.

Recreational fisheries are managed with minimum size limits and daily bag limits designed to constrain landings to a coastal recreational harvest limit (RHL).³

The 2022 Atlantic coast RHL was 13.89 million pounds, and the coastal commercial quota was 3.54 million pounds. Maryland received 2.85% of the coastal commercial quota, resulting in a 2022 quota of 100,698 pounds.⁵

The 2023 Atlantic coast RHL was 14.11 million pounds, and the coastal commercial quota was 4.29 million pounds. Maryland received 2.69% of the coastal commercial quota, resulting in a 2023 quota of 115,409 pounds.⁶

The 2024 Atlantic coast RHL was 11.96 million pounds, and the coastal commercial quota was 2.42 million pounds. Maryland received 2.54% of the coastal commercial quota, resulting in a 2024 quota of 61,471 pounds.⁷

The Maryland Fishery

Maryland's bluefish harvest is primarily recreational. Commercial and recreational bluefish fisheries are open year-round, with a minimum size limit of 8 inches. The recreational fishery has a daily limit of three fish per person per day for anglers fishing from shore or private boats, and five fish per person per day for anglers on for-hire boats. The commercial fishery is assigned an annual quota.

Maryland's commercial bluefish harvest has been consistently low, averaging less than 15,000 pounds annually since 2022. Commercial harvest in 2024 (10,673 pounds) was a 39% decrease compared to 2023 (17,399 pounds) (Figure 1). Approximately 55% of the commercial catch was harvested from the Chesapeake Bay and the remainder from Maryland's Atlantic coastal waters. Pound nets and gill nets are the primary harvest gears.

Recreational harvest estimates are produced by the Marine Recreational Information Program. Over the past three years, harvest estimates have ranged from 249,382 fish in 2022, to 210,655 fish in 2023. The harvest estimate for 2024 was 250,119 fish weighing 793,078 pounds. Live discards in 2024 were estimated at 400,800 fish (Figure 2).⁸

Management Priorities and Concerns

Although SSB has been increasing since 2018, the bluefish rebuilding plan will remain in effect because SSB is 40% below the target of 194 million pounds.⁹

The 2023 Stock Assessment noted the importance of developing or expanding programs to collect length data from recreational releases. This is particularly important because fish released in southern states tend to be much smaller than those released in northern states. Improving these data from southern states would lead to better estimates of total discard weight.⁴

An amendment currently in development proposes splitting the recreational sector into private and for-hire management units. The amendment also proposes enhancing data collection from the recreational sector.¹⁰

Figures

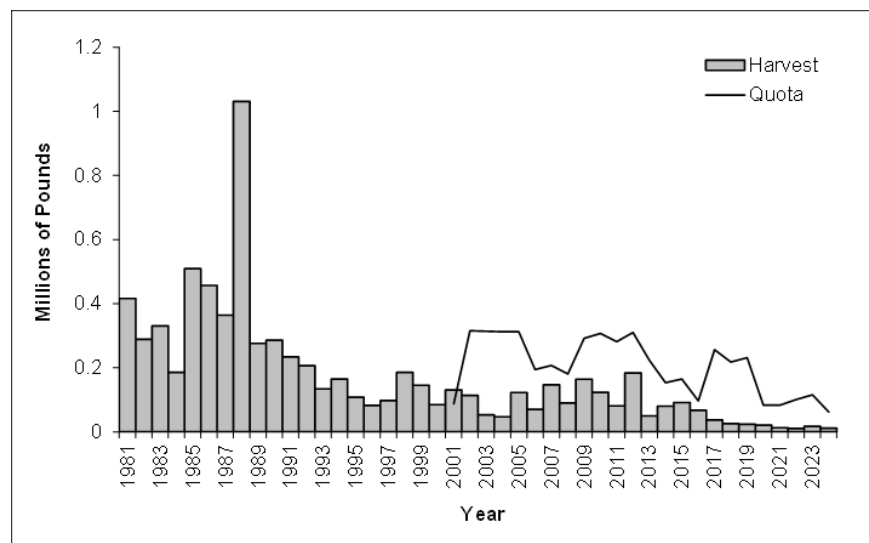


Figure 1. Maryland commercial bluefish landings and quota, 1981 to 2024.

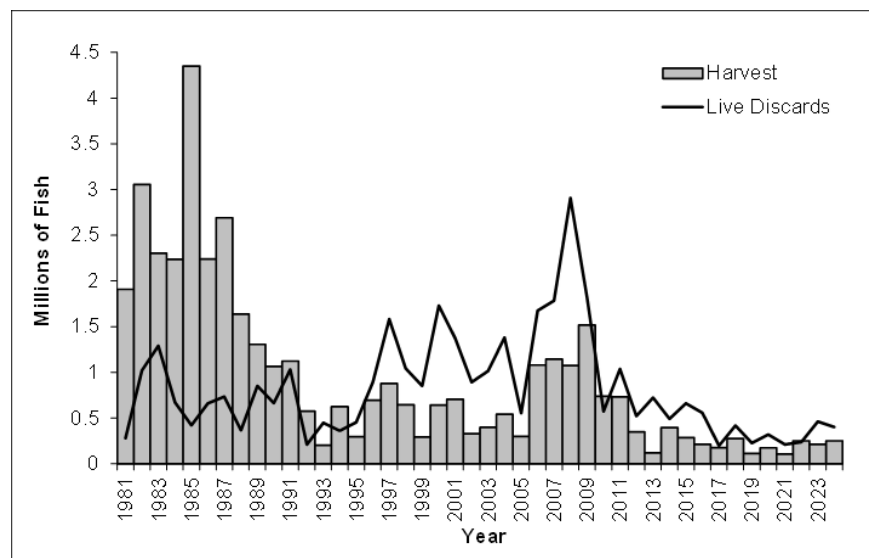


Figure 2. Estimated number of bluefish harvested and live discards by the recreational fishery in Maryland, 1981 to 2024.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ABC	Acceptable Biological Catch
ASMFC	Atlantic States Marine Fisheries Commission
CBB FMP	Chesapeake Bay Bluefish Fisheries Management Plan
F	Fishing Mortality
FMP	Fisheries Management Plan
MAFMC	Mid-Atlantic Fisheries Management Council
RHL	Recreational Harvest Limit
SSB	Spawning Stock Biomass

Section 9. Brook Trout (*Salvelinus fontinalis*)

The brook trout (*Salvelinus fontinalis*) is Maryland's only native salmonid and provides an important recreational fishery for the public. Brook trout is a member of the genus *Salvelinus*, which also includes arctic charr, lake trout, bull trout, and Dolly Varden trout. The brook trout native range extends from Canada in the north through most of the eastern United States to the Appalachian Mountains in Georgia. At the time of European colonization, brook trout occupied watersheds throughout western and central Maryland, including in the Highland, Piedmont, and Coastal Plain geographic regions. They are currently present in the Highland and Piedmont regions, though stream occupancy has declined from historic levels by more than 60% across the state.¹ They are likely extirpated from the Coastal Plains region.

The loss of specific habitat types is one reason the range has contracted in Maryland. Brook trout typically occupy headwater streams, though a number of larger stream and fluvial populations do occur. Optimal stream and riverine habitat include cold, silt free water with variable substrate and stable flow and temperature regimes.² Brook trout become stressed when stream temperatures exceed 20°C and are more likely to become extirpated with increasing frequency and duration above that threshold. Sediment pollution in streams also limits survival of brook trout. Changing land use in brook trout watersheds, including deforestation, increases in impervious surfaces, acid mine drainage, and intensive agricultural practices, have led to elevated stream temperatures, sedimentation, acidic conditions, and losses of sufficient coldwater habitat.

Brook trout have been listed as a species of greatest conservation need by the Maryland State Wildlife Action Plan.³ Several actions have been taken to reduce and reverse losses in brook trout occupancy in Maryland. Coordinated efforts among state, federal, and local government agencies, nongovernmental organizations, and the public seek to protect existing brook trout populations and expand stream occupancy by the species where possible.

Fishery Management Plans

In 2006, the Brook Trout Fishery Management Plan was implemented to restore and maintain healthy brook trout populations in Maryland's freshwater streams and provide long term social and economic benefits from a recreational fishery.⁴ The plan was developed concurrently with the creation of the Eastern Brook Trout Joint Venture, a collaborative effort that includes state and federal government agencies, academic institutions, and nonprofit angling and conservation groups, to increase awareness and promote conservation and restoration of brook trout in their native range. Brook trout management in Maryland is led by the Department of Natural Resources (MDNR), Fishing and Boating Services, with the Brook Trout Fishery Management Plan providing the framework for fisheries management and conservation. These efforts are coordinated across MDNR or with agencies whose management authorities may directly influence brook trout or their habitat, including MDNR's Resource Assessment Service and Wildlife and Heritage Service,

Maryland Department of the Environment (MDE), U.S. Fish and Wildlife Service, U.S. Geological Survey, U.S. Army Corps of Engineers, and county governments within the brook trout range (Garrett, Allegany, Washington, Frederick, Carroll, Baltimore, and Harford counties). Non-governmental participants and partners include the University of Maryland System, Trout Unlimited, and Western Maryland RC&D. Rangewide conservation efforts are coordinated through the Eastern Brook Trout Joint Venture and the Southern Division of the American Fisheries Society Trout Committee.

A brook trout restoration outcome was established in the 2014 Chesapeake Bay Watershed Agreement to: "restore and sustain naturally reproducing Brook Trout populations in Chesapeake headwater streams, with an eight percent increase in occupied habitat by 2025." As a signatory partner to the agreement, Maryland works with the other states in the Chesapeake Bay watershed through the Chesapeake Bay Program to achieve this and other outcomes. The identification of coldwater streams with sufficient brook trout habitat and reintroduction of brook trout populations to those streams have been priorities for the department and fisheries managers.

A comprehensive Coldwater Fisheries Management Plan is currently in development. This plan recognizes the importance of coldwater habitat for supporting both wild and hatchery-raised trout fishing opportunities and will outline strategies to protect and conserve these declining resources. Management objectives from the Brook Trout Fisheries Management Plan will be incorporated into the Coldwater Fisheries Management Plan and additional objectives will be developed to protect coldwater habitat and wild trout resources. The plan will also establish strategies and actions for hatchery raised trout management.

Stock Status

The last complete survey of Maryland's documented brook trout populations was a survey completed between 2014 and 2018. The results of the survey suggested a 27% decline in stream occupancy since the 1980s.⁵ The most severe declines occurred in the central region of Maryland (Piedmont Province), where a 49% decline in occupancy was observed (Figure 1). These declines in occupancy are consistent with losses observed throughout the eastern United States.¹ Following the survey, in 2020 an assessment of all of the brook trout patches in Maryland was completed to identify stronghold and at-risk patches.

A brook trout monitoring network was developed in 2022 and implemented in 2023 to improve the consistency of data collection and the assessment of brook trout population trends throughout the species' range in Maryland. The brook trout monitoring network includes 51 fixed stations that were selected to represent the broad variation in aquatic habitat and the range of stressors that brook trout experience in Maryland.

Fishing and Boating Services completed 111 surveys to assess coldwater potential in streams without recent resource data during the 2022 to 2024 reporting period. This

effort led to the identification of 14 previously undocumented brook trout populations and eight streams that may have sufficient habitat and water quality to support brook trout but are not currently occupied by any trout species.

The first full year of data collection for the brook trout monitoring network was completed in 2023 and continued in 2024. Climate conditions were particularly poor for brook trout in 2024, with warm temperatures and low stream flows occurring throughout Maryland. Adult brook trout abundance was below the long term mean at 77% of monitoring network stations. While most of the abundance means were within the expected range for adults, 40% fell below the reference points (i.e., 25th percentile) and were considered to be particularly low. These observations were consistent across all river basins, though only 27% of stations in the North Branch Potomac River basin were below the 25th quartile. It is notable that 73% of the North Branch Potomac River basin stations were below long term means, as the basin is located at higher elevations and generally does not experience the more extreme temperature conditions that occur in the central region of Maryland.

Brook trout recruitment was particularly poor in 2024, with mean young of year abundances falling below the long term mean at 98% of the monitoring network stations. Recruitment was below the reference points (i.e., 25th percentile) and considered to be poor at over half of the stations in the network (52%). The most severe results were observed in the Piedmont Region, where young of year were observed at only one station in the Gunpowder River basin and no young of year were observed in the Lower Susquehanna River basin. Recruitment was highest in the North Branch Potomac River basin, though young of year abundance was below the long term mean at all but one station. Over half (55%) of the stations fell within the expected range for young of year abundance.

Brook trout recruitment substantially varies annually and these results are expected due to the warm weather conditions and low stream flows. Repeated years of poor recruitment are of particular concern for fisheries managers and can lead to declines or loss of the resource. Surveying network stations will continue in 2025 to monitor population abundance and recruitment.

Current Management Measures

Harvest of brook trout is currently prohibited in all streams east of I-81, in all Put-and-Take Trout Fishing Areas, and in the Upper Savage River watershed. Statewide creel limits in streams where harvest is permitted are two trout per day per angler with no minimum size limit and no closed season. There are two Trophy Trout Fishing Areas in the Savage River below the Savage River Tailwater. Harvest is permitted in these sections, with an aggregate limit of two trout per day and four trout in possession, and a 12-inch minimum size limit for brook trout. The two Trophy Trout Fishing Areas are distinguished by gear restrictions. The upstream area is limited to fly fishing gear only, while the downstream section permits the use of artificial lures and flies. The most recent regulatory change was made in 2021,

during which the east of I-81 and Put-and-Take harvest prohibitions were added to the regulation. No regulatory changes were made during the reporting period.

Additional management measures include updating and maintaining the statewide brook trout patch assessment. Annual data collection for the patch assessment, brook trout monitoring network and routine but less frequent surveys of patches that are not in the network provide important metrics for managers to make informed decisions, establish achievable goals, and develop effective regulations.

The Maryland Fishery

The Maryland brook trout fishery is a recreational resource with no commercial harvest opportunities. All nontidal recreational fishing license holders are permitted to fish for brook trout if they have purchased a trout stamp. A statewide freshwater angler survey and a wild trout angler preference survey provide the most recent descriptions of the angling population.^{6,7} The results of the surveys suggest that most trout anglers fish for both wild and stocked trout without a specific mode of fishing and using artificial lures, bait, and flies.

Surveys demonstrate that anglers do not need to harvest brook trout to have an enjoyable fishing experience. A large majority of surveyed anglers supported the zero harvest creel limit in the Upper Savage River watershed (92%) and would support special regulations in other areas around the state (86%). Other types of special regulations (e.g., catch-and-release only, tackle restrictions) received mixed reactions from anglers, with Catch-and-Release Only special regulations receiving the most support (36%). These data demonstrate that the brook trout fishery in Maryland is characterized by primarily catch-and-release anglers, with limited allowable harvest supporting subsistence fisheries for local communities.

Management Priorities and Concerns

The primary concern for Maryland brook trout is the decline of the resource throughout the state, which has been largely attributed to land use changes and warming waters that prevent successful reproduction. While consistent with trends throughout their range, action to stop or reverse these losses is needed to protect the resource. Land use practices in brook trout watersheds all contribute to declines in occupancy. These include: increases in impervious surfaces, deforestation, riparian buffer loss, discharge from ponds and other impoundments, intensive agricultural practices, and water quality degradation from acid mine drainage. In some cases, competition for resources with non-native salmonids, such as brown trout and rainbow trout, may be an additional stressor. Given MDNR's limited regulatory authority for restricting land use conversion, communication and collaboration with MDE and other permitting and regulatory agencies, local governments and soil conservation districts, and land owners is prioritized to mitigate potentially harmful impacts to streams occupied by brook trout. The MDNR uses the 2020 brook trout patch assessment, the resiliency, protection, and reintroduction conservation

strategies, and the development of the brook trout monitoring network to support communication and collaboration with regulatory agencies.

Since 2020, MDNR has prioritized collection of data to close data gaps in the 2020 brook trout patch assessment and to support fisheries management decision making. Brook trout population survey efforts during the reporting period are provided in Table 1. To address data gaps in genetic data, tissue samples from 24 brook trout patches were collected and submitted to the U.S. Fish and Wildlife Service (Northeast Fishery Center, Lamar, PA). Partial results for the patches have been reported and included in the brook trout patch assessment. The remaining results are expected in 2025.

The brook trout patch assessment was updated in 2024 using the same criteria from the 2020 assessment. This assessment identified four new stronghold patches in addition to the 10 patches that met the stronghold criteria during the 2020 assessment. Fishing and Boating Services will continue to work towards maintaining a completed and current assessment of brook trout patches for prioritization of restoration activities.

Considerable work has been completed towards the resiliency, protection, and reintroduction conservation strategies. Progress towards these goals includes the removal of a blockage in Wolfden Run and Blue Lick Run, with plans for two more blockage removals in progress. These blockage removal projects improve connectivity, access to habitat, and genetic diversity in brook trout watersheds.

The MDNR commented on 23 projects that were planned in brook trout watersheds during the 2022 to 2024 reporting period. The comments were submitted through the environmental review process and include recommendations and best management practices that limit thermal and sediment impacts to brook trout fisheries. Comments included but were not limited to the application of time of year restrictions to protect developmentally critical periods, redundant and strict sediment and erosion control practices, avoidance of stormwater management practices that use pooling water, and minimization of tree canopy and riparian buffer loss to the maximum extent possible.

Coldwater resource data were submitted to MDE for seven brook trout streams that were not designated as coldwater streams under Maryland's water quality regulations. A stream use class redesignation to Use Class III: coldwater was requested for these streams. Streams with the Use Class III designation receive water quality protections that limit activities that could elevate stream temperatures above 20°C. Additionally, the department worked with MDE on a policy to address small ponds in watersheds that support coldwater resources. This policy limits the development of new ponds in coldwater drainages and provides guidance for the retrofit of existing ponds. The MDNR also collaborated with MDE on a dam decommissioning document that provides guidance to landowners that are interested in removing ponds on their property.

A management option for MDNR is to reduce negative interactions between non-native salmonids and brook trout. In 2024, the Non-native Salmonid Removal Policy for Managing Brook and Non-native Trout Populations was officially adopted by MDNR. The policy outlines eight criteria that will be considered when determining if co-occupancy of brook and non-native trout conflicts with brook trout management and conservation goals. The policy establishes a transparent and accountable process for the planning and execution of non-native trout removal projects in cases where these actions are needed to protect brook trout resources.

A management priority for MDNR is habitat degradation owed to aspects of land use and climate change, such as warming air temperatures. Improving the resiliency of existing brook trout populations to warming waters using habitat enhancement projects is one effective approach that MDNR can take in preparation for this challenge. Habitat enhancement projects such as tree planting, livestock exclusion and improving stream connectivity are multi-faceted, highly collaborative projects that require funding to implement.

Tables and Figures

Table 1. Statewide brook trout sampling effort by river basin from 2022 to 2024, as per the Maryland Department of Natural Resources Brook Trout Fisheries Management Plan. River basin abbreviations: GU = Gunpowder River; LS = Lower Susquehanna; PA = Patapsco River; MP = Middle Potomac River; UNB = Upper North Branch Potomac River; UP = Upper Potomac River; WC = West Chesapeake Bay; YG = Youghiogheny River.

River Basin	Number of Populations Surveyed 2022	Number of Populations Surveyed 2023	Number of Populations Surveyed 2024
GU	4	13	16
LS	-	3	3
PA	1	1	1
MP	7	11	10
UNB	43	44	34
UP	1	-	1
WC	1	1	1
YG	8	4	21

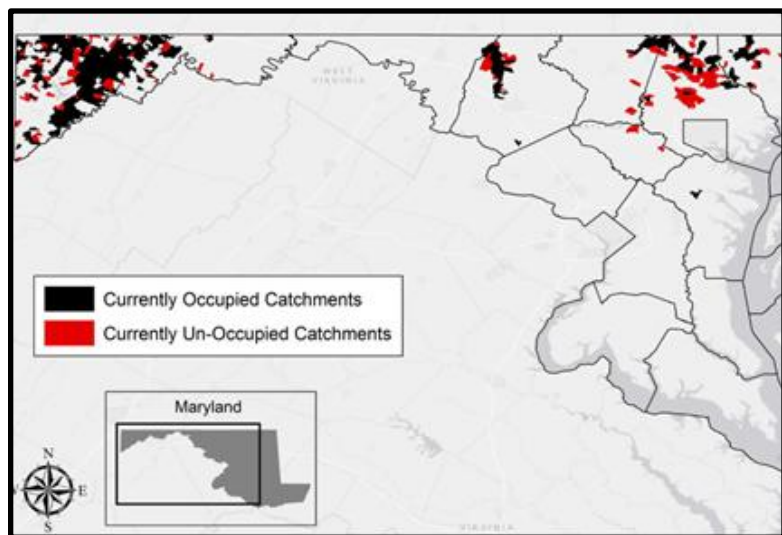


Figure 1. Distribution of brook trout in Maryland subwatersheds following the 2014 to 2018 survey of all brook trout populations. Brook trout were documented in all catchments in historical records back to the 1980s. Brook trout continue to occupy catchments shaded in black, but were not observed in catchments shaded in red.

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Acronyms

Table 2. Acronyms used in this section

Acronym	Term
MDE	Maryland Department of the Environment
MDNR	Maryland Department of Natural Resources

Section 10. Maryland Tidewater Catfish Species

There are five catfish species harvested from the Chesapeake Bay. White catfish (*Ameiurus catus*) and brown bullheads (*Ameiurus nebulosus*) are native to the watershed. Channel catfish (*Ictalurus punctatus*) were introduced into the Potomac River in the late 1800s and spread throughout the Chesapeake Bay region, reaching Maryland's portion of the Chesapeake Bay in the late 1950s. They are now considered naturalized and widespread in tidal waters and impoundments. Invasive blue catfish (*Ictalurus furcatus*) were introduced to the James and Rappahannock rivers in the 1970s, and have been found in high numbers in the Chesapeake Bay from the 1990s to present. Flathead catfish (*Pylodictis olivaris*) were introduced to the James River in Virginia between 1965 and 1977. Invasive blue catfish have spread into every major tributary of the Chesapeake Bay. Invasive flathead catfish occur in the nontidal and tidal Potomac River and introductions occurred in Pennsylvania's portion of the Susquehanna River in the 2000s. Flathead catfish are now commonly found in the Potomac River and in rivers of the upper Chesapeake Bay. Blue catfish are opportunistic feeders, exerting predatory pressure on all trophic levels. Flathead catfish are apex predators in the ecosystem, which raises concerns about their effects on native fish communities.

Recreational and commercial harvest of catfishes in Maryland attest to the popularity of these species. The recreational fishery for catfishes, invasive catfishes in particular, has increased drastically in recent years due to the increased abundance and distribution. In 2024, recreational harvest of all catfish species combined totalled over 1 million fish. Of those, over 73% of the harvest was invasive catfish with the remaining comprising channel catfish and white catfish. In 2024 alone, over 1.28 million pounds of invasive catfishes were harvested commercially, with blue catfish accounting for over 99% of the harvest. The number of for-hire fishing trips reporting blue catfish harvest increased by over 100% from 2023 to 2024.

Fishery Management Plans

In 2021, the Fishery Management Plan (FMP) for Tidewater Catfish was adopted in regulation by the Maryland Department of Natural Resources (MDNR). The FMP was implemented with the goals of (1) maintaining the ecological integrity of Chesapeake Bay ecosystems; (2) ensuring recreational and commercial harvests that support fishing and seafood industries; (3) ensuring sustainability of both native and nonnative, noninvasive catfish populations; and (4) depleting invasive catfish populations (i.e., blue catfish and flathead catfish).

Prior to the FMP, previous plans and workgroups helped to formulate strategies and actions to manage specifically invasive catfishes. In 2012, an Invasive Catfish Task Force was established through the Chesapeake Bay Program and it developed a list of recommendations for jurisdictions to address invasive catfish issues baywide. In 2016, Maryland developed an Aquatic Nuisance Species Management Plan. The plan identified blue catfish and flathead catfish as high priority aquatic nuisance species due to their high potential of negative economic and ecological impacts. It also

identified strategies to reduce biomass and limit the spread of these species. In 2020, the Chesapeake Bay Program drafted the Chesapeake Bay Management Strategy for Invasive Catfish. Staff from MDNR reviewed and revised the strategy, goal, and outcomes. The strategy includes a sustainable fisheries goal to protect, restore, and enhance finfish, shellfish, and other living resources, their habitats, and ecological relationships to sustain all fisheries and provide for a balanced ecosystem in the watershed and the Chesapeake Bay. The corresponding invasive catfish outcome was to reduce the abundance and mitigate the spread and ecological impacts of invasive catfishes in the Chesapeake Bay through increased public education and awareness and development of fishery management strategies that ensure ecosystem health and productivity.

Stock Status

Fishery-independent surveys are conducted by MDNR to routinely monitor relative abundance of white and channel catfishes in the Choptank River and upper Chesapeake Bay. Both white and channel catfish abundance indices exceed long term averages in the Choptank River, but are below long term averages in the upper Chesapeake Bay (Figures 1, 2, 4, and 5). In addition, age-1 channel catfish abundance has been below long-term averages since 2021 in the upper Chesapeake Bay (Figure 3). These two species occur elsewhere in tidal waters of the Chesapeake Bay watershed, but few data are available for stock assessments.

There is no annual fishery-independent survey to determine abundance of bullhead catfish, blue catfish, or flathead catfishes in Maryland's tidal freshwater. However, surveys for blue catfish and flathead catfish are in development by MDNR. Data from MDNR fishery-independent surveys targeting other fishes indicate that bycatch of blue catfish has increased yearly since 2018 on the Choptank River (Figure 6), but has remained at a long-term average in the upper Chesapeake Bay (Figure 7). Commercial harvest of blue catfish continues to increase annually in Maryland waters (Figure 10). Because of increasing levels of commercial harvest and fishery-independent indices indicating steady or increasing relative abundance, anecdotally it appears as if blue catfish are not being overfished. Flathead catfish are not currently widespread in tidal freshwaters of Maryland. The species has not been routinely collected in fishery-independent surveys and current estimates of abundance do not exist.

Current Management Measures

There are no minimum size limits, creel limits, or closed seasons for any recreational or commercial catfish fisheries in tidal waters. Commercial fishermen are allowed to use a variety of gears including: hook and line, fyke nets, haul seines, and finfish trotlines. There are currently length and area restrictions for finfish trotlines which are in place to minimize bycatch. Restrictions on trotline length and minimum hook sizes and types are also in place. Other area and gear restrictions apply to commercial fishermen, but are not catfish-specific.

The Maryland Fishery

There are both recreationally and commercially important fisheries for catfishes in Maryland. The recreational fishery consists of both individuals fishing on their own accord and for-hire fishing trips. According to the National Marine Fisheries Service's Marine Recreational Information Program estimates for 2024, Maryland recreational harvesters caught over 1 million catfish. In addition, the number of fish kept on for-hire fishing trips in 2024 increased by over 300% from previous years.

The commercial fishery for invasive blue catfish continues to grow and since 2023, annual commercial harvest has exceeded 1 million pounds (Figure 10). In addition, the commercial fishery for channel catfish also continues to average over 1 million pounds per year (Figure 12). Commercial fisheries for white and flathead catfish exist, but are small in scale (Figures 11, 13). Anyone can enter the commercial fishery by obtaining one of several commercial licenses. There are two commercial harvester licenses (Unlimited Tidal Fish License [TFL] and Unlimited Finfish Harvester License [FIN]) which allow participants to use any legal gear to harvest catfish. There is also the Finfish Harvester Hook and Line (HLI) commercial harvester license which allows participants to harvest catfish (and other species) using a hook and line only. These licenses all have target numbers of participation that are determined using input from the fishery management plans and the Tidal Fisheries Advisory Commission, creating limited availability. In 2019, the Blue and Flathead Catfish Trotline License was created to allow more participants in the invasive catfish commercial fisheries. This license is much cheaper (\$15) than other commercial fishing licenses and the number of available licenses is unlimited.

Management Priorities and Concerns

As outlined in the FMP, the goals for tidewater catfish populations are to maintain ecological integrity of the Chesapeake Bay, ensure sustainability of native and nonnative, noninvasive catfish populations, and deplete invasive catfish populations. There is growing concern about the impact of invasive catfishes on recreational and commercially viable species in the Chesapeake Bay. The MDNR staff have employed multiple strategies to reduce invasive catfish biomass, including incentivized harvest through grant programs, pilot programs to reduce barriers to the commercial fishery, and the promotion of recreational harvest of invasive catfishes through outreach and financial and infrastructure support to invasive fishing events.

Prioritized FMP actions are to create scientifically defensible, fishery-independent standard operating procedures to establish a sampling program and generate indices to monitor catfishes in tidal waters of Chesapeake Bay (Action 1.1.3) and develop an annual program to measure abundance or density of blue catfish and flathead catfish in targeted areas (Action 1.1.6). The MDNR continues to implement actions that refine and create tools to widely disseminate information on fishing and consumption of invasive catfishes (Action 1.2.2) working with its partners at the Maryland Department of Agriculture and Maryland Department of Environment. The MDNR has also been tasked to develop pilot projects in concurrence with Strategy 1.3 to use

new technologies for harvesting invasive catfishes (Action 1.3.1) and use those data to support objectives of the FMP (Action 1.3.2). Numerous actions to encourage consumptive and nonconsumptive use have also been prioritized including creating and supporting harvest-based tournaments (Action 2.1.2), research of nonconsumptive uses (Action 2.1.4), support creation of more processing plants (Action 2.1.5), and use dietary data to identify ecological consequences of predation by invasive catfishes (Action 2.1.6).

While these actions may be addressed or accomplished in coming years, the success of implementing this plan depends on continued and meaningful partnerships, sustained funding, and programmatic support. Given the interest in invasive catfishes and concerns with other species (e.g., white catfish, channel catfish), there has been a flurry of work aimed at different aspects of tidewater catfish stocks, especially invasive catfishes and perhaps at the expense of other catfish species. Coordinating work and synthesizing it during workshops to reduce repetitiveness and improve efficiency requires lasting commitment by partners, which is always a challenge as priorities shift. Finally, agencies of the Chesapeake Bay watershed have not widely implemented tributary-specific management plans for invasive catfishes or an ecosystem-based approach toward protecting local communities. Deciding upon the spatial scale of management and whether such tributary-specific plans will be effective in managing negative impacts on resources in the Chesapeake Bay remains to be seen.

Figures

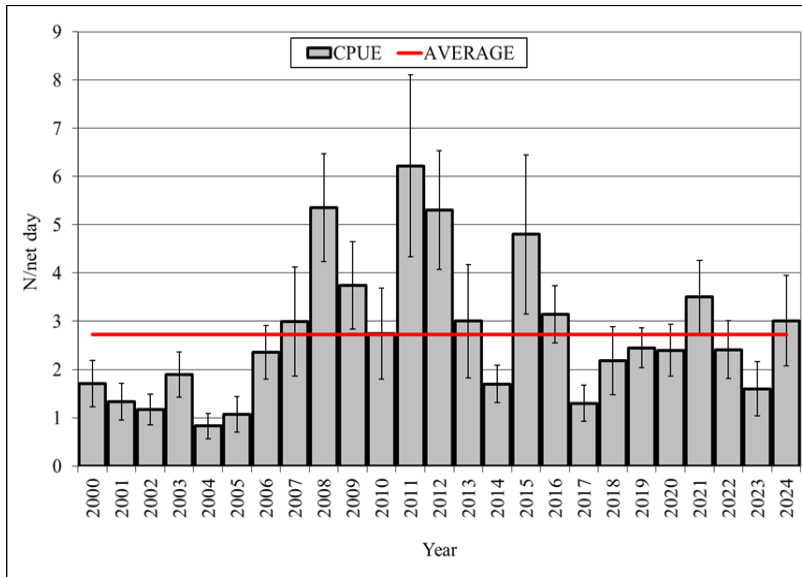


Figure 1. Channel catfish relative abundance (N/net day) from the Choptank River fyke net survey, 2000 to 2024. Horizontal line indicates time series average relative abundance.

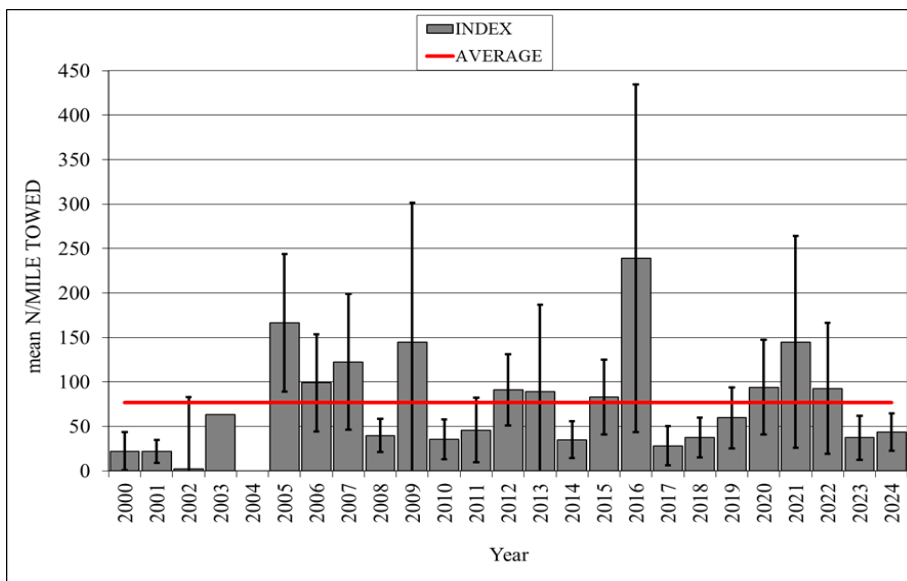


Figure 2. Channel catfish relative abundance (N/mile towed) from the upper Chesapeake Bay winter trawl survey, 2000 to 2024.

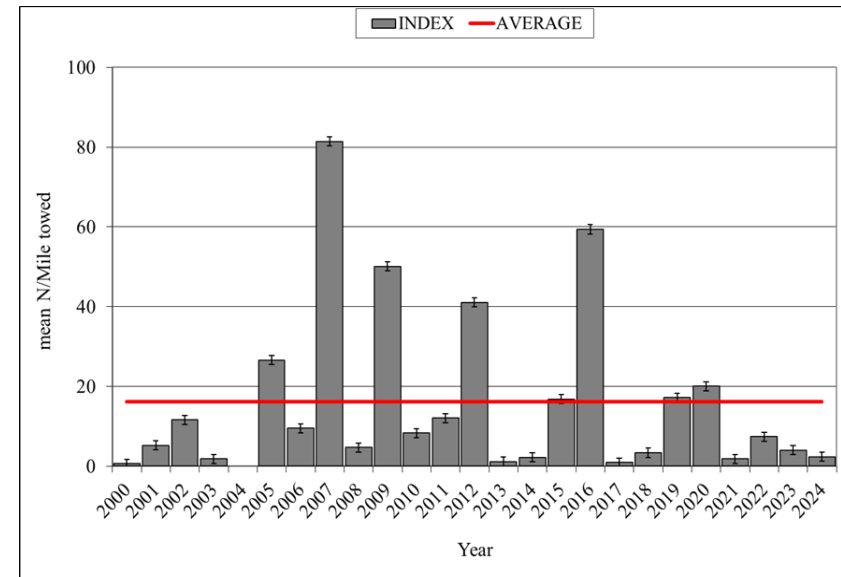


Figure 3. Age-1 channel catfish relative abundance from the upper Chesapeake Bay winter trawl survey, 2000 to 2024.

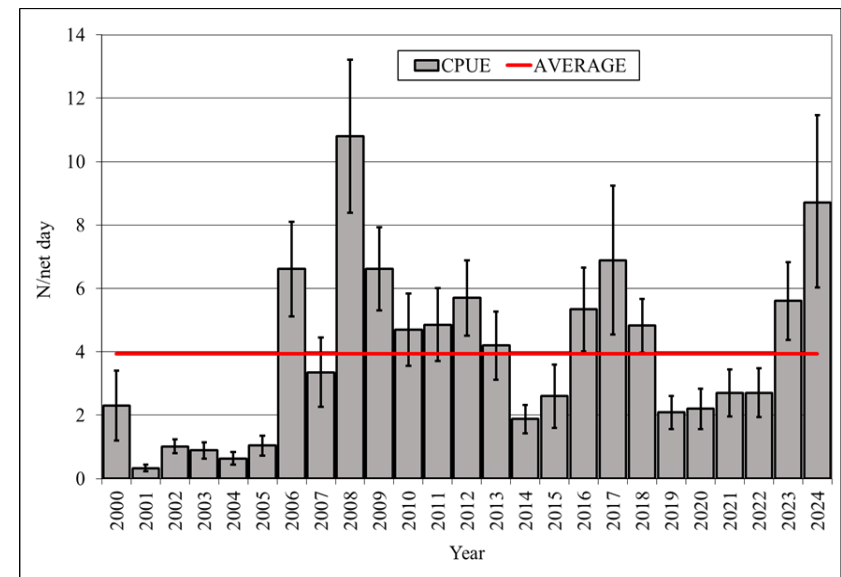


Figure 4. White catfish relative abundance (N/net day) from the Choptank River fyke net survey, 2000 to 2024. Horizontal line indicates time series average relative abundance.

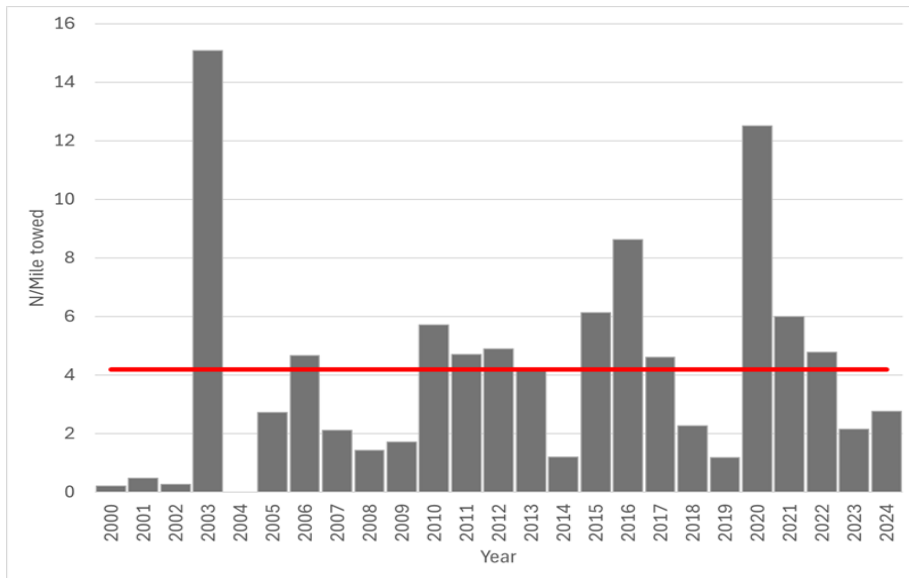


Figure 5. White catfish relative abundance (N/mile towed) from the upper Chesapeake Bay winter trawl survey, 2000 to 2024.

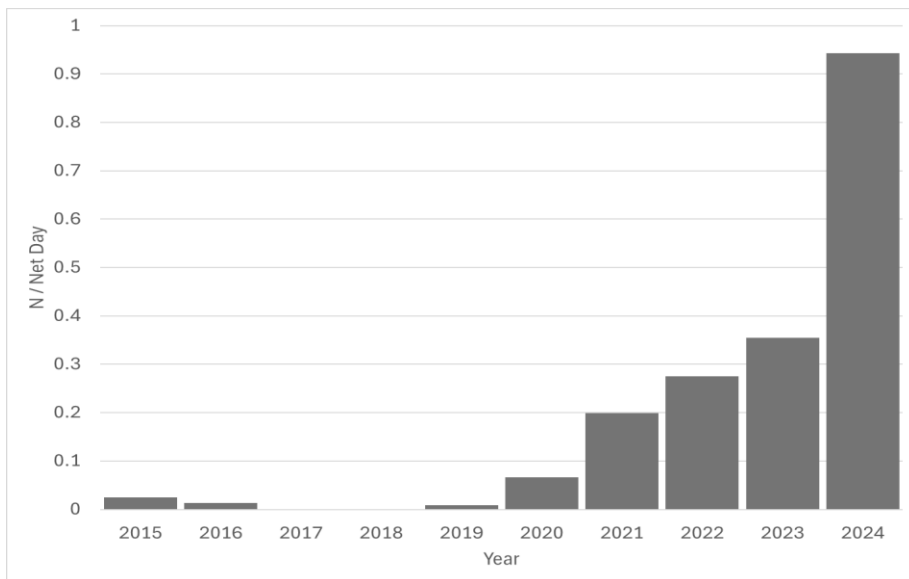


Figure 6. Blue catfish relative abundance (N/net day) from the Choptank River fyke net survey, 2015 to 2024.

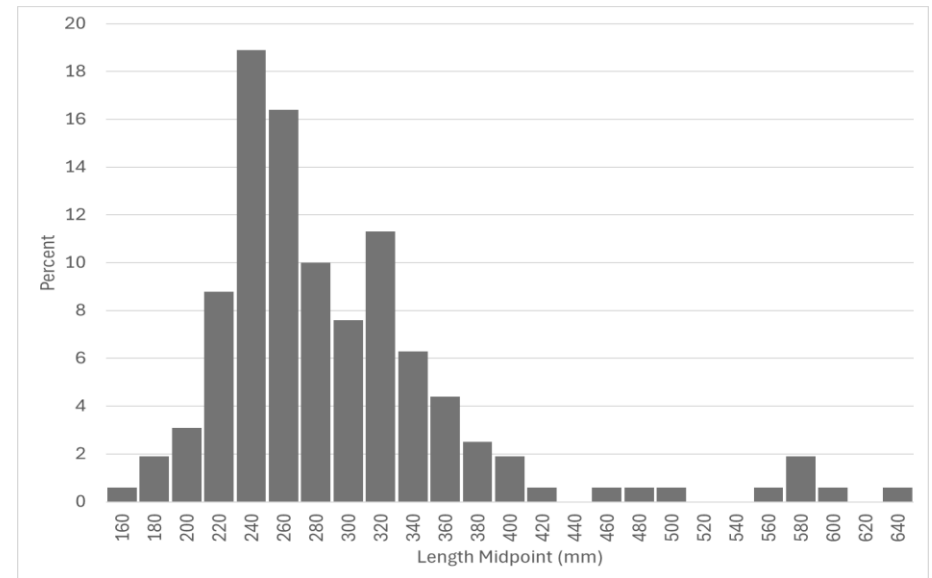


Figure 7. Blue catfish length frequency from the Choptank River fyke net survey, 2024.

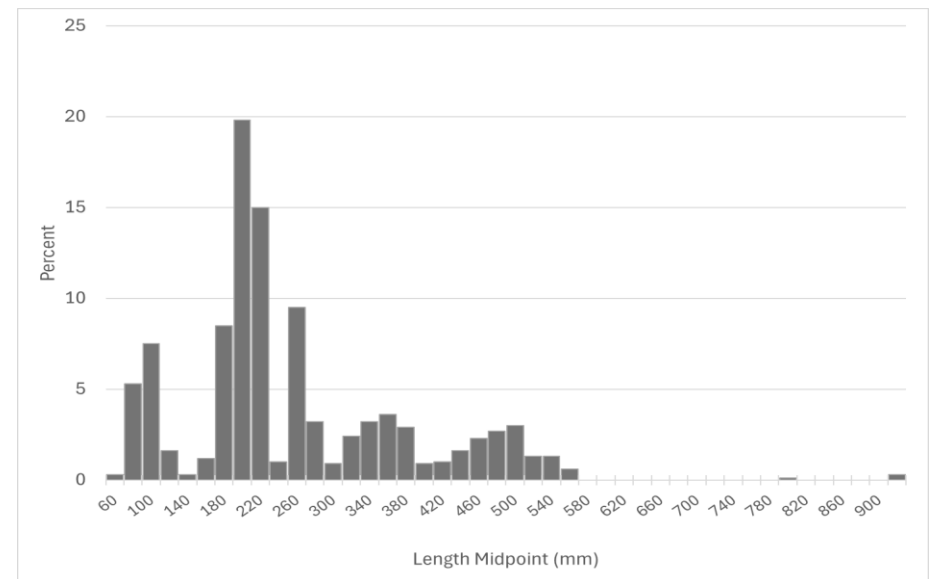


Figure 8. Blue Catfish length frequency from the upper Chesapeake Bay winter trawl survey, 2024.

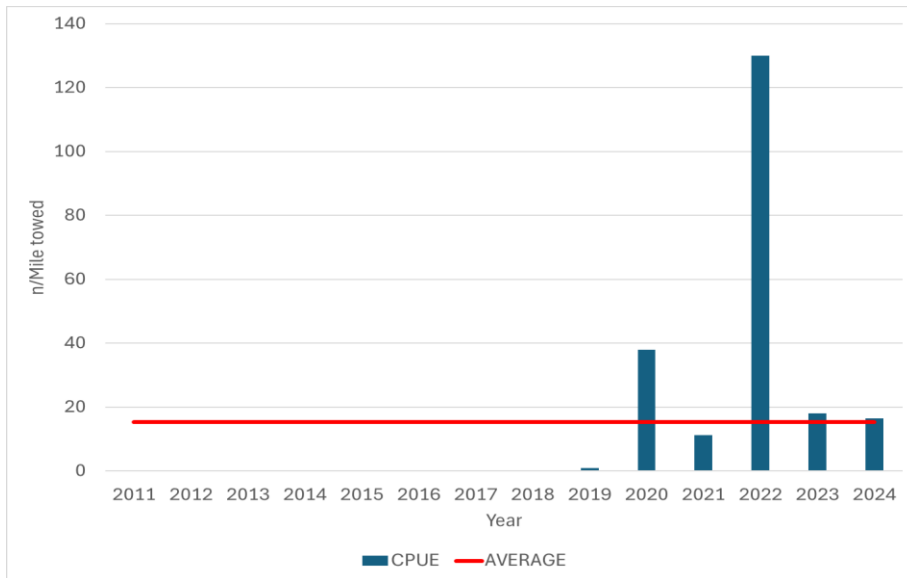


Figure 9. Blue catfish relative abundance (N/mile towed) from the upper Chesapeake Bay winter trawl survey, 2024.

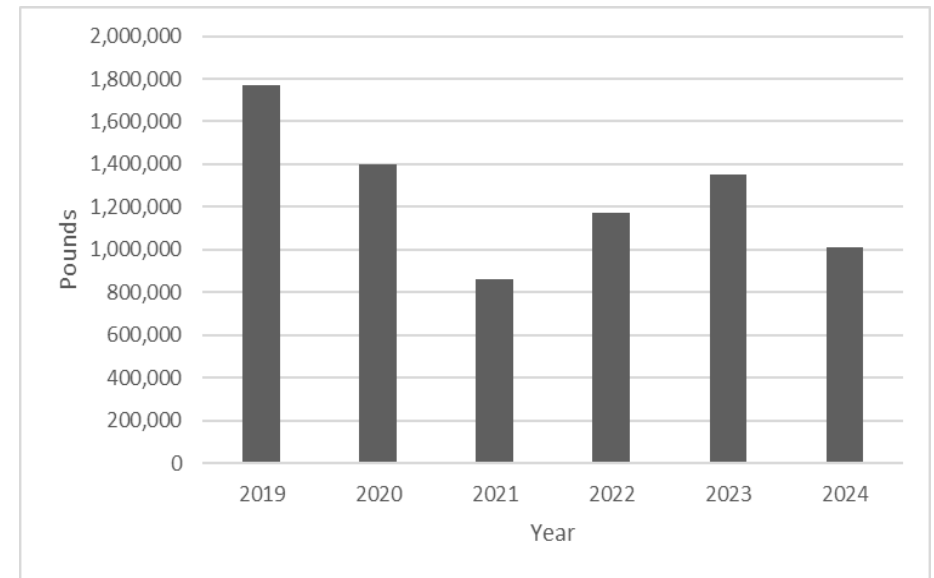


Figure 11. Channel catfish commercial harvest in Maryland (pounds/year) as reported by commercial harvesters, 2019 to 2024.

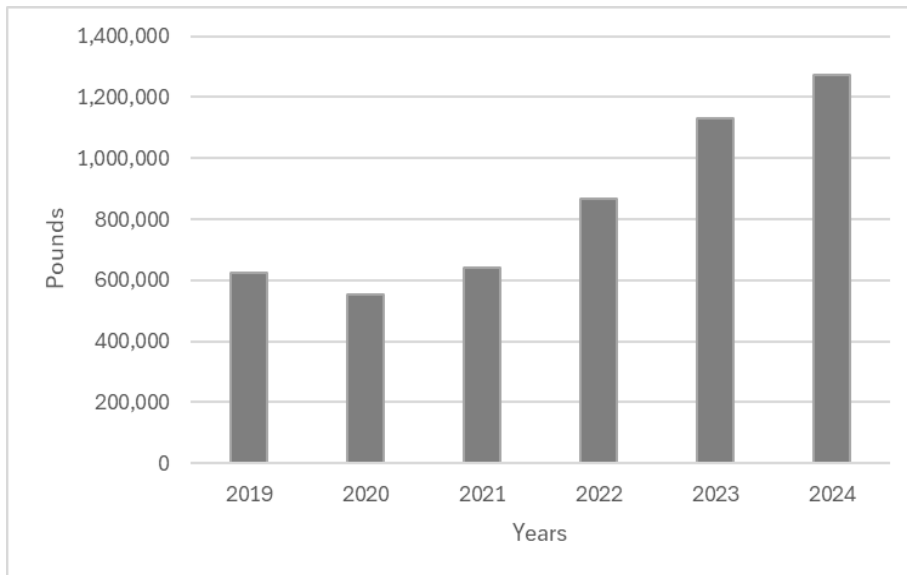


Figure 10. Blue catfish commercial harvest in Maryland (pounds/year) as reported by commercial harvesters, 2019 to 2024.

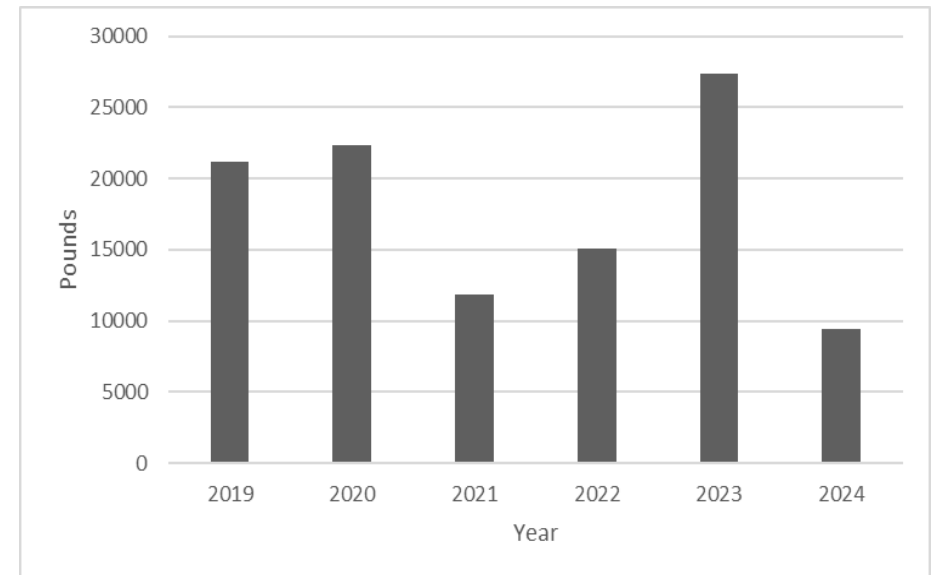


Figure 12. Flathead catfish commercial harvest in Maryland (pounds/year) as reported by commercial harvesters, 2019 to 2024.

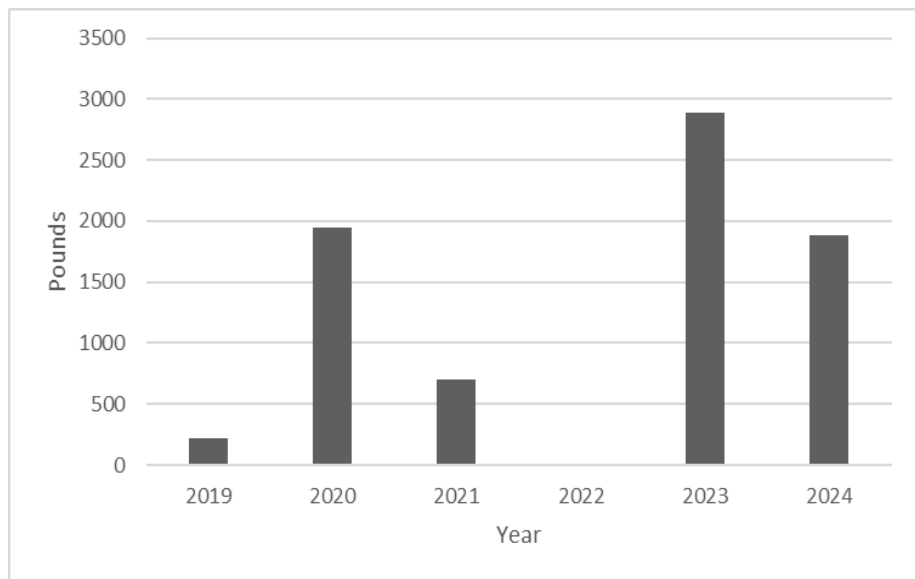


Figure 13. White catfish commercial harvest in Maryland (pounds per year) as reported by commercial harvesters, 2019 to 2024.

Acronyms

Table 1. Acronyms used in this report section

Acronym	Term
FMP	Fishery Management Plan
HLI	Finfish Harvester Hook and Line License
MDNR	Maryland Department of Natural Resources
TFL	Tidal Fish License

Section 11. Cownose Ray (*Rhinoptera bonasus*)

The cownose ray (*Rhinoptera bonasus*) is one of at least eight living species of stingray in the family Rhinopteridae. They are all characterized by a distinct broad, flattened head with an indentation at the center, giving it a “cownose” appearance. The body is diamond-shaped with long, pointed pectoral fins, and a whip-like tail that contains a venomous spine near its base. Adult cownose rays typically reach up to 1.1 meters (39.4 inches) in wingspan and can weigh over 20 kg (44 lbs).

The species within Rhinopteridae are each found in distinct geographic regions that span the tropical and temperate warm waters of the Atlantic, Pacific, and Indian oceans. Cownose rays are found in the western Atlantic Ocean from New England (United States) to Brazil, including the Gulf of Mexico and the Caribbean Sea. They inhabit coastal waters, estuaries, and bays, preferring shallow, sandy, or muddy bottoms. The U.S. East Coast population ranges from southern New England to Florida. They are highly migratory, moving northward in warmer months and southward in cooler months. From May to October cownose rays reside in the Chesapeake Bay, which acts as a nursery area for age-0 rays and mating grounds for adults.

Cownose rays exhibit slow reproductive rates, reaching female sexual maturity at around 7 to 8 years. They are ovoviviparous, meaning embryos develop inside the mother and are nourished through a yolk sac and uterine secretions. Typically, a single pup is born per year after an 11 to 12 month gestation period. This low reproductive output makes them vulnerable to population declines.

Cownose rays have been viewed as a nuisance to commercial harvesters and detrimental to commercial shellfish resources and submerged aquatic vegetation. Consequently, there have been calls to develop a directed fishery to cull the population. Reports about the loss of top predators (e.g., sharks) have influenced the perception that rays are overly abundant. Scientists and conservationists are concerned about cownose rays because their life history characteristics make them vulnerable to overexploitation. These characteristics include a long lifespan, late maturity, and low fecundity (i.e., reproductive output).

Fishery Management Plans

In 2017, the Maryland General Assembly directed the Maryland Department of Natural Resources (MDNR) to prepare a cownose ray fishery management plan (FMP) and to place a temporary moratorium on cownose ray fishing contests (2017 Md. Laws, Chap. 399). The legislation required MDNR to create the FMP, subject to available funding, by Dec. 31, 2018, and to implement a temporary moratorium on a person sponsoring, conducting, or participating in a cownose ray fishing contest in state waters through July 1, 2019. In 2019, the Maryland General Assembly extended the moratorium until an FMP is completed, and gave MDNR until December 2020 to complete it, subject to funding (2019 Md. Laws, Chap. 343).

A draft Fishery Management Plan for Cownose Rays is being developed by MDNR with the help of the Cownose Ray Workgroup comprised of representatives of interested and impacted parties in the cownose ray fishery. The goal of the FMP is to ensure recreational and commercial harvests that support fishing and seafood industries, while also ensuring the sustainability of cownose ray populations and maintaining the ecological integrity of the Chesapeake Bay and Atlantic coastal bay ecosystems.

Stock Status

The status of the cownose ray is unknown. Available data on the U.S. East Coast cownose ray population is insufficient to conduct a stock assessment. In data-deficient situations, extinction risk can be estimated from a small set of biological parameters to rapidly assess the vulnerability of a species or population.¹ Life history information can provide some insight into how a species will respond to fishing pressure from either directed fishing or incidental bycatch fishing. Life history characteristics of elasmobranch species vary widely, but have a tendency toward slow growth, late age at maturity, and low fecundity.² This combination of traits leads to low biological productivity.

The extinction risk for the U.S. East Coast cownose ray population based upon life-history parameters from Chesapeake Bay studies indicates that with strong science-based management, the cownose ray species may be able to support sustainable fishing. However, given the estimated extinction risk of the population, a fishery for cownose rays would benefit from science-based management that includes a coastwide stock assessment conducted by a regional or national organization. This conclusion is consistent with the consensus of the scientific community, as the species is inherently vulnerable, and additional protection is advisable due to the low population growth rate.^{3,4,5,6}

Current Management Measures

Since 2017, there has been a moratorium on a person sponsoring, conducting, or participating in a cownose ray fishing contest in state waters. A cownose ray fishing contest is defined as, “any competition, tournament, or derby with the objective of catching or killing cownose rays for prizes or entertainment.”

The Maryland Fishery

Cownose rays are primarily targeted in Maryland’s Chesapeake Bay and Atlantic Coastal Bays through recreational bowfishing. Historically, tournaments were held in late spring, before parturition, aiming to reduce ray populations. However, a moratorium was placed on these contests until an FMP is developed. Despite increasing bowfishing interest, data on participation, effort, and catch remain limited. Regulations exist for projectile gear, requiring retrieval lines and distance restrictions, but no state enforces size limits, creel limits, or seasons for cownose rays, except Florida, which has a regulation prohibiting wasteful harvest.

Although there is no directed commercial fishery in Maryland, a subsidized bycatch fishery existed in Virginia from 2007 to 2014 but ended due to the failure to establish a market. Rays are frequently caught in pound nets and haul seines, where they are considered a nuisance and often culled. Between 2016 and 2024, only 70 lbs of cownose rays were reported in commercial harvests, though actual numbers may be higher due to unclassified landings.

Management Priorities and Concerns

Cownose rays have extremely low reproductive rates, with only one pup per year and late sexual maturity, making them highly vulnerable to overfishing. Unlike bony fish, which can produce large year classes under favorable conditions, rays cannot quickly recover from population declines. The Chesapeake Bay is a key area for mating and birthing, and the removal of mature gravid females threatens future generations. Due to a lack of stock assessments and catch data, management decisions should be based on reproductive biology and ecological risk rather than traditional fishery assessments.

Socioeconomic considerations will be integrated into management decisions, and public education initiatives will raise awareness about the species. Coordination among state, federal, and local stakeholders is essential to streamline efforts and optimize resources. Additionally, ecosystem-based strategies will emphasize habitat conservation and climate change considerations. An adaptive management approach will ensure flexibility in modifying strategies as new data emerges, improving long-term conservation and fishery outcomes.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
FMP	Fishery Management Plan
MDNR	Maryland Department of Natural Resources

Additional Reports

Cownose Ray Scientific Workshop and Final Report hosted by the Chesapeake Bay Program Sustainable Fisheries Goal Implementation Team (October, 2015). Available: chesapeakebay.net/what/event/cownose-ray-scientific-workshop

Section 12. Eastern Oyster (*Crassostrea virginica*)

The Eastern oyster, *Crassostrea virginica*, is native to coastal waters from the Gulf of St. Lawrence in Canada to the Atlantic coast of Argentina.¹ It is common in estuaries and coastal areas of reduced salinity, and can occur as extensive reefs or bars on hard to firm bottoms in both the intertidal and subtidal zones.¹ As is typical of animals that have evolved to inhabit an environmentally variable estuarine environment, oysters can tolerate a broad range of both temperatures and salinities.² In Maryland, sub-freezing temperatures and ice scouring restrict oyster bars to the subtidal zone.³

Fishery Management Plans

The Maryland Department of Natural Resources (MDNR) and partners began a more comprehensive and coordinated management of oysters throughout the Chesapeake Bay with the adoption of the Chesapeake Bay Oyster Management Plan (1989), subsequent revisions in 1994 and 2004, and an amendment in 2010.

The Maryland Chesapeake Bay Oyster Management Plan (OMP) was adopted in 2019 and replaced the previous plan and amendment. Since the oyster management plan addresses more than just the public fishery, the plan uses a more comprehensive title, the “Maryland Chesapeake Bay Oyster Management Plan,” but it is still considered a fishery management plan. Amendment 1 to the 2019 Maryland Chesapeake Bay Oyster Management Plan was adopted in December 2023.

Sections 4-204 and 4-215 of the Natural Resources Article, Annotated Code of Maryland were amended in 2020 (2020 Md. Laws, Chap. 5 and 9). The legislation required MDNR, in coordination with the University of Maryland Center for Environmental Science, to convene the Oyster Advisory Commission (OAC) to develop a package of consensus recommendations for enhancing and implementing the OMP. The OAC was restructured and began meeting in February 2020 to comply with the new statutory mandates. The group developed a package of consensus recommendations through a facilitated consensus solutions process based on a 75% majority agreement level for each recommendation. The process was informed by a collaboratively developed, science-based modeling tool used to quantify the long-term impacts of management actions on oyster abundance, habitat, harvest, harvest revenue, and nitrogen removal. The OAC provided MDNR with an approved package of 19 recommendations in November of 2021 which were based on options that were rated with an agreement level of 75% or higher.

Amendment 1 to the 2019 Oyster Management Plan (Amendment) was adopted in 2023. The purpose of the Amendment was to formally update the oyster management framework in Maryland. The Amendment incorporated recommendations from the OAC based on their November 2021 report to MDNR. The OAC recommendations correspond to several current actions, strategies, and goals in the OMP, but some recommendations required new actions to be added. In summary, one existing action was replaced and ten new actions were defined.

In addition, efforts to rebuild the Chesapeake Bay’s native oyster resource have been directed by commitments in the Chesapeake 2000 Agreement (2011), Programmatic Environmental Impact Statement (2009), Maryland’s 10-Point Oyster Restoration Plan (2010), and the 2014 Chesapeake Bay Watershed Agreement.^{4,5,6,7} The current Chesapeake Bay Watershed Agreement set its goals for completion in 2025. It will then be updated with revised goals.

Oyster Stock Status

Benchmark Stock Assessment

The first Maryland benchmark stock assessment was developed in 2018, and the model was updated every two years, with the intention of producing a new benchmark assessment every six years. The most recent iteration of the benchmark stock assessment was made in 2024 and reviewed by an outside peer review panel in April 2025, which found the assessment to be accurately and properly conducted: “Overall, the Review Panel concluded that all Terms of Reference had been met. The Review Panel supported the conclusions of the Assessment Team and agreed that they had fully utilized the available data at an appropriate temporal and spatial resolution. The modeling approach is innovative and the results can serve as a reliable basis for management decisions.”⁸

The assessment was conducted at the National Oceanic and Atmospheric Administration’s (NOAA) code level of spatial resolution totaling 35 areas. There were significant changes made in the approach of the 2024 assessment. The start of the assessment was moved to the 2005/2006 season, when the Fall Oyster Survey started recording tow distances and total catch per tow. This allows for a quantitative swept area estimation of oyster and box (dead oysters) counts (i.e. densities), which gives a more straightforward approach to calculating abundances in the model. The previous assessment used counts per bushel. Also, the 2018 assessment started in 1999, before the onset of the devastating millennial epizootics. The shift to the post-epizootic starting year gives a better picture of how the population is recovering from those losses to disease. In addition, the 2024 assessment assumes the habitat area is constant, which is supported by observations from the Fall Survey. The 2018 model assumed an exponential decline in habitat.

The assessment found that the number of adult oysters has been trending upward, from 2.4 billion oysters in 2005 to 7.6 billion oysters in 2023. For the three most recent years of the assessment (2021 to 2023), one NOAA code was above the abundance target, 24 NOAA codes were between the abundance target and cautionary level, three NOAA codes were between the cautionary level and lower threshold, and seven NOAA codes were below the lower threshold. Regarding fishing mortality, 29 NOAA codes were below the target exploitation rate, two NOAA codes were between the target and upper limit, and four exceeded the upper limit exploitation rate reference point.

Fall Oyster Survey

Because the benchmark stock assessment does not include 2024, some key results from the Fall Survey over the past three years are presented here. Overall, the oyster metrics used to track the status of Maryland's oyster population have been trending upwards in recent years. Recruitment has been above the 40 year median for the last five years in a row (Figure 1). The 2023 spat set was exceptional, both in terms of numbers and distribution (as indicated by the annual median), including a once in a generation spatset in the upper Potomac River as well as in other normally low recruitment areas. As a consequence of the drought condition in 2023, disease levels exceeded their long-term averages for the first time in several years (Figure 2). The prevalence of MSX disease was the highest in 21 years and extended almost as far north as the William Preston Lane Jr. Memorial Bridge. The high freshwater flows during the winter and spring of 2024 greatly reduced disease levels. There was an uptick in the observed mortality index associated with the rise in disease levels in 2023, but it was relatively low compared with past epizootics and dropped somewhat in 2024 (Figure 2). The biomass index has been trending upward since 2018 and peaked in 2021 (Figure 3). The last four years have had the highest biomass index values of the 32 year time series.

Current Management Measures

Oyster management in Maryland focuses on three major sectors: sanctuaries (closed to harvest), the public fishery (open to harvest), and aquaculture (private cultivation and harvest). Desired goals are to enhance both the ecological contribution of oysters and the economic value of oysters. Ecological restoration through sanctuaries will meet the goal of the Chesapeake Bay Program's 2014 Watershed Agreement to restore oysters in 10 tributaries by 2025 (five each in Maryland and Virginia).⁷

Harris Creek was selected as Maryland's first restoration area. Initial restoration efforts (reef construction and seeding) in Harris Creek were completed in 2015, with 348 acres planted using oyster seed or substrate with oyster seed. In 2020, the last of the planned second spat-on-shell planting restoration occurred. As of fall 2021, all 90 restored reefs (348 acres) in Harris Creek have been monitored as they matured to six years - the point where, per Oyster Metrics, a reef can be considered successfully 'restored' if it meets all the Oyster Metrics success criteria. The restoration plan called for between 300 and 600 acres of reefs to be restored for Harris Creek to be considered fully restored, per Oyster Metrics criteria. A total of 348 acres of reefs have received restoration treatment. Of those, 343 acres of reefs can be considered successfully restored after the recommended six year monitoring period. Per the success criteria established in Oyster Metrics, and the Harris Creek Tributary Plan, the Harris Creek tributary can now be considered fully, successfully restored.

The Little Choptank River was selected as Maryland's second priority area for targeted oyster restoration with a goal of 440 acres. In 2017, the target restoration goal was reset at 357.8 acres, which corresponds to 52% of the restorable bottom. In 2020, the sanctuary received its last initial planting, thereby making it Maryland's

second tributary to be initially restored. The river will receive its final planned second seeding in 2025. Monitoring is underway to gauge success. In the Little Choptank, all three year monitoring of reefs was completed in 2023, with 98% having met the minimum threshold for oyster density and biomass. Of those that have had six year monitoring (2020 to 2023), 100% of reefs met the minimum threshold success criteria for oyster density and biomass.

The Tred Avon was selected as Maryland's third area for oyster restoration with a goal of 130 acres (51.7% of currently restorable oyster habitat). In 2021, the sanctuary received its last initial planting. The river is anticipated to receive its final planned second seeding in 2025. Monitoring is underway to gauge success. So far, at three year monitoring (2019 to 2023) 85% of reefs met the minimum threshold success criteria for oyster density and 91% met the minimum threshold for biomass in Tred Avon. Of those that have had six year monitoring (2022 to 2023) 92% have met the minimum threshold for density and 96% have met the minimum threshold for biomass.

The Upper St. Mary's River was selected as Maryland's fourth area for restoration. The initial implementation phase of the restoration project was completed in 2022, with a total of 60.2 acres of reef restored. Planned second seedings are ongoing based on year three monitoring.

The Manokin River was chosen as the fifth area for restoration with a restoration goal of 441 acres. Initial restoration is on track to be completed in July of 2025, with 455 acres of reef restored. Planned second seedings will be done based on year three monitoring.

As 2025 approaches and the five tributaries for large-scale restoration are nearing completion of their initial restoration, the Maryland Department of Natural Resources (MDNR) announced its Four Point Sanctuary Plan. This plan commits to additional large-scale restoration. At the October 8, 2024 Oyster Advisory Commission meeting, MDNR announced the next three areas for large-scale restoration within Maryland: Herring Bay, Hooper Strait, and Nanticoke River oyster sanctuaries. The selection was based on the findings of the U.S. Army Corps of Engineers Master Plan, MDNR Fall Oyster Survey and patent tong survey data, the Maryland oyster sanctuary list, and bottom survey data from the Maryland Geological Survey and NOAA. The sanctuaries were chosen for large-scale oyster restoration based on their status as an oyster sanctuary (oyster harvesting prohibited), the availability of restorable bottom (bottom that can support substrate), water quality (dissolved oxygen and salinity appropriate for survival and reproduction), historic oyster populations, proximity to Public Shellfish Fishery Areas, and sanctuary size.

The Oyster Recovery Partnership established the Shell Recycling Alliance in 2010 as a mechanism to collect oyster shells for habitat and oyster seed. Members of the alliance include over 250 restaurant owners, caterers, seafood distributors, and citizens committed to recycling oyster shells and keeping them out of the landfill.

Since the inception of the program in 2010, a total of 338,711 bushels of shell have been recycled. Each year approximately 30,000 bushels are transported to the Horn Point Oyster Hatchery for sanctuary spat-on-shell production. A new grant program was implemented in 2024 to pay for recycled shell. A total of 100 groups and individuals met the eligibility requirements for the grant program. Eligible applicants received payment for up to 400 bushels of recycled shells.

The Maryland Fishery

In Maryland's portion of the Chesapeake Bay, variable salinity and temperature regimes are the primary environmental determinants of oyster population dynamics due to their influence on reproduction, growth, and mortality.² Gametogenesis and spawning in oysters are directly correlated with water temperature.² In the Chesapeake Bay, oysters begin gametogenesis in the spring and spawning can occur from late May to late September, but generally peaks in late June to early July.^{2,9}

In Maryland, the oyster fishery is dominated by the commercial sector. Recreational catch is unknown but assumed to be small due to the difficulty of finding and collecting oysters subtidally using hand gears along with the relatively small number of calls received by staff by recreational fishermen.

As required by Natural Resources Article, §4-701, Annotated Code of Maryland, individuals must have a Maryland commercial fishing license to commercially harvest oysters on public bottom. In addition to their annual license renewal fee, these licensees must pay an annual surcharge fee of \$300 in order to activate their license to harvest oysters prior to each season.

The commercial catch, dockside value, number of active licenses (i.e., surcharge payers), and number of individuals reporting catching oysters is provided in Table 1 for years 2022 to 2024. The catch is reported in Maryland bushels, with one Maryland bushel being approximately equal to 46 liters. The oyster catch in these three years was above the 10 year average of approximately 368,000 bushels (2015 to 2024). The oyster season runs from Oct 1 through March 31 of each year. The recreational catch is unknown but assumed to be small.

Management Priorities and Concerns

Maryland is dedicated to maintaining a balanced approach toward oyster management, focusing on the three main sectors of sanctuaries, the fishery, and aquaculture. These sectors represent the major stakeholders as well as the vital oyster resource itself. Protecting and enhancing the oyster resource and working with each sector is important to achieving Maryland's goals.

Sanctuary priorities include meeting the Chesapeake Bay Program's 2014 Watershed Agreement goals to restore oysters in five Maryland large-scale tributaries, conducting additional small-scale restoration efforts in other tributaries, and expanding beyond 2025 as Maryland works to meet enhanced acreage goals that are

emerging. Already, MDNR has committed to work in Hooper Straits and Herring Bay to expand to larger areas of restored bottom.

Fishery priorities include obtaining the needed shell, hatchery spat, and funding to continue assisting fishery enhancement efforts to boost Maryland's seafood economy. Annual decisions on the harvest rules (bushel limits, times, area closures, etc.) are based on the most recent survey and stock assessment data and will continue to be made with the resource and sustainability in mind.

A major priority is MDNR's Eastern Bay Project, designed in 2019 as a new restoration model that includes the three management sectors of sanctuary, fishery and aquaculture into a single initiative. Prior efforts tended to focus on single purpose oyster recovery. The Eastern Bay Project's goal is to restore oysters in Eastern Bay and its tributaries, once a prolific system, and restore relationships among the diverse oyster partners. Large scale habitat and seed plantings will help boost populations and broodstock. The MDNR briefed the OAC on the project, they endorsed it and made it one of their recommendations to MDNR in their consensus report in November 2021. Afterwards, the legislature provided funding. The project has broad support and eager partners.

Monitoring and data priorities include continuing the long-term annual Fall Oyster Survey and other surveys to assess the status of the population, improving the harvest data records which are needed to understand the fishery and build the stock assessment, and to continue the stock assessment using these and other data sources.

Concerns for oyster management in Maryland are mostly centered on finding ample sources of shell (which is vital to all oyster restoration and industry efforts), continuation of large-scale hatchery production, and ample amounts of funding (which are needed to expand upon the progress made so far). Shells are available for purchase from shucking houses in the Chesapeake Bay region, from the West Coast of the United States, and also from shell recycling centers. Shell costs per bushel and costs for the recycling program have increased in recent years. Alternate materials such as stone are available in place of shells, but they are also costly. Hatchery production of larvae and spat has increased in Maryland over the past decade through state and private facilities. However, mid-summer issues with water quality and funding bottlenecks have hampered production at times. Future larvae and spat production are at risk due to an anticipated lack of various funding sources (e.g., NOAA hatchery grants). These components are essential to expanding sanctuary, fishery, and aquaculture efforts. Budget priorities include obtaining commitments of funding to conduct the sanctuary and fishery programs, the Eastern Bay Project, and the robust monitoring programs.

Tables and Figures

Table 1. Commercial catch, dockside value, number of active licenses, and number of individuals reporting catching oysters (2022 to 2024).

Year	Season	Oyster Catch (Bushels)	Dockside Value (\$)	Individuals reporting catching oysters	Active Licenses (Paid surcharge for season)
2021 - 2022	2022	548,558	21,766,781	732	1,230
2022 - 2023	2023	722,850	31,241,577	435	1,354
2023 - 2024	2024	438,075	15,646,039	549	1,293

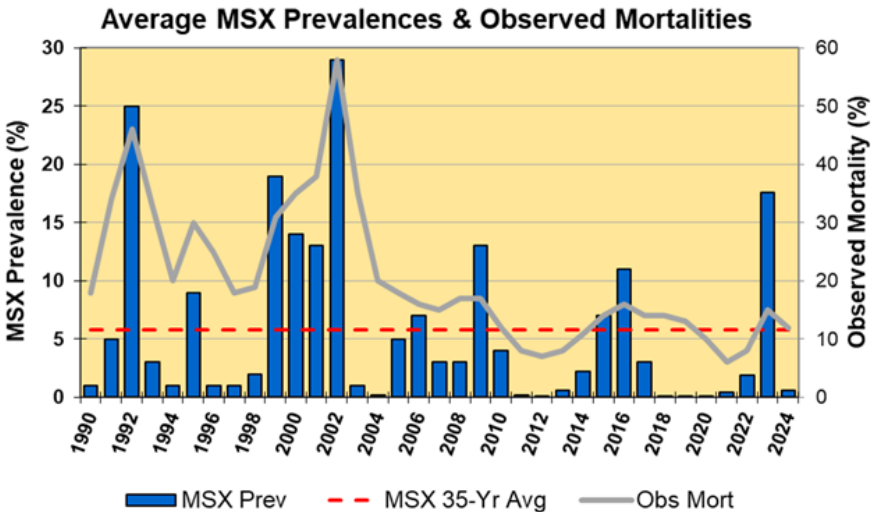


Figure 2. Annual percentage of Maryland oysters with MSX disease compared to 35-year mean and the correlation with observed mortalities on the disease monitoring bars from 1990 to 2024.

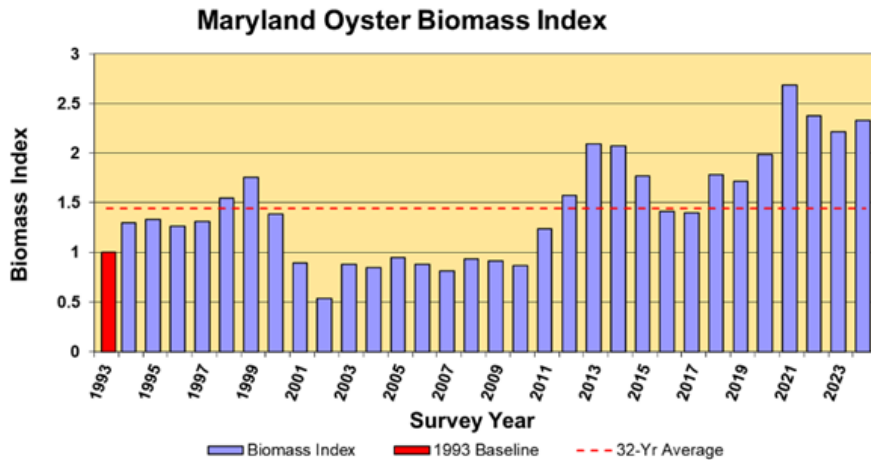


Figure 3. Maryland oyster Biomass Index. The year 1993 represents the baseline index of 1.0.

Maryland Spatfall Index, 2007-2024

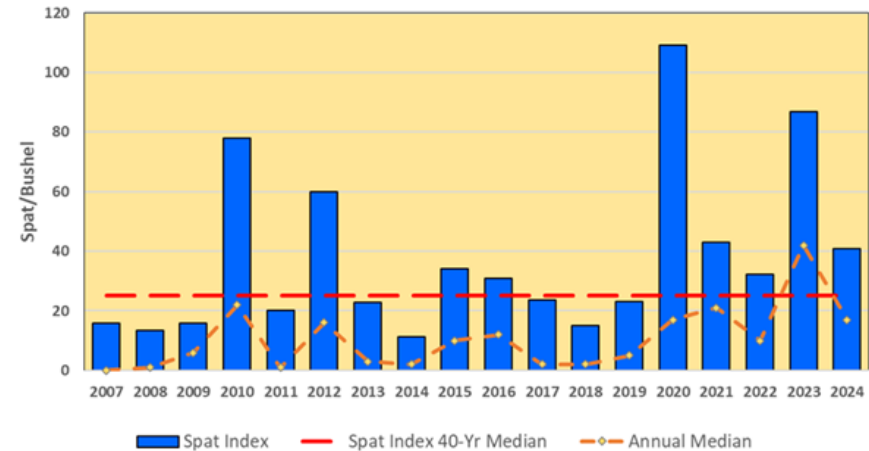


Figure 1. Recent Maryland spatfall indices, 2007 to 2024, including annual and long-term median values. Higher annual medians indicate wider spat distributions.

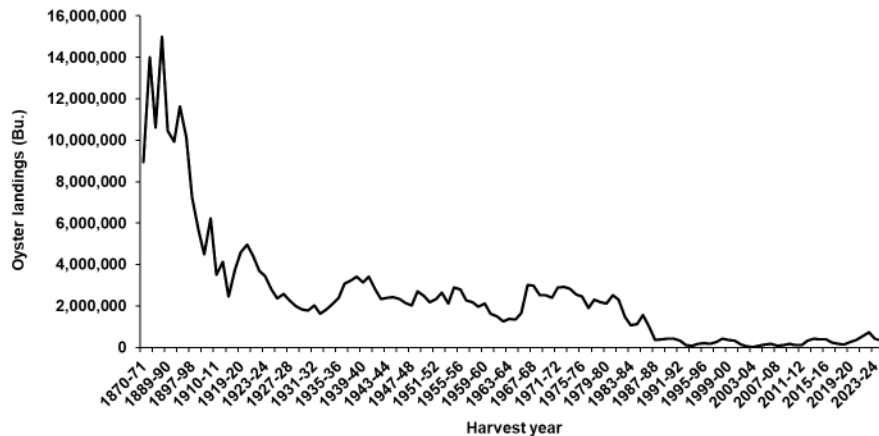


Figure 4. Maryland Oyster Landings in Bushels

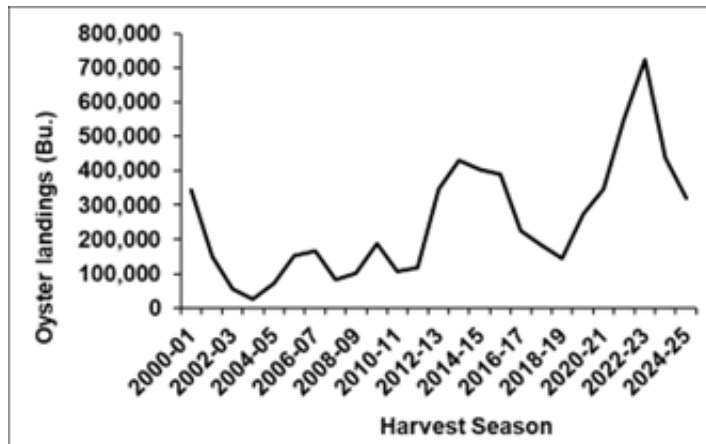


Figure 5. Recent Maryland Oyster Landings in Bushels.

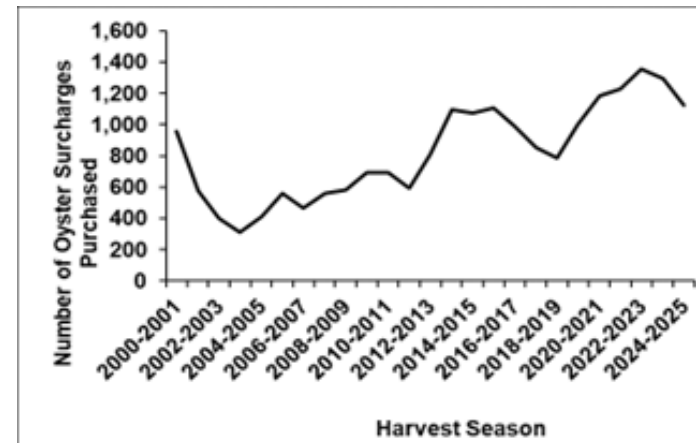


Figure 6. Maryland Oyster Surcharges purchased per season.

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Acronyms

Table 2. Acronyms used in this section

Acronym	Term
MDNR	Maryland Department of Natural Resources
NOAA	National Oceanic and Atmospheric Administration
OAC	Oyster Advisory Commission
OMP	Oyster Management Plan

Section 13. Hard Clam (*Mercenaria mercenaria*), Coastal Bays

The hard clam *Mercenaria mercenaria* is found in embayments along the East Coast of North America from the Gulf of St. Lawrence down through Texas. In Maryland, its distribution is limited primarily to the higher salinity waters of the Atlantic Coastal Bays, with smaller populations found in the lower Chesapeake Bay region where salinities are above about 15 to 20 ppt. It is a long-lived species, with some estimates of up to 40 years or more. The hard clam historically has been a valuable species both in terms of sustenance and commerce. This species also provides a pleasant recreational pursuit for many vacationers to Maryland's Atlantic shore.

Ecologically, hard clams serve as a key trophic link between primary producers and higher consumers. They are an important food source for a wide variety of species including crabs, fish, and waterfowl. They serve as biogeochemical agents in benthic-pelagic coupling, cycling organic matter from the water column to the bottom. In addition, hard clams can have a pronounced impact on the physical structure of an ecosystem, whether by occupying and reworking the sediment or leaving their death assemblage of shells as substrate for attachment by epibenthic organisms and as shelter from predation.

Fishery Management Plans

Recognizing Maryland's Atlantic Coastal Bays as a separate, unique ecosystem from the Chesapeake Bay, a Comprehensive Conservation Management Plan was adopted for the Coastal Bays in 1999 and updated in 2015 under the jurisdiction of the Maryland Coastal Bays Program (MCBP). The plan recommended that the Maryland Department of Natural Resources (MDNR) address fishery issues specific to the Coastal Bays, including those related to hard clams, the primary commercial molluscan shellfish resource in the region. In accordance with the MCBP plan, MDNR adopted a Coastal Bays Hard Clam FMP in 2002 to conserve the coastal stock, protect its ecological and socioeconomic value, and optimize the long-term utilization of the resource. In 2010, the FMP was reviewed by the Plan Review Team (PRT). The PRT recommended a revision of the plan because the majority of actions are no longer valid due to the legislative ban on mechanical harvesting in 2008.

The health of the Coastal Bays is annually assessed by the MCBP through an environmental report card process which takes into account several metrics, including hard clam densities from the MDNR surveys. Hard clams received an overall rating of poor (21 to 40% goal attainment) in 2022 and 2023, although the scores for the individual embayments ranged from very poor (0 to 20% goal attainment) to very good (80 to 100% goal attainment). Attainment goals are based on the 1952 to 1953 benchmark hard clam densities. The 2024 score has not yet been released.

Stock Status

Since 1993, the MDNR Shellfish Division has conducted fishery-independent hard clam surveys in the Coastal Bays. Due to seasonal conflicts with other fisheries and logistical problems in moving the research vessel to the Coastal Bays for the survey, as of 2019 the survey has been conducted during the winter months of the following year. Since hard clams enter a period of quiescence with minimal physiological activity during the cold winter months, from a biological standpoint, the population parameters obtained during the winter surveys were as they existed towards the end of the previous year at the onset of cold temperatures. Thus, the data collected during the winter survey is applied to the preceding year (e.g. the 2025 winter survey data is applied to the 2024 report).

Sixteen years have passed since the mechanical harvesting of shellfish was legislatively prohibited in the Coastal Bays. At the time of the prohibition, hard clam densities were well under the benchmarks established from surveys conducted in 1952 and 1953 and in some bays were at near-record lows. Since then, the response of the component hard clam populations to the drastic reduction in harvest pressure has generally trended in the positive direction, but at varying rates of increase, with most of the bays still below their baseline values. Observed mortalities have been negligible throughout the bays. Recruitment is generally low and sporadic in most areas (except in parts of the Sinepuxent and Isle of Wight bays). For the most part, the Coastal Bays populations are dominated by older, larger clams.

Since the ban on mechanical harvesting, there has been a sharp rise in clam densities from Sinepuxent Bay northward. This is especially true in the sandy substrates that hard clams prefer. These density increases were episodic, jumping as a stepwise function as a result of a strong recruitment period during the late 2000s. The upsurges were followed by a plateau at the next level for several years, rather than a smooth and continuous increase, reflecting the irregular nature of recruitment. Perennially, the tributary with the lowest hard clam densities, the St. Martin River population, surpassed its benchmark as early as 2014, but it was a comparatively low mark. Since 2019, the Isle of Wight Bay has been the only other embayment to exceed its 1953 baseline (Figure 1), and has the highest clam density of the Coastal Bays. The Sinepuxent Bay also experienced strong increases in clam numbers but is still below its 1953 density. The Chincoteague Bay, historically the primary focus of the hard clam fishery, has never recovered its early status as having the highest clam densities of the Coastal Bays. This bay's clam population essentially has been flatlined over the past 32 years (Figure 1). Although densities have increased since the record lows during 2008 to 2010, they are only back to the already depleted levels of the 1990s and early 2000s and remain a fraction of the historical benchmark.

It has become evident that despite the absence of harvest pressure, recovery of this species requires an extended period of time, on the order of a decade or more. While the upper bays have made great strides with increased clam abundances, the Chincoteague Bay population remains mired at low densities. Given the currently

depressed density status, the history of poor and sporadic recruitment, and shifting environmental and habitat conditions, it may take up to several decades for the Chincoteague population to return to its historical benchmark density.

Current Management Measures

In 2007, the Maryland General Assembly passed a law prohibiting the harvesting of clams and oysters in the Coastal Bays by hydraulic escalator dredge, power dredging, or other mechanical means. This statute went into effect in September 2008 and resulted in a further reduction of the commercial fishery. The fishery could improve in the future if stocks build to densities high enough to support manual means of harvesting. The minimum size for both the commercial and recreational fisheries is 1 inch (transverse measurement). A person may only use hand-held devices to catch hard clams and the recreational limit is 250 per person per day. A license is not required, but only Maryland residents can participate.

Compliance with the National Shellfish Sanitation Program model ordinance is required and affects the handling of hard clams intended for human consumption. Handlers are required to cool clams and deliver them to dealers who are licensed and certified to sell shellfish by the Maryland Department of Health within specified time periods.

The Maryland Fishery

The earliest harvesters of the hard clam in the Coastal Bays were the indigenous people belonging to subgroups of the Nanticoke tribe. The Native Americans gathered the clams by feeling for them with their feet, or treading in clammer's parlance. In addition to being items of food, the clams were highly valued as a source of purple shell for making wampum beads, the common currency of exchange among tribes along the Atlantic coast.

During more recent times, the hard clam was one of the species that flourished in the Coastal Bays after the Ocean City Inlet opened in 1933, which increased salinities throughout the bays. Prior to that time, the population was confined to the higher salinities in southern Chincoteague Bay, where the only inlet existed. Significantly, the improvement of commercial shellfish resources was one of the primary rationales for allocating funds to construct and stabilize a new inlet. Just before construction was to begin, a hurricane serendipitously breached the island at the southern edge of Ocean City, which the U.S. Army Corps of Engineers quickly stabilized. New clam populations and an associated fishery consequently developed throughout the bays. Landings peaked in 1969 at 760,000 pounds following the introduction of hydraulic escalator dredges. Harvests rapidly declined afterwards, so that by 1973 they were only 61,000 pounds. Depleted landings persisted into the mid-1990s, when they averaged less than 25,000 pounds per year. Successful clam recruitment during this period was followed by a resurgence in landings, which exceeded 100,000 pounds in 1999 and peaked at 197,000 pounds in 2002 (Figure 2). Since the prohibition of hydraulic dredging in 2008, a small commercial fishery continues, primarily using

hand rakes. Coastal landings were 13,929 individual clams or approximately 537 pounds in 2019, the last year of reported harvests. The hard clam is also the basis of a recreational fishery, especially for tourists that visit the region during the warmer months. Harvest from the recreational fishery is unknown.

Shellfish aquaculture activities have been slowly expanding in recent years. While the number of leases and total acreage were about the same as in 2018, production almost doubled. There were 14 active leases covering 65 acres, down from 19 leases and 139 acres at the high point in 2017. Of these, two leases encompassing 15 acres were subtidal and 12 leases covering 50 acres were water column leases. Despite the decline in the number of leases, production actually increased from 1,594 bushels in 2017 to 2,262 bushels in 2018 and 4,111 bushels in 2019. Since then harvests have ranged between 1,950 bushels to 2,373 bushels (Figure 3). Recent aquaculture production has consisted almost entirely of oysters from water column leases, though hard clams have been raised on leases in the past.

Management Priorities and Concerns

The stubbornly slow recovery of hard clam stocks, despite the 16 year prohibition on mechanical harvesting, is the foremost issue concerning this species, especially in the Chincoteague Bay. The causes of these generally slow recovery rates have not been determined. Low population densities can reduce spawning efficiencies and consequent recruitment, thereby maintaining low clam densities. Other causes of recruitment failures may be due to unfavorable water quality conditions for hard clam survival (such as harmful algal blooms), especially for vulnerable life history stages (e.g. larvae, newly settled spat), and possibly increased predation. Repeated calls for opening the fishery to mechanical harvesting with scrape-type dredges (similar to oyster dredges) before stocks attain sustainable levels would further inhibit recovery.

Aside from the dredging prohibition, restoration actions have been limited to concentrating broodstock to enhance spawning efficiency, which continues on a small-scale basis during the clam surveys.

Many of the strategies and actions in the 2002 FMP were developed to address hydraulic dredging. Since the use of hydraulic dredges is prohibited, these strategies and actions are now obsolete. Consequently, the development of a new plan has been recommended but a timeline has not been established.

User conflicts and stakeholder opposition, especially from shoreline property owners, continue to hinder the expansion of shellfish aquaculture in the Coastal Bays. As such, one lease application initiated in 2009 was finally approved in 2016.

Non-native green crabs (*Carcinus maenas*) have been introduced, most likely as bait in the bait bucket trade. This species has been recognized by the federal Aquatic Nuisance Species Task Force as nuisance invasive. Green crabs are clam predators and their impact on the hard clam population is uncertain. Although small pockets of

green crabs may be established in the Coastal Bays, they are neither abundant nor widely distributed. The green crab is listed as a “species prohibited from transport” (Code of Maryland Regulations 08.02.19.04) and they may not be collected or used as bait in areas where they are not established. Other introduced species such as the Japanese shore crab may also be of concern.

Other potential threats, both to the early life stages and in some cases to the adults include 1) shoreline development which may increase sediment and chemical runoff, thereby increasing water column sediment loads, altering and contaminating the substrate, and decreasing dissolved oxygen levels, 2) marinas and marine construction where toxic substances can leach out and small scale oil and other contaminant spills chronically occur (primarily a localized problem in areas with poor water circulation), 3) boat wakes which increase sediment loads and erode marshy shorelines, altering the subtidal substrate, 4) navigational dredging and spoil dumping, and 5) large scale oil spills.

Figures

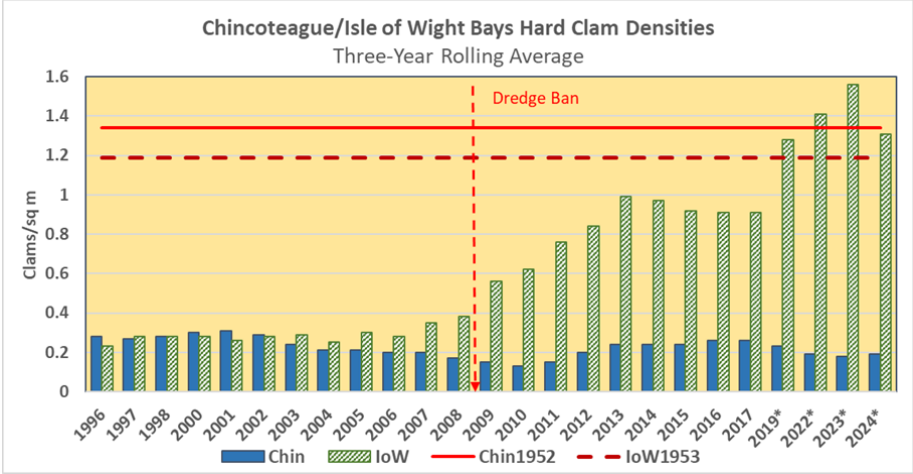


Figure 1. Chincoteague (Chin) and Isle of Wight (IoW) bays hard clam densities before and after the dredging ban and the historic benchmark densities (MDNR data). The three-year rolling average is represented by the third year of the grouping. Surveys were not conducted in 1999, 2018, 2020-21.

*2019 to 2024 were surveyed during the winter of the following year.

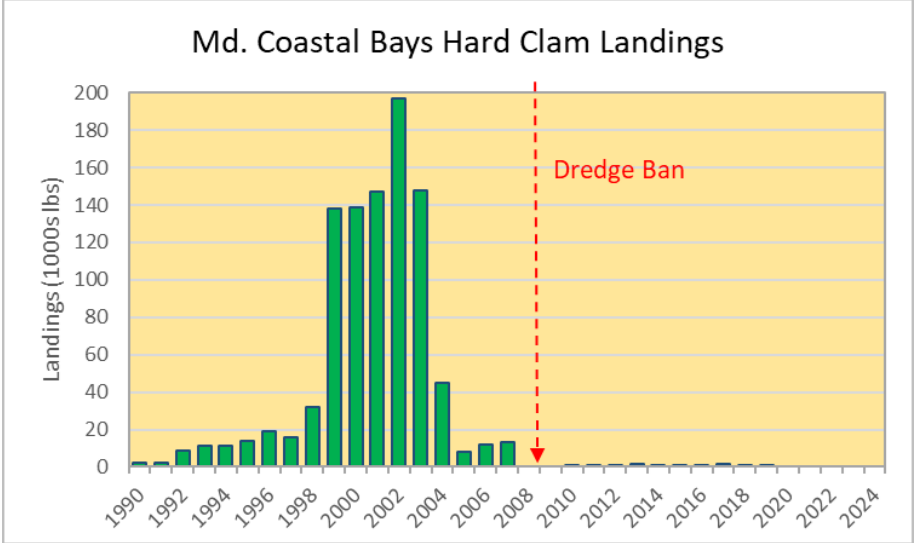


Figure 2. Maryland Coastal Bays hard clam landings, 1990 to 2024 (MDNR data). No landings were reported in 2008-09, 2020-24.

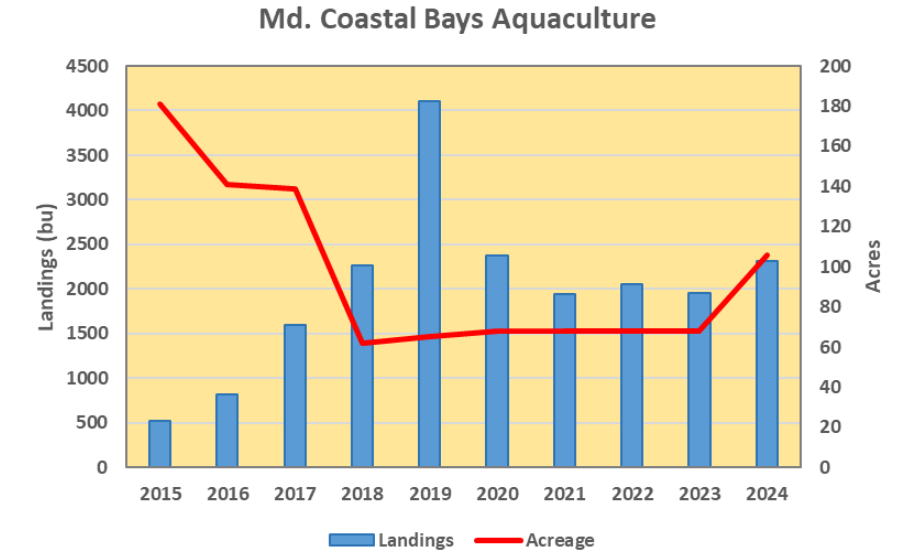


Figure 3. Maryland Coastal Bays aquaculture landings (all species) and acreage under lease, 2015 to 2024.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
FMP	Fishery Management Plan
MCBP	Maryland Coastal Bays Program
MDNR	Maryland Department of Natural Resources
PRT	Plan Review Team

Section 14. Horseshoe Crab (*Limulus polyphemus*)

Horseshoe crabs (*Limulus polyphemus*) are a marine arthropod found along the Atlantic coast from northern Maine to the Yucatan Peninsula and the Gulf of Mexico. The Delaware Bay supports the largest spawning population in the world. Adults either remain in estuaries or migrate to the continental shelf during the winter months. Migrations resume in the spring when the horseshoe crabs move to beach areas to spawn. Juveniles hatch from the beach environment and spend the first two years in nearshore areas.

Horseshoe crabs are important to many different stakeholders. Not only do they support several valuable commercial fisheries, most notably whelk and American eel, but they also have an important biomedical role and are a critical food source for migratory shorebirds. Horseshoe crabs and migratory shorebirds, particularly the threatened red knot (*Calidris canutus rufa*), have a unique ecological relationship.

Red knots rely on horseshoe crab eggs as food during their spring migration from South America to their Arctic breeding grounds. As a result of these relationships, the management of horseshoe crabs has a broad ecosystem approach and is closely coordinated with the conservation efforts of migratory birds. The U.S. Fish and Wildlife Service (USFWS) identified climate change induced effects such as habitat impairment and loss, asynchronous timing with food resources, and predation as principal threats to migratory birds. The USFWS expressed confidence in the Atlantic States Marine Fisheries Commission's (ASMFC) Adaptive Resource Management (ARM) framework as a reasonable approach to ensure sufficient egg abundance to meet the needs of both red knots and horseshoe crabs.

Fishery Management Plans

The Chesapeake Bay and Atlantic Coast Horseshoe Crab Fishery Management Plan (CBHSC FMP) was adopted in 1994 by the major jurisdictions in the Chesapeake Bay (Maryland, Virginia, and the Potomac River Fisheries Commission). The CBHSC FMP prohibited the harvest of horseshoe crabs during the spawning season as a conservation measure for protecting their eggs and providing an important food resource for shorebirds. The plan established a spawning stock census of horseshoe crabs, stricter harvest reporting standards, and a program to delineate important spawning areas. The CBHSC FMP was reviewed in 2011, and the plan review team recommended amending the plan to address two issues: 1) adopt the ASMFC's ARM framework and 2) address the lack of genetic and spawning data for horseshoe crabs within the Chesapeake Bay.

In 1998, the ASMFC adopted the Interstate Fishery Management Plan (FMP) for Horseshoe Crabs along the Atlantic coast. Since then, there have been a number of changes. Addendum I (2000) established state-by-state quotas on horseshoe crab landings that were 25% below reference period landings. Addendum II (2001) allowed quota transfers between states. Addendum III (2004) further reduced commercial harvest and added seasonal closures in New Jersey, Delaware, and

Maryland. These additional restrictions were implemented to further increase horseshoe crab egg abundance to provide food for migratory shorebirds, including the red knot. Addendum IV (2006) instituted seasonal and spatial harvest restrictions in Maryland and Virginia. Harvest restrictions apply only to the bait fishery. In addition, no more than 40% of Virginia's quota can be harvested east of the COLREGS line, as determined by the International Regulations for Preventing Collisions at Sea, and the "rules of the road" followed by vessels at sea. Harvesters must also have a minimum male to female ratio of 2:1 if landed in Virginia. Addenda V (2008) and VI (2010) continued the Addendum IV restrictions for Maryland and Virginia. Addendum VII (2012) implemented the ARM framework in 2013 to optimize horseshoe crab harvest, while conserving both shorebird and horseshoe crab abundance. The implementation of the ARM framework included male only harvest for the Delaware Bay states and Maryland.

In November 2022, the Horseshoe Crab Management Board approved Addendum VIII, which adopts the changes to the ARM Framework as recommended in the peer-reviewed 2021 ARM Framework Revision, and allows its use in setting annual bait harvest specifications for horseshoe crabs of Delaware Bay-origin. The 2021 revision includes improvements to the ARM Framework's population models for horseshoe crabs and red knots and incorporates more sources of horseshoe crab removal data, including mortality due to the biomedical industry and commercial discards from other fisheries. Given these improvements, which address previous peer review critiques, the revision was endorsed by the independent peer review panel as the best scientific information for the management of horseshoe crabs in the Delaware Bay region that accounts for the forage needs of migratory shorebirds.

The Maryland Department of Natural Resources (MDNR) is required to submit annual compliance reports to ASMFC. Included in this FMP report are the horseshoe crab compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the horseshoe crab FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/HSC_FMP_Review_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/HSC_FMP_Review_FY2023.pdf
asmfc.org/wp-content/uploads/2025/11/HSC_FMP_Review_FY2024.pdf.

Stock Status

During 2019, ASMFC completed a new stock assessment and it was peer reviewed. It was found that the Atlantic population was stable to good in all regions except for the New York area where the stock was considered poor. The stock assessment committee tasked the Adaptive Resource Management Committee with incorporating the bycatch and biomedical harvest into the management matrix.

An update of the 2019 assessment was completed in 2024. The update shows that since the 2019 assessment, the stock statuses for the Northeast, New York, and Southeast regions have remained the same (neutral, poor, and good, respectively). The Delaware Bay region population has improved from neutral to good, as has the coastwide stock status. In April 2024, the Board accepted the stock assessment update for management use.

Current Management Measures

Table 1. Male horseshoe crab season and daily limits by permit type

Date	Area Open to Harvest	No Permit	Tier 1 Permit	Tier 2 Permit	Tier 3 Permit	Tier 4 Permit
May 1, 2024, through July 7, 2024	Atlantic Ocean between 1 and 3 miles from the coast; Maryland's coastal bays and their tidal tributaries	25	150	150	150	150
July 8, 2024, through November 30, 2024	All Maryland waters	25	150	200	1500	2500
December 1, 2024, through April 30, 2025	Closed	No Harvest Allowed	No Harvest Allowed	No Harvest Allowed	No Harvest Allowed	No Harvest Allowed

Under Addendum VIII, the 2021 ARM Revision will be used to annually produce bait harvest recommendations for male and female horseshoe crabs of Delaware Bay-origin, based on the abundance of horseshoe crabs and red knots. The maximum number of male and female horseshoe crabs the ARM Revision can recommend (500,000 males and 210,000 females) and the conceptual model of horseshoe crab abundance influencing red knot survival and reproduction remain unchanged, with the objective of ensuring horseshoe crab abundance does not become a limiting

factor for the population growth of red knots. While the methodology for allocating the overall quota among the four Delaware Bay states is also unchanged, the state allocations have been updated to reflect the most current genetic information on the proportion of each state's harvest that is of Delaware Bay-origin.

Taking into consideration the recommendations of the ARM Framework Revision as well as public concern about female horseshoe crab harvest, the Board set a harvest limit of 500,000 male and zero female Delaware Bay-origin horseshoe crabs for the 2024 and 2025 seasons. The annual total allowable landings of male horseshoe crabs for the commercial fishery was 255,980.

The Maryland Fishery

Maryland's commercial fishery has operated under a quota system since 1998. Beginning in 2013, the harvest of female horseshoe crabs is prohibited and the quota is set for male horseshoe crabs only. Any overages are deducted from the following year's quota. Under Addendum III, it was established that Maryland must not exceed an annual harvest of 170,653 horseshoe crabs (2001 landings). This landing limit was maintained through Addenda IV and VI from 2001 through 2012. The limit for Maryland in 2013 through 2024 was 255,980 male horseshoe crabs. A new Maryland regulation protecting spawning horseshoe crabs was implemented on January 31, 2017. The purpose of the action was to clarify that horseshoe crabs may be harvested from a vessel, but not from shore. Horseshoe crab commercial bait harvest regulations have remained the same from 2017 through 2024 (varying by one to two days in July).

Management Priorities and Concerns

The USFWS published a rule to list the red knot as a threatened species in December 2014. The primary threats to red knot in the Mid-Atlantic region are climate change induced effects such as habitat impairment and loss, and asynchronous timing with food resources. Availability of horseshoe crab eggs, horseshoe crab harvest, and bleeding mortality data are of concern. The USFWS recognized the validity of the ARM framework to control horseshoe crab harvest and prevent harvest from being a threat to red knots. A concurrent factor is the presence of peregrine falcons, which prey on red knots. The presence of peregrine falcons can inhibit red knot foraging regardless of horseshoe crab egg abundance. In addition, genetic variability in red knot body mass thresholds may be an important factor for their annual survival.

Horseshoe crabs prefer to spawn on sandy beaches in protected areas like coves and bays. Shallow water areas of the Chesapeake Bay and Maryland and Virginia coastal bays are important nursery areas. The ASMFC Habitat Committee has identified threats to horseshoe crab spawning habitats. These threats include coastal erosion, shoreline development and stabilization, sea level rise, contaminants, oil spills, human disturbances, and excess nitrogen. Recommendations for counteracting the threats include identifying and protecting spawning and nursery areas, and reducing human disturbances. Activities such as beach grooming and nourishment, all-terrain

vehicles, and beach watercraft should be limited on horseshoe crab spawning beaches during the spawning season. Staff from MDNR continue to work with staff from the Coastal Bays Program and Worcester County to show how soft shore stabilization can create or protect horseshoe crab spawning habitat.

The Virginia Polytechnic Institute trawl survey conducted along the Mid-Atlantic Bight (Virginia to New York) is a critical component for determining the harvest level of horseshoe crabs under the ARM model but was discontinued in 2014 due to a lack of funding. In its place, the ASMFC Horseshoe Crab Management Board approved a composite trend index from Delaware and New Jersey fishery independent surveys. Long term funding for the VPI trawl survey remains a concern.

Reductions in Mid-Atlantic harvest quotas, particularly in Delaware Bay, have redirected harvest to the New York and New England fisheries. Localized overharvest within these regions is possible meaning current harvest levels may not be sustainable.

Figures

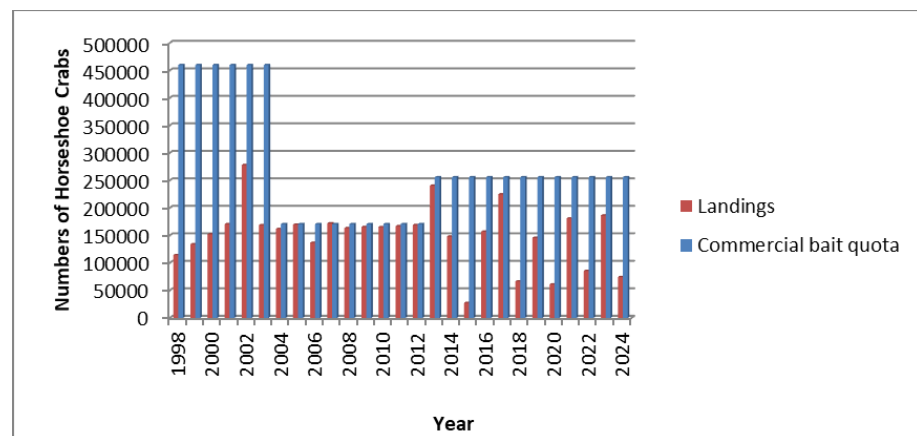


Figure 1. Maryland Quota and bait landings from 1998 through 2024.

Acronyms

Table 2. Acronyms used in this section

Acronym	Term
ARM	Adaptive Resource Management
ASMFC	Atlantic States Marine Fisheries Commission
CBHSC FMP	Chesapeake Bay Horseshoe Crab Fishery Management Plan
FMP	Fishery Management Plan
MDNR	Maryland Department of Natural Resources
USFWS	U.S. Fish and Wildlife Service

Section 15. Largemouth Bass (*Micropterus nigricans*)

Largemouth bass are a popular sportfish belonging to the sunfish family known for their fight and size potential. Spawning occurs in the spring when males build nests, often near vegetation or structure, making it a popular time for recreational anglers. Largemouth bass are economically and recreationally significant in North America, particularly in Maryland. They support the state's largest freshwater recreational fishery and approximately 400 organized tournaments annually. As keystone predators, they influence the aquatic food webs in the tidal fresh areas of Chesapeake Bay tributaries where they live.

Fishery Management Plans

Management of tidal largemouth bass by the Maryland Department of Natural Resources (MDNR) is guided by the Fishery Management Plan for Largemouth Bass in Maryland Tidewater, adopted in 2015. An update to this plan is currently in progress. There are no other plans that direct the management of largemouth bass in tidal waters.

Stock Status

Due to the non-migratory behavior of largemouth bass, management units are divided by major rivers with tidal fresh habitat supporting the species, the one exception is the upper Chesapeake Bay where fish may move between the lower Susquehanna River and the Northeast River. Management units consist of 12 tidal tributaries on the western and eastern shore of the Chesapeake Bay and the upper Chesapeake Bay system. Stock assessments are performed every 2 to 3 years for fisheries with a 10 year reference data set. Prominent fisheries, such as the Potomac River or the upper Chesapeake Bay, and fisheries without a reference dataset are surveyed annually.

Stock status for management units is based on indices of catch; body growth; relative weight and condition^{1,2}; size structure in the population³; mortality; reproduction; and habitat suitability⁴ compared to reference points created from the 10 year reference period. Fishery-specific reference points are the 25th and 75th percentiles of the reference dataset. Most management units under the current management plan are labeled as “stable” or “good”. There are, however, several management units that are currently labeled as “rebuilding” due to low catch rates, poor reproduction, or poor growth. In general, most management units currently have an upward trend of abundance. In the last two years there were no changes to the methods or a new benchmark assessment that was developed.

Sassafras River

A total of 14 largemouth bass, including two juveniles, were caught in 2022. However, this survey was incomplete because salinity was too high to survey many sites. More bass would have been caught had sampling conditions allowed. The sites

that were sampled produced good numbers of bass. Given poor sampling conditions and because this fishery lacks the necessary comparative surveys, an assessment was not possible. Nonetheless, tournament anglers weighed an average of one bass per day, which is consistent with tournament data collected since 2016. No fish were collected with signs of disease during the survey. Because of the limited data set for comparison, the status of this fishery was designated as Unknown.

Wicomico River

A total of 56 largemouth bass, including 35 juveniles, were collected in 2022. The fishery survey statistics were generally similar to long-term averages, with the exception of reproduction indices that indicated better than average distribution of juveniles. In recent years, tournament anglers reportedly weighed between one and two bass per fishing day; this is about half of those weighed between 2012 and 2015. Some stocking has been done to help bolster catch rates. Only 4% of fish were observed with disease, one had a missing eye and the other had a mild hooking injury. Because of the similarity of metrics to those from previous years, the status of this fishery was designated as Good.

Upper Chesapeake Bay

A total of 279 largemouth bass, including 151 juveniles, were collected in 2024. Twenty of these fish (or 7%) showed signs of injury and/or disease. Relative abundance or catch indices were within normal ranges for the fishery. As has been typical for the fishery, anglers weighed about two bass per tournament fishing day. Reproduction appeared to be good with 87% of high-quality habitats having juveniles, which was above average. Recruitment may have lagged in recent years as indicated by the size structure of the population. Growth rate indices also tended to be lower than normal. Because of generally good catch statistics and reproduction, the status of this fishery was designated as Good.

Middle River

A total of four largemouth bass, including two juveniles, were collected in 2024. No fish collected showed signs of injury and/or disease. Low levels of catch for this population do not allow for a robust assessment. Possibly owing to higher salinity, few fish were collected during survey efforts. However, anglers have reported a resurgence of the fishery. Led by Scott Sewell (Conservation Director, Maryland Bass Nation), Middle River has benefited from significant releases of purchased and hatchery-reared bass and will likely remain a focus for supplemental stocking. Because a reference dataset for comparison is ongoing and not yet completed, the status of this fishery has been designated as Unknown.

Pocomoke River

A total of 149 largemouth bass, including 47 juveniles, were collected in 2024. Seven fish collected (or 5%) showed signs of injury and/or disease. Anglers weighed

between three and four bass per tournament fishing day, which is above average for the fishery. Relative abundance or catch indices were the highest observed in historical sampling and a notable increase from the previous sample in 2020. Reproduction was above average, and juveniles were caught at 73% of all high-quality habitats. Growth rate indices tended to be lower than average and size structure has shifted to predominantly younger fish. More frequent sampling will be done in the future in an effort to reduce the variability in sampling statistics. Because of the above average reproduction and catch statistics, this fishery has been designated Good.

Gunpowder River

A total of 64 largemouth bass, including 17 juveniles, were collected in 2024. Eight of these fish (or 12.5%) showed signs of injury and/or disease, a greater proportion than that observed for the Potomac River or the upper Chesapeake Bay. Catch indices were above average, likely owing to significant stocking efforts in the river. Anglers weighed about two bass per tournament fishing day, similar to the upper Chesapeake Bay. Juveniles represented 27% of the sample and were found in 62% of prime habitats, suggesting above average reproduction. Growth rates tended to be below average for the population. Because of above average catch statistics, likely owed to stocking, but below average growth, the status of this fishery was designated as Rebuilding.

Bush River

A total of 45 largemouth bass, including eight juveniles, were collected in 2024. Six fish collected (or 13%) showed signs of injury and/or disease, a greater proportion than that observed for any other tidal river. Catch has slowly increased since 2018 and was at its highest average in 2024. Reproduction was above average in Bush River with juveniles found in 70% of high-quality survey sites. Additionally, juveniles constituted above average proportion of the sample (18%). Growth rates were similar to those observed for fish from Gunpowder River. Because a reference dataset for comparison is on-going and not yet completed, the status of this fishery has been designated as Unknown.

Marshyhope Creek

A total of 81 largemouth bass, including 31 juveniles, were collected in 2024. Four fish collected (or 5%) showed signs of injury and/or disease. Relative abundance or catch indices were below average, including older fish. As has been typical for the fishery, anglers weighed about two bass per tournament fishing day. Reproduction showed improvement from previous years as juveniles were found at 42% of sites representing 28% of total catch. The high prevalence of juveniles could also be attributed to the heavy stocking efforts conducted by the MDNR in the summer and fall of 2024. Growth indices were below average. Because of concerning survey metrics, the status of this fishery was designated as Rebuilding.

Current Management Measures

Current regulations include different minimum size limits for possession depending on the time of year for tidal largemouth bass fisheries. From June 16 through the end of February, a 12-inch minimum size limit is in place, which helps protect smaller fish from harvest or stress during competitive possession tournaments. This limit increases to 15 inches from March 1 through June 15, a measure implemented in 1989. The larger size limit was put in place to reduce the number of sexually mature largemouth bass moved from their nests to a weigh-in station during the spawning season. While these size limits aim to protect the population, they do not prevent catch-and-release fishing, which can still cause handling stress and mortality, particularly during the critical spawning period. Additional management measures, such as areas closed to fishing during the spawning season, may also apply in specific parts of individual management units.

The Maryland Fishery

Maryland's tidal largemouth bass fishery is largely driven by successful reproduction and habitat availability. In areas where complex structure and submerged aquatic vegetation are in abundance, the fishery thrives. Additionally, the amount of submerged aquatic vegetation has been linked to the fluctuations in population abundance.⁵ The fishery is entirely recreational with no commercial harvest or sale of fish for food. Additionally, there is no sale of live specimens for pond aquaculture unless approved by MDNR. Any angler with a tidal fishing license can fish for largemouth bass in Maryland's tidal waters. Perhaps the most visible constituency of largemouth bass angling in tidal waters is tournament angling. Over 400 tournament permits are requested every year in the state and an average of 64,000 tournament angler hours have been reported annually over the last 10 years.

Management Priorities and Concerns

- 1) Continue the Tidal Bass Survey so that at least a 10 year baseline of data is established for targeted tidewater areas and populations are monitored at least biannually. Expand the survey to the Chester River. Continue surveys as specified in the Tidal Bass Program's Standard Operating Procedure during fall, as funded with federal and state money. Available: dnr.maryland.gov/fisheries/Documents/Tidal_Bass_Survey_SOP.pdf.
- 2) Monitor habitat and fish health using data collected during the Tidal Bass Survey to better understand spatial changes in the fishery over time.
- 3) Support Potomac River Interjurisdictional Cooperative Management for the largemouth bass fishery with a creel survey and continued tagging.
- 4) Support responsible growth of bass tournaments by monitoring compliance with permits and permit requirements.

Tables

Table 1. The most recent stock assessment of largemouth bass populations for targeted drainages of the Chesapeake Bay watershed using indices and metrics reflecting changes in population biology. When a metric falls below the 25th percentile computed for available data for that river, the downward arrow is given. When a metric falls above the 75th percentile computed for available data for that river, then the upward arrow is given. For tidal rivers where 25th and 75th percentiles for populations were not available, values were compared to general, reference point-estimates established for non-Maryland populations. Abbreviations for indices are at the bottom of the table. NA = Not Available; † = Sampled in 2022

River	N	CPUE	CPUE, 1+	PSD ₃₀₅	PSD ₃₈₁	A (-Z)	GR-EXPrise	GR-VBGF	LW-Slope	W _r	K _n	JuvCPUE	JUVPSD	JUV%OCC
Bush	10	42.077	32.97	0.73	0.11	NA	49.86	50.01	3.24	1.01	1.00	11.86	0.18	0.70
Gunpowder	16	41.1↑	29.85↑	0.77	0.36	0.54(-0.17)	53.51↓	50.82↓	3.21	0.99	0.99	13.97	0.27	0.63↑
Marshyhope Creek	25	25.03	11.89	0.64	0.22	0.39(-0.50)↑	52.71↓	53.02↓	3.20	1.00	1.00	10.55↓	0.38	0.42
Middle	7	7.04	3.12	0.67	0.15	NA	NA	NA	2.42	1.00	0.99	13.4	0.16	0.29
Patuxent†	30	48.53	10.69↓	0.59	0.34	NA	58.3↓	58.5↓	3.21	1.02	1.00	33.46↑	0.76↑	0.71↑
Pocomoke	30	45.78↑	38.15↑	0.46	0.16	0.35(-0.43)↓	52.74	53.04	3.13	0.99	1.00	18.24↑	0.32↑	0.73↑
Potomac	52	67.63	30.95	0.48↓	0.25↓	0.34(-0.41)↓	59.52↓	59.88↓	3.21↑	1.00	1.00	42.49	0.59	0.84↑
Sassafras†	6	16.89	4.38	1.00	0.75	NA	47.42	47.92	3.13	1.01	1.00	7.52	0.14	0.33
Upper Bay	30	82.8	32.41	0.67	0.30↓	NA	54.97↓	55.33↓	3.05↓	1.00	1.00	43.1	0.57↑	0.86↑
Wicomico†	25	19.92	14.41	0.76	0.48	NA	60.49	60.79	3.27	0.99	0.99	19.06	0.62↑	0.42↑

Table 2. Abbreviations of indices and metrics presented in Table 1.

Abbreviation	Index or Metric
N	Number of sites surveyed
CPUE	Catch Per Unit Effort
CPUE, 1+	Catch Per Unit Effort for age 1 and older fish
PSD ₃₀₅	Proportional Size Distribution for stock size fish that were 305 mm or greater
PSD ₃₈₁	Proportional Size Distribution for stock size fish that were 381 mm or greater
A (-Z)	Total Annual Mortality presented as the proportion of fish that die each year (A) alongside the instantaneous mortality rate in parentheses (-Z)
GR-EXPrise	Growth Rate determined from a two-parameter, isometric growth model
GR-VBGF	Growth Rate for von Bertalanffy growth models
LW-Slope	Slope of the length-weight regression
W _r	Relative Weight
K _n	Relative Body Condition
JuvCPUE	Catch Per Unit Effort for age 0 or juveniles
JUVPSD	Proportion of juveniles (≤ 200 mm) in sample
JUV%OCC	Proportional occurrence of juveniles among prime quality sampled sites

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Acronyms

Table 3. Acronyms used in this section

Acronym	Term
MDNR	Maryland Department of Natural Resources

Section 16. Red Drum (*Sciaenops ocellatus*)

Red drum, also known as redfish, is a popular game fish found along the Atlantic coast of the United States from Massachusetts to Florida. Juveniles and subadults reside in estuaries, whereas adults reside in coastal ocean habitats. Red drum are capable of living greater than 60 years and reaching sizes exceeding 90 pounds. In Maryland, red drum are targeted by recreational anglers for both their fighting capabilities and delicious taste. There is also a modest commercial red drum harvest in Maryland, though it is predominantly a bycatch fishery. The species is likely to become more popular in Maryland over time as its coastwide range shifts northward due to increasing water temperatures.

Fishery Management Plans

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Interstate Fishery Management Plan (FMP) for Red Drum in 1984 to protect the red drum spawning stock. Since then, several changes have been made. Amendment 1 (1991) was adopted to attain optimum yield from the fishery over time. Amendment 2 (2002) requires states to comply with recreational limits to meet the target fishing mortality. Addendum I (2013) identifies key habitats and habitats of concern for red drum. The coastal FMP management unit consists of the states from Florida to New Jersey. The Chesapeake Bay Red Drum Fishery Management Plan was adopted in 1993 to address overfishing and to follow the ASMFC guidelines. The plan addresses stock assessment needs concerns about habitat and water quality. Coastal management measures since 2000 have resulted in reduced fishing mortality.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the red drum compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the red drum FMP, respectively, are available at: asmfc.org/wp-content/uploads/2025/01/RedDrum_FY2022_FMP_Review.pdf, asmfc.org/wp-content/uploads/2025/01/Red_Drum_2024_FMP_Review_Final.pdf, asmfc.org/wp-content/uploads/2025/08/RedDrum_FY2024_FMP_Review.pdf.

Stock Status

In the 1980s and 1990s, the coastal red drum stock was overfished. Management measures were implemented to reduce fishing mortality (F) and rebuild the stock. The 2017 red drum benchmark stock assessment used statistical catch at age models and determined that overfishing was not occurring but was unable to determine an overfished status.¹ Due to the shortcomings of the 2017 assessment, a new two-step assessment process for red drum was initiated in 2020.² The first step began in 2020

with a simulation assessment, which used simulated data to explore the strengths and weaknesses of potential assessment techniques. The results of the simulation assessment were presented to a review panel, who recommended that a Stock Synthesis (SS) model (a statistical catch at age model developed in the SS program) should be used to assess both the northern and southern stocks of red drum. The Traffic Light Approach would be used as an accessory tool between assessments.³ These recommendations were approved by the Sciaenids Management Board at the May 2022 meeting to be used in the 2024 red drum benchmark stock assessment.

The 2024 red drum benchmark stock assessment split red drum into two separate stocks: a northern stock (New Jersey to North Carolina) and a southern stock (South Carolina to Florida).⁴ The distinction between stocks was based on differences in life history traits, such as growth rates, age, and migratory habits. The southern stock was assessed using the SS assessment model; however, a robust SS model could not be developed for the northern stock so a Traffic Light Analysis (TLA) was used to assess the stock instead.⁴ The terminal year of the assessment was 2021.

For the northern stock, a TLA was used to categorize fishery performance, adult abundance, and recruitment as either red, yellow, or green. The results of the TLA indicated that the northern stock was not experiencing overfishing and was not overfished.⁴ However, many of the metrics were yellow, indicating that fishing mortality was increasing in recent years. The TLA will be updated prior to the next benchmark assessment, which is currently scheduled for 2029.

For the southern stock, stock status was based on the three terminal years of the assessment. The average spawning potential ratio (SPR) of those years was below the 30% SPR threshold, indicating that the stock was experiencing overfishing.⁴ The SPR of a stock is defined as the ratio of spawning biomass under current fishing levels compared to a stock that was experiencing zero fishing mortality. Furthermore, the average female spawning stock biomass (SSB; 8,737 metric tons) was below the SSB threshold (9,917 metric tons), indicating that the stock was overfished.

Current Management Measures

Red drum is managed through size limits and creel limits in compliance with all current interstate FMP requirements. All harvests occur in state waters. Maryland permits recreational fishermen to take one fish per day between 18 inches and 27 inches. Charter boat logs show that anglers in Maryland release most of the red drum they catch.⁴ Commercial fishermen in Maryland are limited to five fish per day, with a slot limit of 18 to 25 inches. The Potomac River Fisheries Commission enforces a slot limit of 18 to 25 inches, and a possession limit of five fish per day for recreational and commercial fishermen. The recreational and commercial fisheries are open year-round.

The Maryland Fishery

Commercial harvest from Maryland makes up a small proportion (< 1%) of the total commercial catch from the Atlantic Coast. The majority of the commercial catch from the Atlantic Coast is from North Carolina. Three southern states that manage the southern stock have given red drum game fish status and prohibit commercial harvest. Commercial harvest generally accounts for 10% of the total landings in the northern stock.

Red drum is one of the most highly sought recreational species along the southern Atlantic coast. In Maryland's portion of the Chesapeake Bay, red drum are only seasonally available from summer to early fall. As a result, the estimates for recreational catch in Maryland are low most years. However, as average water temperatures have increased in Maryland, so have recreational catches, with three of the four highest total catch estimates occurring within the last five years (Figure 2).

Management Priorities and Concerns

The TLA for the northern stock in the 2024 benchmark stock assessment found that the fishery performance metric is in the yellow, suggesting levels of moderate action from management. The stock should continue to be closely monitored even as catches increase in Maryland.

The northern stock is still data limited throughout the entire range, most noticeably north of North Carolina.⁴ This lack of data leads to increased stock uncertainty, especially with catches increasing in states north of North Carolina. Without long-term fishery-independent surveys that reliably collect red drum data from these states, it is unclear how these increases in catches correspond to changes in overall abundance.

Submerged aquatic vegetation (SAV) beds are important red drum habitat. Efforts by the EPA and state programs to achieve SAV restoration and water clarity goals will continue. In 2013, ASMFC approved Addendum I to Amendment 2.⁵ Addendum I revised the habitat section to include the most current science on red drum habitat requirements for all life history stages. Habitat identification and description, habitats of concern, and potential threats to recovery and sustainability were also defined.

Figures

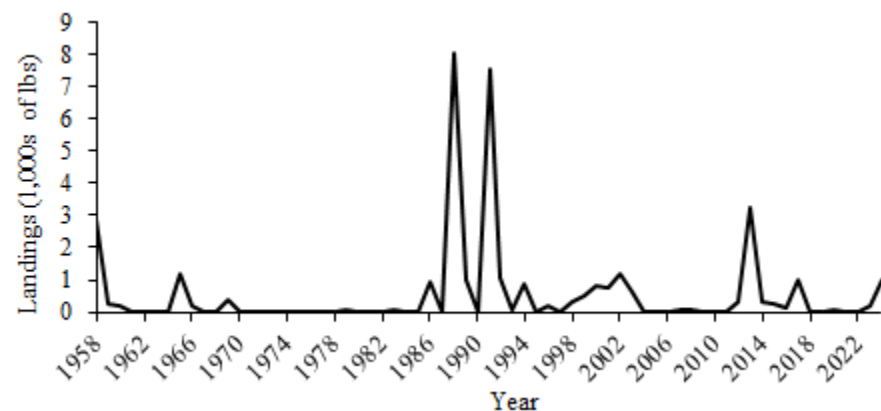


Figure 1. Commercial red drum landings for Maryland, queried from Maryland's commercial landings database, 1981 to 2024.⁵

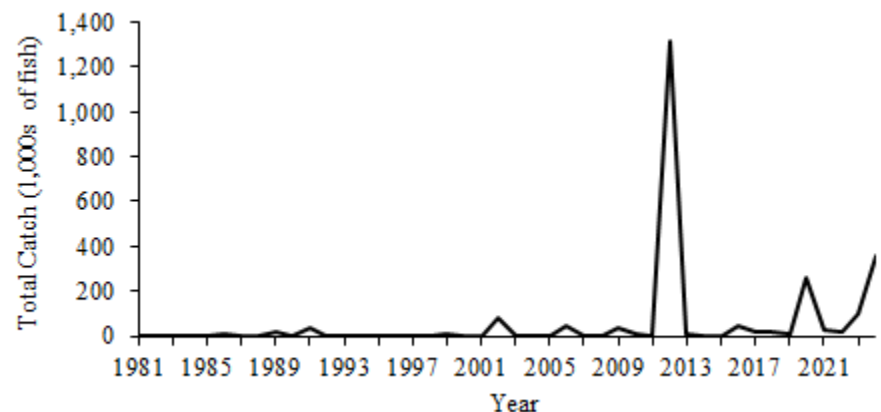


Figure 2. Total recreational red drum MRIP catch estimate for Maryland, all modes combined, 1981 to 2024.⁶

References

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
F	Fishing mortality
FMP	Fishery Management Plan
SAV	Submerged Aquatic Vegetation
SPR	Spawning Potential Ratio
SS	Stock Synthesis
SSB	Spawning Stock Biomass
TLA	Traffic Light Analysis

Section 17. Scup (*Stenotomus chrysops*)

Scup, also called porgy, are found along the Atlantic coast from Massachusetts to North Carolina. They are both commercially and recreationally popular along the coast, and thrive in warmer waters. Schools of scup undergo an extensive migration from northern coastal waters in the spring and summer to southern offshore waters in the fall and winter. The majority of coastal harvest is from Massachusetts through New Jersey. Recent stock assessments show that scup stocks are doing well, and coastal landings have been sustained at a high level. Compared to other states, commercial harvest in Maryland is variable.

Fishery Management Plans

A Chesapeake Bay/Atlantic Coast fishery management plan (FMP) has not been developed for scup. The Maryland Department of Natural Resources' (MDNR) authority to manage scup comes from its designation as a species in need of conservation that was established in 1994.

Scup are jointly managed by the Atlantic States Marine Fisheries Commission (ASMFC) in state waters and the Mid-Atlantic Fishery Management Council (MAFMC) in federal waters under the Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan (FMP). Scup were incorporated into the ASMFC and MAFMC summer flounder FMPs in 1996. Scup are currently managed under ASMFC Amendment 13 (2002) and its subsequent addenda.

In 2022, Amendment 22 was jointly approved by ASMFC and MAFMC to change the commercial and recreational allocations for all three species in response to changes in how recreational catch is estimated by the Marine Recreational Information Program (MRIP). This new method resulted in a revised recreational time series with data beginning in the 1980s. Addendum XXXIV (2022) and Framework 17 (2023) implemented the Percent Change Approach for setting recreational measures and modifications to the recreational accountability measures. This approach gave greater consideration to stock status when determining whether recreational measures should be restricted, liberalized, or remain unchanged for the upcoming two years. The Percent Change Approach began in 2023 and is expected to sunset at the end of 2025.

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the scup compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the scup FMP, respectively, are available at: asmfc.org/wp-content/uploads/2025/01/Scup_FMPReview_FY2022.pdf

asmfc.org/wp-content/uploads/2025/01/Scup_FMPReview_FY2023.pdf
asmfc.org/wp-content/uploads/2025/08/Scup_FMPReview_FY2024.pdf.

Stock Status

The 2021 and 2023 management track stock assessments found that the stock was not overfished, and overfishing was not occurring (Figures 1 and 2). The 2021 assessment included data through 2019 and informed specifications for the 2022 and 2023 fishing years. The 2023 assessment included data through 2022 and informed specifications for the 2024 and 2025 fishing years using new biological reference points. Spawning stock biomass (SSB) was estimated to be 193,087 metric tons (mt), which is 246% of the updated biomass target of 78,593 mt (SSB_{MSY} proxy; Figure 2). Fishing mortality (F) was 0.098, which was 52% of the updated overfishing threshold of 0.19 (F_{MSY} proxy). Recruitment has been below average from 2017 to 2022, with the lowest dip in 2019. If above average year classes are not produced, SSB could decline in the short term. The next assessment is scheduled to be released in 2025 and will include data through 2024.

Current Management Measures

In 2022, the annual quota was divided between the commercial (78%) and recreational (22%) fisheries. Amendment 22 updated the 2023 scup allocations to 65% commercial and 35% recreational which remained in effect in 2024.

Commercial Fishery

The annual commercial quota is divided into three seasons: Summer, Winter I, and Winter II. There are minimum size limits, trip limits, mesh size requirements for trawl nets, and specific requirements for scup pots and traps. From 2022 to 2024 the commercial minimum size limit was 9 inches.

The 2022 coastwide commercial quota was 20.38 million pounds. The Summer quota was 7,938,686 pounds with a final allocation of 944 pounds to Maryland. The Winter I quota was 9,194,201 pounds with a trip limit of 50,000 pounds which decreases to 1,000 pounds when the quota reaches 80%. The Winter II quota was 7,468,343 pounds including rollover of unused quota from Winter I, with a trip limit of 24,000 pounds.

The 2023 coastwide commercial quota was 14.01 million pounds. The Summer quota was 5,456,895 pounds with a final allocation of 1,649 pounds to Maryland. The Winter I quota was 6,319,911 pounds with a trip limit of 50,000 pounds which decreases to 1,000 pounds when the quota reaches 80%. The Winter II quota was 3,037,824 pounds including rollover of unused from Winter I, with a trip limit of 13,500 pounds.

The 2024 coastwide commercial quota was 21.15 million pounds. The Summer quota was 8,236,655 pounds with a final allocation of 980 pounds to Maryland. The

Winter I quota was 9,539,294 pounds with a trip limit of 50,000 pounds which decreases to 1,000 pounds when the quota reaches 80%. The Winter II quota was 5,074,019 pounds including rollover of unused from Winter I with a trip limit of 16,500 pounds.

Recreational Fishery

Recreational anglers are subject to annual harvest limits, minimum fish sizes, possession limits, and seasons. From 2022 to 2024 the recreational minimum size limit was 9 inches and the season was open year-round. The creel limit declined from 50 fish per day in 2022 to 40 fish per day in 2023 and 30 fish per day in 2024.

The Maryland Fishery

From 2022 to 2024, scup were commercially harvested using otter trawl and pot gears. Maryland's preliminary commercial scup harvest was 48,058 pounds in 2022, 92,230 pounds in 2023, and 93,175 pounds in 2024.

Maryland's 2022 recreational scup harvest with percent standard error (PSE) was estimated at 1,671 fish (PSE 83) with a combined weight of 2,211 pounds (PSE 83).¹ The 2023 recreational scup harvest was estimated at 13 fish (PSE 75.2) with a combined weight of 34 pounds (PSE 84.1).² The 2024 recreational scup harvest was estimated at 151 fish (PSE 57.2) with a combined weight of 214 pounds (PSE 58.1).³

Management Priorities and Concerns

Maryland commercial scup harvest has not returned to pre-1970 levels. Scup landings occur offshore and are highly variable. Recreational management measures are in effect in federal waters. States will continue to use a regional management approach.

Figures

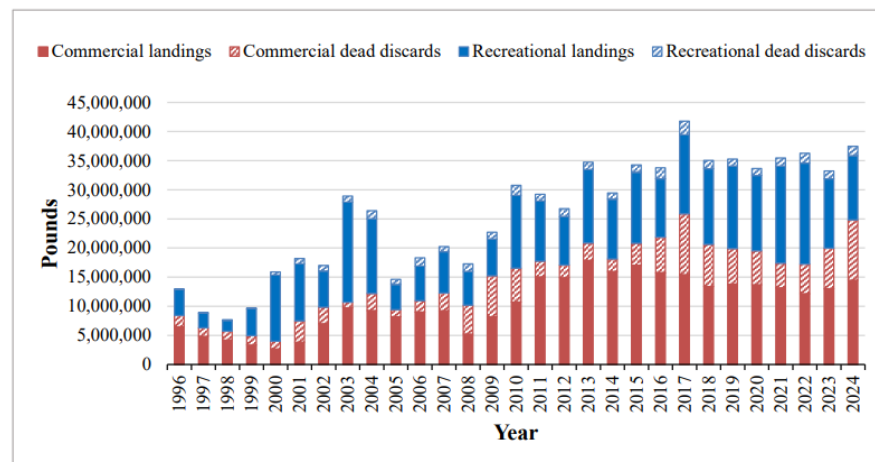


Figure 1. Commercial and recreational scup landings and dead discards in pounds, Maine to North Carolina, 1996 to 2024, based on the draft 2025 management track assessment for scup (S. Truesdell, pers. comm, June 2025). The full time series of recreational values reflect revised MRIP values.

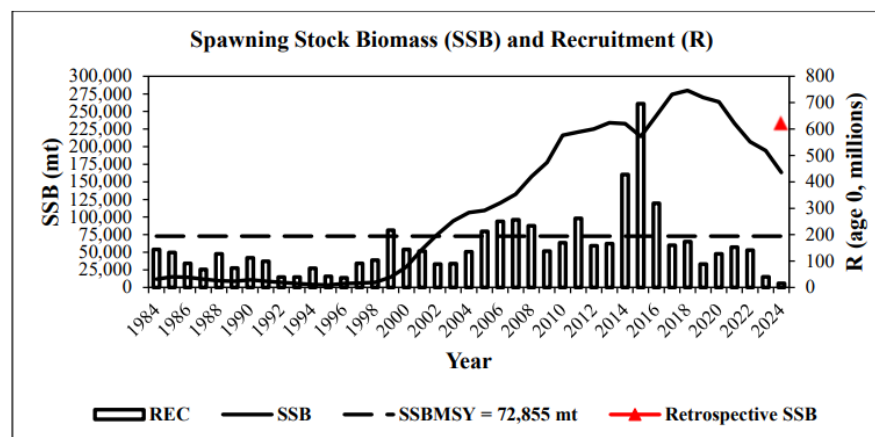


Figure 2. Scup spawning stock biomass and recruitment, 1984 to 2024. The horizontal dashed line represents the biomass target from the 2025 management track stock assessment. Adjusted SSB in 2024 (the red triangle) for comparison against the SSB_{MSY} proxy reference point is 235,613 metric tons. The adjusted value is used in management.⁴

References

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3. National Marine Fisheries Service, Fisheries Statistics and Economics Division, Personal communication, May 12, 2025.
4. Mid-Atlantic Marine Fisheries Council Scup Specifications Memo. July 15, 2025.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
FMP	Fishery Management Plan
MAFMC	Mid-Atlantic Marine Fisheries Council
MDNR	Maryland Department of Natural Resources
MRIP	Marine Recreational Information Program

Section 18. Shad and River Herring

a) Shad. American Shad (*Alosa sapidissima*) and Hickory Shad (*Alosa mediocris*)

American shad, and to a lesser extent hickory shad, were historically one of the most important fishes in North America, but stocks drastically declined coastwide throughout the twentieth century due to habitat loss, overfishing, ocean bycatch, stream blockages, pollution, and exposure to invasive predators.¹ Both species are anadromous and spend the majority of their lives in the Atlantic Ocean before returning to natal freshwater systems in the spring to spawn. Harvest of either species is prohibited in most of Maryland, though there is a small commercial bycatch fishery in the Potomac River. There is an active catch and release recreational fishery for both species in the spring, particularly in the Choptank, Potomac, and Susquehanna rivers.

Fishery Management Plans

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Interstate Fishery Management Plan (FMP) for American Shad and River Herring in 1985. In response, the Chesapeake Bay jurisdictions implemented the Chesapeake Bay Alosid [*sic*] Management Plan (CB Alosine FMP) in 1989 to coordinate shad and river herring management among the jurisdictions. The CB Alosine FMP identified declining abundance, overfishing, insufficient research and monitoring, and habitat loss as problems. The plan set guidelines to continue the American shad moratorium in Maryland and reduce exploitation rates in Virginia, such as removing stream blockages, reopening historic habitat, and continuing the stocking hatchery-raised fish. The CB Alosine FMP Amendment 1 (1998) continued the shad moratorium in Maryland, initiated review of criteria to reopen a shad fishery, and initiated development of measurable restoration targets.

Amendment 1 to the interstate FMP was implemented in 1999. The amendment mandated a 40% reduction in the American shad ocean intercept fishery by 2003 and a closure by 2005. In-river commercial fisheries were also limited to not exceed a fishing mortality rate of 30% of the maximum spawning potential of an unfished population (F_{30}). Technical Addendum I (2000) adjusted state fishery-independent and fishery-dependent monitoring programs but did not affect Maryland's obligations. Addendum I (2002) clarified hatchery-rearing requirements for *Alosa* species. Amendment 3 (2010) was enacted in response to the continued lack of improvement in American shad abundance. Amendment 3 established an instantaneous total mortality (fishing plus natural mortality) benchmark of Z_{30} , refined the juvenile recruitment failure definition to be more conservative, mandated states to monitor bycatch and discards, and required states with commercial and/or recreational (excluding catch and release) American shad fisheries to have approved fishing and habitat sustainability plans. The Potomac River Fisheries Commission (PRFC) submitted a sustainable fishery management plan for American shad in

2012. This plan was most recently re-approved by ASMFC in 2023. A habitat restoration plan was approved by ASMFC for Maryland in 2014. The plan was updated and approved in 2021. The ASMFC board approved a new benchmark stock assessment for American shad in August 2020. The assessment established a more conservative instantaneous total mortality benchmark of $Z_{40\% SBPR}$ and included a coastwide assessment of American shad habitat.

The adequacy of the CB Alosine FMP, including Amendment 1, was evaluated in 2012 to determine if the strategies and actions provided an appropriate management framework for addressing management changes implemented by ASMFC. The plan review team (PRT) determined that the CB Alosine FMP's strategies and actions were adequate to meet ASMFC compliance requirements and Chesapeake Bay management goals. Following input from the Maryland Sport Fisheries Advisory Commission and the Tidal Fisheries Advisory Commission, the PRT recommended no changes to the CB Alosine FMP. However, when the stock has adequately recovered and a limited fishery is ready to be opened, an amendment will need to be developed.

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the shad and river herring compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the shad and river herring FMPs, respectively, are available at:
asmfc.org/wp-content/uploads/2025/01/ShadRiverHerringFMP_ReviewFY2022.pdf
asmfc.org/wp-content/uploads/2025/04/ShadRiverHerringFMP_ReviewFY2023.pdf

Stock Status

American shad harvest in Maryland declined in the late 1950s and reached historic low levels in the mid-1970s, where it has remained since (Figure 1).² The 2020 American shad benchmark stock assessment determined that the coastwide metapopulation was depleted.¹ The assessment also found a lack of consistent response in coastwide abundance to the 2005 closure of the ocean intercept fishery. American shad were determined to be depleted, rather than overfished, as inadequate fish passage at dams, predation, pollution, water withdrawals, channelization of rivers, changing ocean conditions, and climate change have all also contributed to their decline. Four Maryland river systems were examined in the assessment: the Susquehanna River and Upper Chesapeake Bay, the Nanticoke River, the Patuxent River, and the Potomac River. Adult mortality and abundance were unknown for all systems other than the Potomac River, which was found to have unsustainable levels of adult mortality.¹ The next benchmark assessment for American shad is scheduled for 2030.

The two Maryland rivers with the greatest populations of American shad are the Susquehanna River and the Potomac River. The Maryland Department of Natural Resources (MDNR) has conducted a population assessment on the Susquehanna River in the Conowingo Dam tailrace since the mid-1980s. These estimates indicate that American shad abundance increased from 1984 to 2000 but has declined since (Figure 2).² This increase was likely driven by the success of the trap and transport program in the 1980s and 1990s, which collected American shad at the Conowingo Dam, and then transported them to spawning habitat above the York Haven Dam. The subsequent population decline was the result of fish passage inefficiencies at three of the four downstream hydroelectric dams with the switch to volitional passage in 2000. In 2021, to prevent the upstream passage of invasive species (specifically Northern snakehead *Channa argus* [also known as Chesapeake Channa in Maryland], blue catfish *Ictalurus furcatus*, and flathead catfish *Pylodictis olivaris*), volitional passage was halted indefinitely and trap and transport once again became the primary method of fish passage.² It is unclear whether the reinstitution of the trap and transport program will again lead to American shad population increases. Lift efficiency at the Conowingo Dam has greatly declined over the past three decades, and as a result, only 13% of American shad that have reached the Conowingo Dam since 2021 have been transported upstream, compared to 50% from 1984 to 1996.²

The primary surveys that MDNR uses to monitor American shad in the Potomac River are the MDNR Striped Bass Spawning Stock Survey (SBSSS; 1991 to present) and the MDNR Estuarine Juvenile Finfish Seine Survey (EJFS; 1959 to present).² Despite the 2020 benchmark stock assessment finding adult mortality in the Potomac River to be at unsustainable levels, in the seven years since the terminal year of the assessment (2017), the SBSSS index has had six of its seven highest annual estimates (Figure 2). The EJFS index has been relatively stable over the past 20 years, though the estimate for 2024 was the lowest estimate since 1999. The total instantaneous mortality (*Z*) estimates from the SBSSS have been above the *Z*-based reference point from the benchmark stock assessment in nine of the last 11 years.¹ If *Z* remains high, and the EJFS index does not show improvement, it is possible that the adult stock will plateau at its current level. Nonetheless, historic EJFS estimates indicate that the stock is currently at its highest level since at least 1959.²

There are several restoration efforts throughout the Chesapeake Bay region that stock American shad and regularly evaluate hatchery contribution. Thirty nine percent (*n* = 198) of adult American shad sampled from the Conowingo Dam tailrace since 2022 were of wild origin. In the Choptank River, adult American shad are infrequently encountered by monitoring surveys, but the number of juveniles collected in 2022 and 2023 were both above the survey average; 15% and 26% of juveniles examined in 2022 and 2023 were of wild origin fish, respectively.³

While Atlantic coast jurisdictions are required to monitor hickory shad populations, there have been no coastwide assessments for the species due to a scarcity of data. Fishery-independent and fishery-dependent data indicate that hickory shad populations in the upper Chesapeake Bay have been relatively stable over the past 20

years.² Hickory shad populations in the Patuxent and Choptank rivers were determined to be self-sustaining in 2014 after 11 and 18 years of respective stocking efforts.⁴ The proportion of wild, spawning adult hickory shad in the Patuxent River had been $\geq 80\%$ in eight of the last 10 years and was 91% in 2014.⁴ The proportion of wild, spawning adult hickory shad in the Choptank River from 2001 to 2013 varied between 29% to 85%. In 2014, 74% of spawning adults were wild.⁴ Monitoring on these rivers occurs every three years to continue trend data. A stable population of spawning adult hickory shad has been present in the lower Susquehanna River since 1996 without any stocking.

Current Management Measures

Harvest of American shad from the Chesapeake Bay was prohibited by Maryland in 1980, by PRFC in 1982, and by Virginia in 1994. Pennsylvania and New York also prohibit the harvest of American shad in the Susquehanna River basin. Maryland allows commercial fishermen a two fish per day bycatch of dead American shad for personal use. The sale of American shad bycatch is not permitted in Maryland. Virginia maintains an American shad bycatch permit for the gillnet fishery. Bycatch permit holders are allowed up to 10 fish per vessel from permitted areas as long as a greater number of bluefish, catfish, croaker, spot, striped bass, or white perch are landed. The PRFC allows licensed commercial fishermen to harvest up to two bushels of American shad bycatch per day, but American shad must represent less than 2% of their daily catch. All Atlantic coast jurisdictions closed their American shad ocean intercept fisheries in 2005.

Maryland enacted a hickory shad moratorium in 1981. The District of Columbia and PRFC prohibited hickory shad harvest in 1992 and 1995, respectively. In Virginia, there are no regulations for hickory shad caught in its portion of the Chesapeake Bay or its tributaries.

The National Marine Fisheries Service enacted Amendment 5 to the New England Fishery Management Council's federal FMP for Atlantic herring in 2014.⁵ Amendment 5's objectives, to improve monitoring and minimize the bycatch of river herring, are anticipated to reduce at-sea mortality of shad.⁵ The 2021 to 2023 shad and river herring catch cap for the Atlantic herring fishery was set at 361 metric tons (mt) coastwide.⁶ This quota was divided among four fishery regions/gears including the Gulf of Maine mid-water trawl (76.7 mt), Cape Cod mid-water trawl (32.4 mt), southern New England mid-water trawl (129.6 mt), and the southern New England bottom trawl (122.3 mt).⁷ From 2022 to 2024, the only shad and river herring catch cap to be exceeded was the Cape Cod mid-water trawl cap, which was exceeded in 2024.⁸

The Mid-Atlantic Fishery Management Council adopted Amendment 14 (2014) to the Atlantic Mackerel, Squid, and Butterfish FMP to improve monitoring of these fisheries and to limit shad mortality in the Atlantic mackerel fishery. The annual incidental shad and river herring catch cap has been 129 mt for the Atlantic mackerel fishery since 2020.⁷ The catch cap has not been exceeded since 2019.⁸

The Maryland Fishery

In Maryland, commercial bycatch mostly occurs during the spring pound and fyke net fisheries. These nets are found in tributaries and the upper Chesapeake Bay.¹ Bycatch is limited to two dead American shad per day for personal use, assuming they were captured by gear legally deployed for the capture of other species. In the Potomac River, commercial fishermen can harvest two bushels per day per licensee from pound nets and gill nets, but American shad must make up less than two percent of the total catch by volume.

The Marine Recreational Information Program stopped collection of American shad and hickory shad recreational data in 2009. The MDNR conducts a voluntary angler logbook survey to monitor the catch and release fishery throughout Maryland. The MDNR also conducts creel surveys for American and hickory shad in the tailrace below the Conowingo Dam. According to the logbook and creel surveys, the catch rate of American shad has declined since 2001; however, most of this trend is driven by the decline of American shad in the Susquehanna River.² There is no trend over the time series in either survey for Hickory Shad. In addition to the Susquehanna River, an active catch and release recreational fishery for both shad species occurs in the Choptank, Patuxent, and Potomac, rivers.⁴ In 1998, catch and release mortality of 309 American shad at the Conowingo Dam tailrace was calculated to be 0.97%.¹⁰ Mortality from the current recreational fishery is believed to be negligible.¹⁰

Management Priorities and Concerns

The Conowingo Dam remains a significant blockage to American shad migrating up the Susquehanna River in Maryland, despite substantial investment in fish lifts. Although American shad are captured in both the east and west fish lifts, hickory shad have rarely been documented in either lift.² The Maryland Department of the Environment reached a settlement agreement with the owners of the Conowingo Dam, Exelon Generation Corp, LLC (now Constellation Energy Generation, LLC). The agreement defines improvements to fish passage and water quality that must be achieved over the course of the 50 year license. The agreement was approved by the Federal Energy Regulatory Commission (FERC) in early 2021. However, in 2022 a judge ruled that FERC violated the federal Clean Water Act in giving the permit, which invalidated the 50 year license. As a result, the Conowingo Dam is currently operating under year to year annual licenses until the water quality permit issues are resolved. No new improvements to fish passage will be made until a new 50 year license is granted, though Constellation continues to work on designs to improve fish passage in the interim.

Comparisons between using scales (scale age) versus otoliths (known age) to age a fish revealed a notable amount of bias and error.¹¹ Percent agreement among 13 biologists varied between 50% and 77%. Aging accuracy was greatest for shad ages 3 to 6 (34% to 49%) but decreased significantly for age 7 fish (12%) and age 8 fish (4%). Otolith sampling is not a feasible option because of the depressed stock status. The accuracy of using scales to determine repeat spawning remains problematic.¹¹

Currently, American shad mortality is assessed relative to total mortality benchmarks ($Z_{40\% \text{ SBPR}}$) identified in the most recent stock assessment. The contribution of various sources of mortality such as dam turbines, ocean bycatch, pollution, and predation to total mortality remains unknown.¹ Additional data are required to estimate anthropogenic, fishery, and natural mortalities to develop appropriate biological benchmarks.

Currently, Maryland does not monitor commercial bycatch and discard of American shad as specified in Amendment 3 to the interstate FMP. Although the Maryland commercial finfish reporting forms have a designation for discards/bycatch, fishermen are not required to report bycatch or discards.

Figures

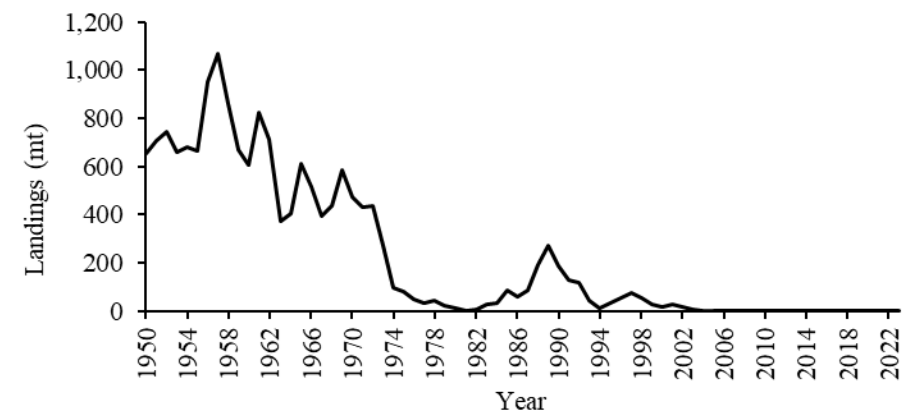


Figure 1. Time series of commercial landings of American shad, 1950 to 2024 in Maryland.¹²

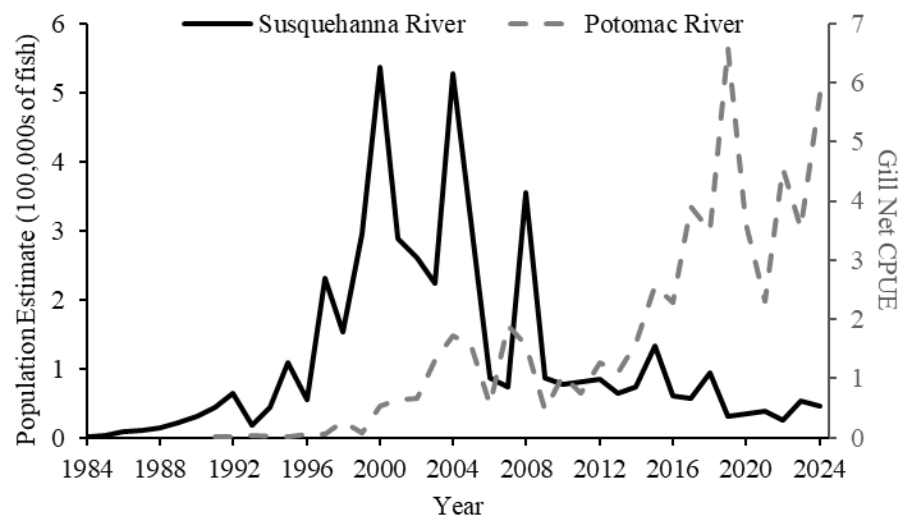


Figure 2. American shad population estimate for the Conowingo Dam tailrace estimated using the Petersen method (1984 to 2024), and an American shad standardized index (catch per 914 m² of drift gill net per hour) in the Potomac River from the Striped Bass Spawning Stock Survey (1991 to 2024).

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CB Alosine FMP	Chesapeake Bay Alosid [sic] Management Plan
EJFS	MDNR Estuarine Juvenile Finfish Seine Survey
FERC	Federal Energy Regulatory Commission
MDNR	Maryland Department of Natural Resources
PRFC	Potomac River Fisheries Commission
PRT	Plan Review Team
SBSSS	MDNR Striped Bass Spawning Stock Survey
Z	Total Instantaneous Mortality

b) River Herring. Alewife Herring (*Alosa pseudoharengus*) and Blueback Herring (*Alosa aestivalis*)

River herring, collectively alewife and blueback herring, were historically one of the most important fishes in North America, but stocks drastically declined coastwide throughout the twentieth century due to habitat loss, ocean bycatch, overfishing, pollution, stream blockages, and exposure to invasive predators.¹ River herring are anadromous and spend the majority of their lives in the Atlantic Ocean before returning to natal freshwater systems in the spring to spawn. River herring are important forage fish for many predatory fishes, such as striped bass (*Morone saxatilis*). Harvest of river herring is prohibited throughout Maryland. The catch and release of river herring is allowed but no recreational fishery exists.

Fishery Management Plans

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Interstate Fishery Management Plan (FMP) for American Shad and River Herring in 1985. In 1989, the Chesapeake Bay States implemented the Chesapeake Bay Alosid [*sic*] Management Plan (CB Alosine FMP) to coordinate shad and river herring management. The CB Alosine FMP identified declining abundance, overfishing, insufficient research and monitoring, and habitat loss as problems. The plan set guidelines to reduce river herring fishing mortality and remove impediments to access historic habitat.

Amendment 2 (2009) to the interstate FMP was enacted to address coastwide declines in alewife and blueback herring stocks and to address the lack of fishery-dependent and fishery-independent monitoring for these species. It required states to have an ASMFC approved river herring sustainability plan by 2012 or close their river herring fisheries. Sustainability plans require development of a river herring juvenile index, a monitoring plan for spawning adults, and collection of commercial and recreational fisheries statistics including bycatch data. Maryland closed its river herring fisheries due to the decline and persistently low levels of river herring.

The National Marine Fisheries Service and ASMFC published a coastwide conservation plan for river herring (2015) that utilizes input from experts (River Herring Technical Expert Working Group) throughout the species range and is intended to be a dynamic web-based plan that can be easily updated. The plan has the following goals: (1) identify key research needs for assessment and conservation; (2) increase coordination of river herring research and conservation; (3) identify funding sources for river herring research and conservation; (4) identify conservation actions to address threats; (5) cultivate research groups to address key topics; (6) improve information to be used in the next assessment; (7) improve information used in conservation efforts; (8) further conservation efforts to address threats; and (9) promote outreach in regards to river herring.

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the shad and river herring compliance reports for calendar years

2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the shad and river herring FMPs, respectively, are available at: asmfc.org/wp-content/uploads/2025/01/ShadRiverHerringFMP_ReviewFY2022.pdf asmfc.org/wp-content/uploads/2025/04/ShadRiverHerringFMP_ReviewFY2023.pdf.

Stock Status

River herring harvest in Maryland declined in the late 1950s and reached historic low levels in the mid-1970s, where it has remained since (Figure 1). The 2024 river herring benchmark stock assessment found coastwide populations to be depleted relative to historic levels.¹ River herring were determined to be depleted, rather than overfished, as many factors in addition to fishing, such as climate change, habitat loss, and predation have contributed to their decline. There was no clear trend within the majority of genetic stock-regions. While the majority of abundance indices indicated that their respective river herring populations were likely greater now than in 2009, the majority of river herring populations also had a high probability of being above the total mortality (*Z*) reference point, indicating total mortality on adult fish was too high.¹

Four Maryland river systems were examined in the 2024 assessment: the Choptank, Nanticoke, North East, and the Potomac rivers.¹ There were significant negative trends detected in adult and juvenile abundance for both species in the Nanticoke River. The only significant positive trend from the assessment was for juvenile blueback herring in the Choptank River. All juvenile indices, other than the Nanticoke alewife index, had greater than 50% chances of the current index value being above the 2009 index value. All total mortality estimates, other than the Nanticoke alewife estimate, had greater than 50% chances of the current index value being below the 2009 index value.

The primary survey that MDNR uses to monitor the river herring spawning stock is the MDNR North East River gill net survey (NEGN; 2013 to present). There are no trends in adult abundance for either species, though this is not surprising since the time series is still relatively short. Since 2022, the *Z* estimates have been above the *Z*-based reference point for the Mid-Atlantic stock in all three years for alewife, but only in 2024 for blueback herring. Of the 20 total annual *Z* estimates from the survey (2013 to present), 15 have been above their respective reference points, indicating that adult mortality for the stock is high.²

The MDNR previously monitored the river herring spawning stock in the Nanticoke River by sampling commercial fyke and pound nets (1989 to 2021). This survey ended after 2021 due to logistical issues. The survey showed a clear decline in the abundance of both species in the 1990s and early 2000s, though both populations were stable at low levels for the final decade of the survey.² A new river herring

spawning stock survey is currently being developed to replace the former Nanticoke River survey.

The Patapsco River has recently become the focus of restoration efforts for both alewife and blueback herring. Recent dam removals have increased available habitat to migratory fish. Most notably, the removal of the Bloede Dam was completed in 2019. Access to 60 miles of aquatic habitat was restored with its removal.

Current Management Measures

Maryland, Virginia, and the Potomac River Fisheries Commission instituted a recreational and commercial river herring moratorium on January 1, 2012. All river herring and river herring products imported into Maryland must include a bill of sale from a state with an approved river herring fishery: Maine, New Hampshire, Massachusetts, New York, and South Carolina.

The National Marine Fisheries Service enacted Amendment 5 to the the New England Fishery Management Council's (NEFMC) FMP for Atlantic herring in 2014.³ Amendment 5's objectives to improve monitoring and minimize bycatch of river herring catch are anticipated to reduce at-sea mortality of shad and river herring.³ The 2019 to 2021 shad and river herring catch cap for the Atlantic herring fishery was set at 361 metric tons (mt) coastwide.⁴ This quota was divided among four fishery regions/gears including the Gulf of Maine mid-water trawl (76.7 mt), Cape Cod mid-water trawl (32.4 mt), southern New England mid-water trawl (129.6 mt), and the southern New England bottom trawl (122.3 mt).⁵ From 2022 to 2024, the catch cap remained at 361 mt and the only shad and river herring catch cap to be exceeded was the Cape Cod mid-water trawl cap, which was exceeded in 2024.⁶

The Mid-Atlantic Fishery Management Council (MAFMC) adopted Amendment 14 (2014) to the Atlantic Mackerel, Squid, and Butterfish FMP to improve monitoring of these fisheries and to limit shad mortality in the Atlantic mackerel fishery. The annual incidental shad and river herring catch cap has been 129 mt for the Atlantic mackerel fishery since 2020.⁵ The catch cap has not been exceeded since 2019.⁶

Maryland Fisheries

All commercial and recreational river herring fisheries in Maryland have been under a moratorium since 2012. The river herring commercial fishery gradually declined throughout most of the 20th century before completely collapsing in the mid-1970s (Figure 1). Recreational catch and release angling is allowed but data is limited. The recreational fishery is believed to be minimal.² Alewife and blueback herring recreational fishery data have not been available from the Marine Recreational Information Program since 2009.

Management Priorities and Concerns

In 2013, a river herring ageing workshop took place to compare age estimates and

methodologies among Atlantic coast states.⁸ River herring age is determined from scales using the same methodology as for American shad (previously discussed), although some states also use otoliths for age determination. River herring of known age were not available to determine the accuracy of age estimates; obtaining accurate ageing is an imperative data gap. The workshop determined that age estimates of a fish tended to differ between labs, presumably due to different sample preparation and ageing methodologies. Otoliths were often aged younger than scales for young fish and aged older than scales for older fish. The extent of bias was affected by reader experience, species (alewife versus blueback), river system, and environmental conditions. Standardization of ageing methods and validation of scale ages are needed. At the Data Collection Standardization Workshop held in November 2015, it was recommended that paired otolith and scale samples should be collected from all fish sacrificed for biological sampling.⁹ The MDNR have collected otoliths and scales from river herring since 2016 and plan to make otoliths the primary ageing structure beginning in 2025.

Misidentification of river herring species is relatively common. Alewife and blueback are easily confused and can be confused with young hickory shad and American shad. At the Data Collection Standardization Workshop (November 2015) it was recommended that field identification should be validated, when possible, with a more rigorous laboratory-based method.⁹

River herring mortality sources include bycatch, discard, harvest, pollution, and predation. In Maryland, mortality from hydroelectric turbines is considered insignificant because they are rarely encountered in the Conowingo Dam's fish lifts; less than 1,000 river herring per year have been passed upstream at the Conowingo Dam since 2002.² Ocean trawl bycatch of juvenile river herring in the Atlantic mackerel and Atlantic herring fisheries is of particular concern.¹ Genetic studies indicate 78% of blueback herring bycatch from the New England Atlantic herring fishery is of Mid-Atlantic origin.¹⁰ The NEFMC and MAFMC will continue to address river herring as bycatch and incentivize avoidance by fishermen. Additional at-sea observer data would improve development of management benchmarks.

Adult access to suitable spawning habitat has historically been impeded by blockages of various types and sizes. Dams are a common type of barrier. Although building fishways has been an option for moving fish upstream, these structures are not 100% effective at passing fish. Removal of blockages is the preferred method for reopening spawning habitat. Maryland's Fish Passage Program is responsible for working on projects to reopen spawning habitat for anadromous fish. Most notably, recent dam removals on the Patapsco River have reopened substantial amounts of riverine habitat to alewife fish. The Union and Simkins dams were removed in 2010, and the removal of the Bloede Dam was completed in 2019. The Fish Passage Program has updated its online Fish Passage Prioritization Tool and will continue working with partners to develop an incentive program for private dam owners to remove their dams.

Figures

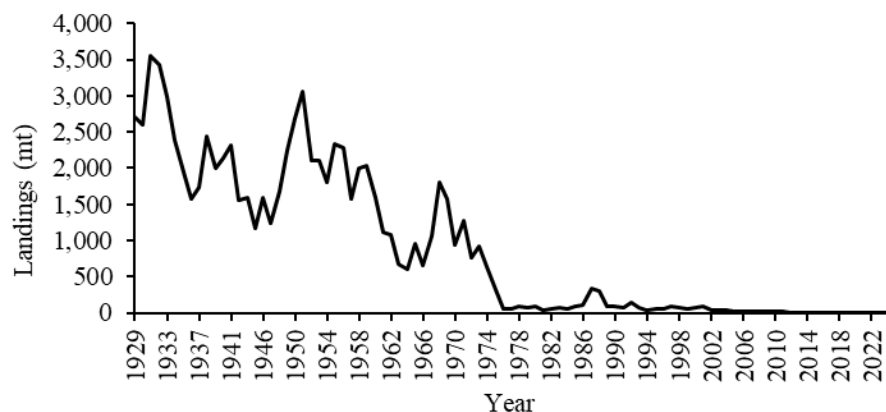


Figure 1. Time series of commercial landings of river herring (alewife and blueback herring, 1929-2024) in Maryland.

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Acronyms

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Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CB Alosine FMP	Chesapeake Bay Alosid [sic] Management Plan
MAFMC	Mid-Atlantic Fishery Management Council
MDNR	Maryland Department of Natural Resources
NEFMC	New England Fishery Management Council
Z	Total Instantaneous Mortality

Section 19. Spanish Mackerel (*Scomberomorus maculatus*) and King Mackerel (*Scomberomorus cavalla*)

Spanish mackerel and king mackerel migrate between Florida and New York, and are found in Maryland waters in the warmer months. Spanish mackerel generally arrive in the Chesapeake Bay in late spring, providing an opportunity for commercial and recreational fishermen. King mackerel are less common seasonal visitors to Maryland's coastal waters. King mackerel and Spanish mackerel are managed under the same fishery management plan (FMP) within the Chesapeake Bay. Looking at records from 1986 to 2024, Spanish mackerel had the greatest recorded recreational harvest in 2021 in Maryland. Spanish mackerel and king mackerel are currently not overfished or experiencing overfishing based on the South Atlantic coastal stock assessments.^{1,2}

Fishery Management Plans

The Chesapeake Bay and Atlantic Coast King and Spanish Mackerel Fishery Management Plan was adopted in 1994. The plan follows the interstate and federal management requirements. Spanish mackerel are managed jointly under the Interstate Fishery Management Plan for Spanish Mackerel adopted in 1990 by the Atlantic States Marine Fisheries Commission (ASMFC), and under the federal Coastal Migratory Pelagics (CMP) FMP adopted in 1983 by the South Atlantic Fishery Management Council (SAFMC), which also includes management of king mackerel. Since 1985, SAFMC has adopted amendments that make changes to the allocation of commercial quotas, changes to at-sea transfer rules, and changes that increase the total allowable catch of Spanish mackerel. In April of 2023 the Scientific and Statistical Committee, SSC[HR1], determined that the Southeast Data, Assessment, and Review stock assessment (SEDAR 78)³ was sufficient for providing stock status. Amendment 13 will update catch levels based on recommendations from the SEDAR 78 stock assessment. The amendment was approved for scoping in September 2023.

Atlantic coastal jurisdictions comply with the provisions of the interstate FMP (1990),⁷ the Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout (2011), and Addendum I to the Omnibus Amendment (2013) by implementing creel limits, size limits, and seasonal closures that closely mirror the SAFMC's CMP FMP requirements.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the Spanish mackerel compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 fishing year review of the Spanish mackerel FMP is available at: asmfc.org/wp-content/uploads/2025/01/SpanishMackerelFMP_Review_FY2022.pdf

Stock Status

There is no formal stock assessment for either mackerel species in the Chesapeake Bay. A SEDAR 78 stock assessment was completed in 2022, and concluded that the Spanish mackerel Atlantic stock is not overfished, and overfishing is not occurring.³ The coastal stock was overfished in the 1980s and early 1990s, which led to harvest control regulations. Management measures have been successful at rebuilding the Spanish mackerel stock.³ A SEDAR 38 stock assessment for the Atlantic king mackerel migratory group was completed in 2014, and it concluded that the stock is not overfished, and overfishing is not occurring.²

Current Management Measures

The coastal annual catch limit (ACL) for Spanish mackerel was set at 6.063 million pounds under CMP Framework Amendment 1 to the federal FMP (2014). Framework Amendment 13 is currently revising the ACLs and annual catch targets based on the finding from the SEDAR 78 stock assessment. Amendment 34 was approved in 2023, modifying recreational regulations to allow the possession of damaged fish as long as they still comply with size and bag limits. Fifty-five percent of the ACL is allocated to the coastal commercial fishery, and 45% is allocated to the coastal recreational fishery. The commercial portion of the ACL was further divided with 19.9% going to the northern fishing area and 80.1% to the southern fishing area (Amendment 20b, 2014). The north-south split occurs at the South Carolina-North Carolina border. King mackerel are also managed under an ACL, with an annual commercial quota. Although the Atlantic king mackerel management area extends to the Mid-Atlantic region, SAFMC is responsible for providing management oversight on catch and bag limits for the recreational fishery, and catch, gear, and seasonal limits for the commercial fishery. More information can be found at safmc.net/amendments/cmp-framework-amendment-13/.

Following public hearings, ASMFC approved the Omnibus Amendment in August of 2011. The amendment includes: (1) an update to the interstate FMP; (2) commercial and recreational management measures and recommendations; (3) adaptive management options; (4) *de minimis* thresholds and exemptions; (5) monitoring recommendations; and (6) requires each jurisdiction to submit an implementation plan and annual compliance report.⁴ Maryland changed its regulations in 2012 to comply with the omnibus amendment.

On June 21, 2022, through March 1, 2023, a catch limit was established that restricted commercial landings to 500 pounds of Spanish mackerel per vessel per day or trip to prevent exceeding the quota. On September 25, 2023, through February 29, 2024, and on July 28, 2024, through March 1, 2025, the same commercial closures were implemented in the northern zone of federal waters. Public notices were

provided for all commercial Spanish mackerel fisheries closures and bag catch limit modifications.

All states from New York to Florida implemented the requirements of the 2011 Omnibus Amendment. The Chesapeake Bay jurisdictions manage Spanish mackerel through size and creel limits, as well as closures consistent with federal management measures. Maryland requires a 14-inch minimum total length limit, with a creel limit of 15 Spanish mackerel for recreational fishermen and a 3,500 pounds per trip limit for commercial fishermen. Maryland has not developed regulations for king mackerel because they are rarely encountered in Maryland state waters, though commercial harvest reporting is required.

The Maryland Fishery

The estimated recreational harvest of Spanish mackerel has been variable in Maryland, with an increase in landings for the last six years (Figure 1). Annual recreational harvest estimates for Spanish mackerel have been highly variable, ranging from 0 to 245,947 pounds.⁵ Catch estimates in the recreational fishery are imprecise, with proportional standard errors in excess of 50 for most years. The commercial landings of Spanish mackerel for 2022 were 6,658 pounds, and declined in 2023 to 1,917 pounds. The commercial landings in 2024 of 3236 pounds increased from 2023 (Figure 2). Over the past ten years, annual commercial landings for Spanish mackerel have ranged from 817 to 16,209 pounds in Maryland.⁶

Management Priorities and Concerns

The 2014 review of the interstate FMP recommended additional research and monitoring. High priority recommendations included collecting basic fisheries data for better stock assessment accuracy; developing methods for fishery-independent monitoring; determining better estimates of recruitment, natural and fishing mortality rates, and stock size, and implementing ecosystem-based management.

Figures

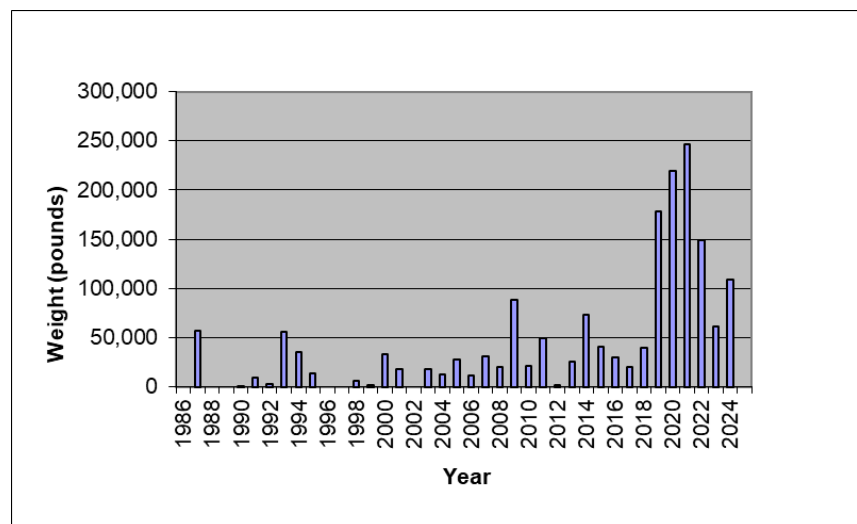


Figure 1. Estimated recreational harvest of Spanish mackerel from Maryland, 1986 to 2024.

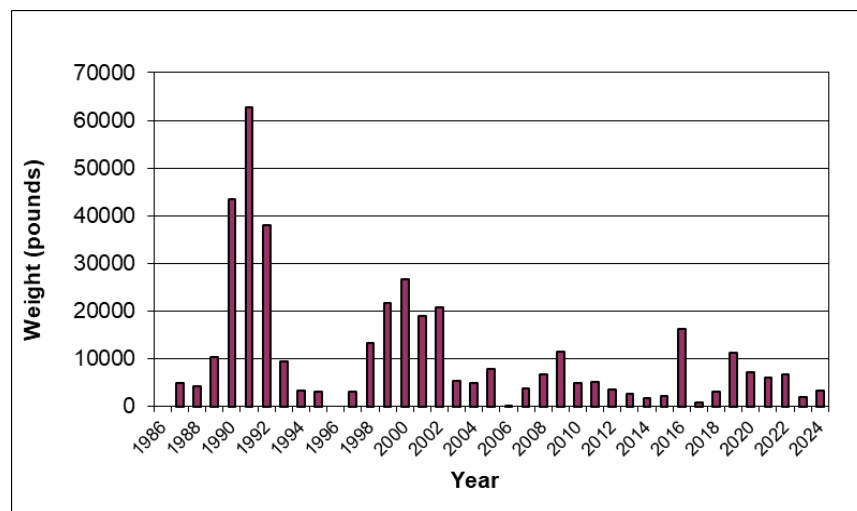


Figure 2. Commercial harvest of Spanish mackerel from Maryland, 1986 to 2024.

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5. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, Marine Recreational Information Program. June 6, 2025.
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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ACL	Annual Catch Limit
ASMFC	Atlantic States Marine Fisheries Commission
CMP	Coastal Migratory Pelagics
FMP	Fishery Management Plan
SAFMC	South Atlantic Fisheries Management Council
SEDAR	Southeast Data, Assessment, and Review

Section 20. Spot (*Leiostomus xanthurus*)

Spot is a small member of the drum family, with a maximum length of 10 to 12 inches. They are most common from New Jersey through Florida, with their distribution moving north in the spring and south in the winter. They spend the warmer months in Atlantic coast estuaries, then in the fall and winter months they migrate out into the open ocean and spawn on the outer continental shelf. In the winter months, the young of year spot enter estuaries, including the Chesapeake Bay, where food and cover from predators are more abundant. This species is a popular sport and food fish that supports commercial and recreational fisheries in Maryland.

Fishery Management Plans

Spot are managed by the Maryland Department of Natural Resources (MDNR) and the Atlantic States Marine Fisheries Commission (ASMFC). The ASMFC adopted an Interstate Fishery Management Plan (FMP) for Spot in 1987. The main purpose of the FMP was to decrease the number of small fish caught as bycatch in the coastal shrimp trawl fishery. The Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout was adopted in 2011 to allow these species to be managed under the authority of the Atlantic Coastal Fisheries Cooperative Management Act.¹ Addendum II (2014) established a precautionary management framework using the Traffic Light Approach (TLA),² and Addendum III (2020) modified the TLA and stated what management action would be required if the TLA were to trip.³

The Chesapeake Bay Atlantic Croaker and Spot Fishery Management Plan (CBCS FMP) was adopted in 1991. The FMP's goal is to: "Protect the Atlantic croaker and spot resource in the Chesapeake Bay, its tributaries, and coastal waters, while providing the greatest long term ecological, economic, and social benefits from their usage over time." To accomplish this goal, management strategies were developed to prohibit the harvest of small fish (age 1 and younger) of both species and to recommend monitoring and research programs for stock assessments and habitat needs.

The MDNR is required to submit annual compliance reports to ASMFC. Included in this FMP report are the spot compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the spot FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/SpotFMP_Review_FY2022.pdf.

asmfc.org/wp-content/uploads/2025/01/SpottedSeatroutFMP_Review_FY2023.pdf

Stock Status

The overfishing status and overfished status remain unknown. The first benchmark stock assessment was completed in 2016, peer reviewed in March 2017, and presented to the ASMFC South Atlantic Board in May 2017.⁴ The assessment was not endorsed for management use by the independent peer review, but the review panel agreed with the Stock Assessment Subcommittee that immediate management action was not required. The review panel recommended the continued use of the TLA until an improved assessment can be completed. The TLA, as modified by Addendum III, incorporates multiple data sources into a single metric and includes two metrics, an abundance metric based on scientific surveys and a harvest metric based on commercial and recreational landings. If the threshold of 30% is triggered for two of the three most recent years, then state-specific management actions will be triggered.³ Indices in the revised TLA are grouped by region (Mid-Atlantic and South-Atlantic, differentiated by a Virginia/North Carolina boundary). The spot TLA, as modified by Addendum III, was updated and presented to the South Atlantic Board in 2020 (data through 2019). The review team found that the harvest composite index (recreational and commercial harvest) in the Mid-Atlantic region was above the threshold in 2018 and 2019. The abundance composite index for the Mid-Atlantic region was above the 30% threshold in 2018 and 2019. Since both the harvest and adult abundance characteristics were above the 30% threshold in two of the past three years, management action was tripped on a coastwide level. A benchmark stock assessment is expected to begin following completion of the Atlantic croaker stock assessment, likely in late 2025 or early 2026.

The ASMFC Spot Technical Committee (TC) updated the TLA in 2024, with data through 2023.⁵ Harvest metrics remained above the 30% red threshold, but abundance metrics were below the 30% threshold in both regions. Since management measures were triggered in 2020 that could artificially reduce the harvest metrics and since the abundance metrics were not above 30% red for two of the previous three years, management measures were technically not triggered in 2024. The TC recommended and the Sciaenids Management Board approved maintaining the current regulations. This recommendation was based on (1) continued poor harvest values, (2) the abundance metric in the Mid-Atlantic measuring above 30% red in 2023, which means that another above 30% red value in the next two years would retrigger management, and (3) the upcoming benchmark assessment expected in 2026.

Current Management Measures

As mentioned in the Stock Status section, the TLA triggered management action for spot in 2020 for the Mid-Atlantic region, which includes the Chesapeake Bay. All states along the East Coast that did not have *de minimis* status and did not have a season or size limit in place were required to implement a 50 fish bag limit and a 1% reduction to the previous 10 year average harvest. All of the Chesapeake Bay jurisdictions needed to enact both the recreational and commercial limits. All three jurisdictions instituted a 50 fish recreational bag limit. Maryland instituted a

commercial season from April 10 through November 24, Virginia instituted an April 15 to December 8 season, and PRFC instituted a January 1 to October 28 season.⁶

The Maryland Fishery

Commercial landings were higher in the 1950s, decreased in the 1960s and 1970s, rebounded in the 1990s, and have fluctuated since (Figure 1). Landings from 2015 through 2024 were at a low to moderate level. Age and length samples from commercial pound nets indicate that fewer larger, older spot have been available during this time period, leading to lower landings values by weight. Estimated recreational harvest has been somewhat more variable than commercial harvest, with less sustained peaks and values (Figure 2).⁷ Recreational harvest values in 2022 through 2024 were moderate to low when compared to the rest of the time series. Recreational release estimates were relatively high from 2019 to 2024 (Figure 3), likely due to higher numbers of age-0 fish in late summer and fall and age-1 fish in the spring.

Two juvenile indices (JI) are calculated to evaluate recruitment of spot in Maryland's portion of the Chesapeake Bay. One is calculated from MDNR's Blue Crab Trawl Survey (BCS, Figure 4), and the other from MDNR's Estuarine Juvenile Finfish Survey (EJFS, Figure 5). These JIs are highly variable, yet the overall trends from both surveys align. Both JI values were near their respective time series means in 2012, but declined steadily to a level near the time series lows in 2015. The 2016 through 2018 values from both JIs were higher than the 2015 values, but remained well below their means. The 2020 through 2023 values from both JIs exceeded their time series means. The 2024 JI survey values were the time series high for the BCS and the highest value since 1988 for the EJFS. The increased juvenile production has led to higher availability of age-0 and age-1 fish, as evidenced by increased release estimates, but has not led to an increase in availability of age-2 or older fish in recent years.

Management Priorities and Concerns

Bycatch mortality of spot is a continued concern throughout its range. Spot are caught as bycatch in several commercial fisheries throughout the Chesapeake Bay, and smaller individuals are discarded in offshore fisheries. Small spot, for example, could account for as much as 80% of the shrimp trawl catch by weight, and 60% by number, depending on area.⁴ States are encouraged to use bycatch reduction devices. As shrimp move farther north, fishermen in Chesapeake Bay jurisdictions are starting to inquire about shrimp trawling in coastal waters, and a limited Atlantic Ocean fishery has begun in Maryland. The use of traditional shrimping gear in the estuaries would increase bycatch mortality of juveniles in a primary nursery area.

Spot are used as live bait in both the commercial and recreational hook and line striped bass fisheries in the Chesapeake Bay. The implemented creel limits for spot could have some impact on these striped bass fisheries. The consequences of using

small spot as bait are unknown. Spot used for the live bait fishery are harvested in fish pots or by hook and line.

Figures

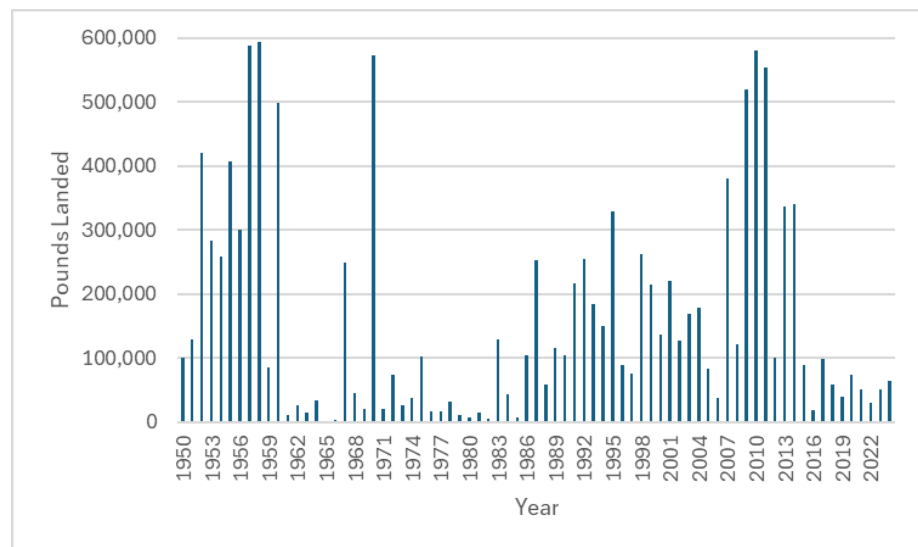


Figure 1. Maryland commercial landings of spot in pounds, 1950 to 2024.

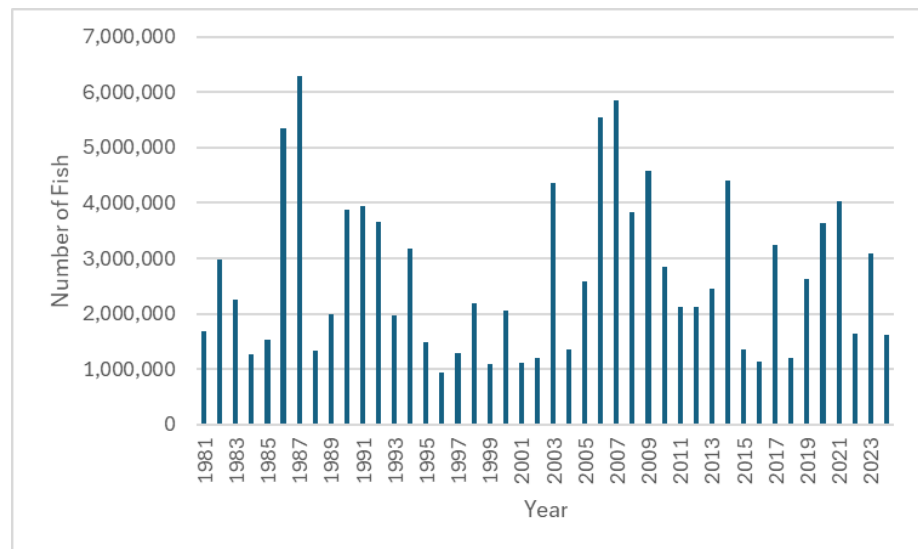


Figure 2. Estimated spot recreational harvest for Maryland waters, 1981 to 2024.

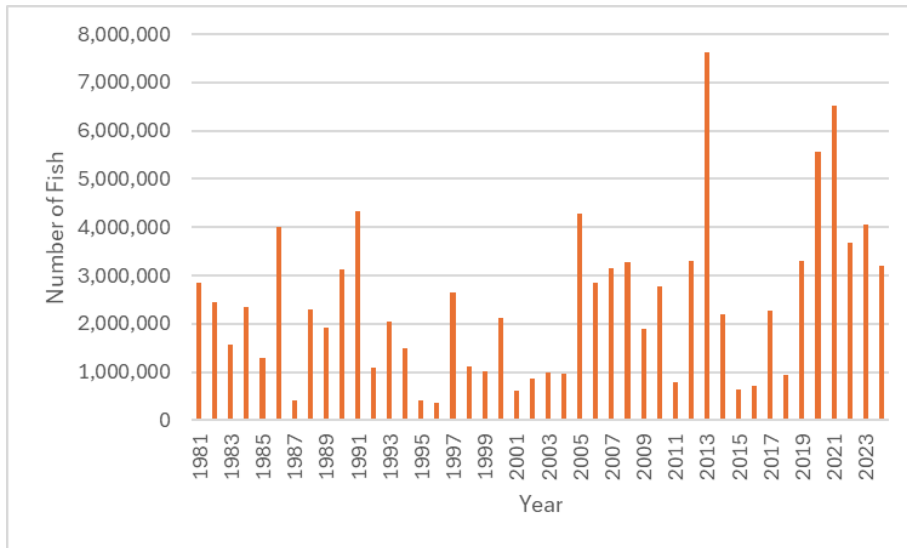


Figure 3. Estimated spot recreational releases for Maryland waters, 1981 to 2024.

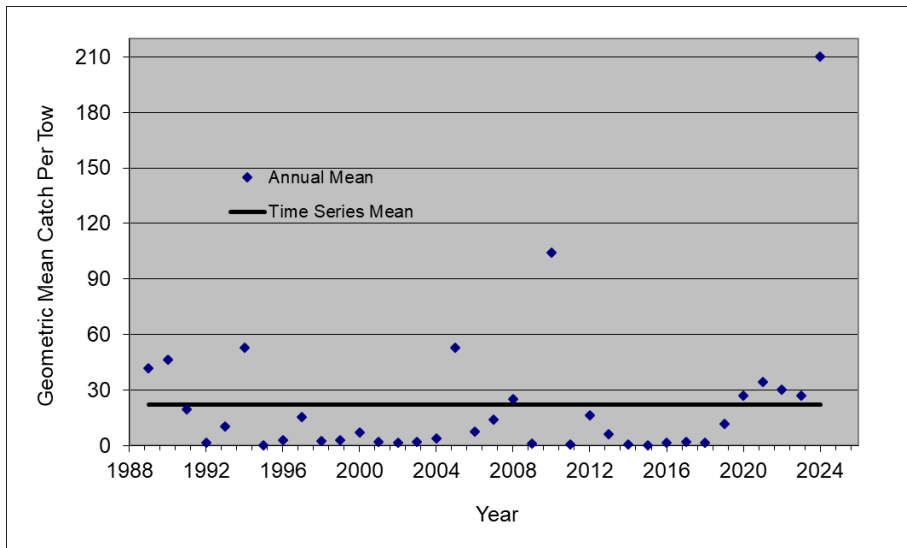


Figure 4. Spot juvenile geometric mean catch per tow and time series mean catch per tow from the Blue Crab Trawl Survey, 1989 to 2024.

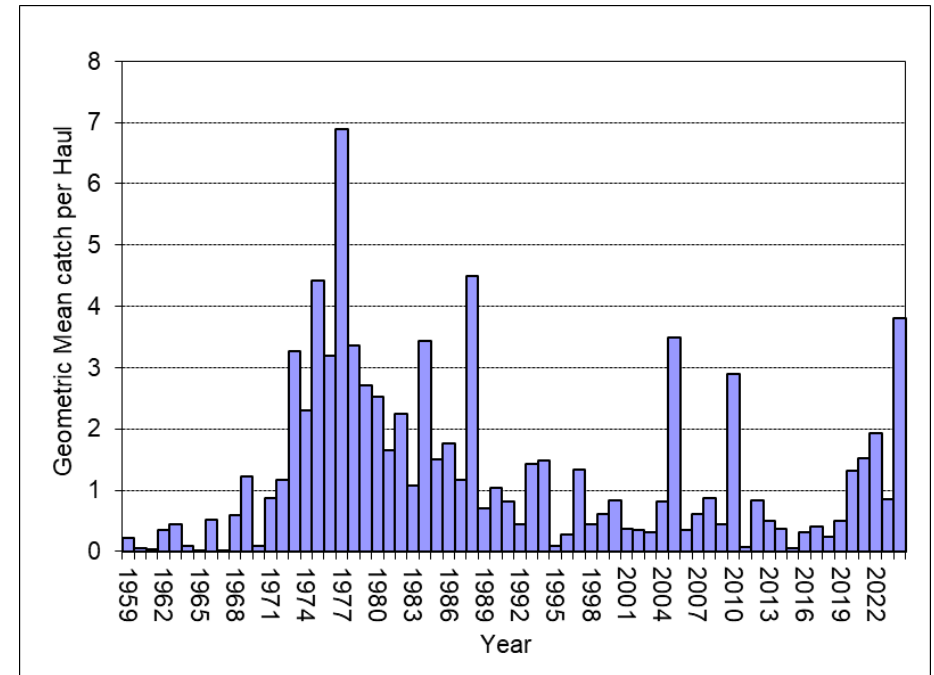


Figure 5. Spot juvenile geometric mean catch per tow and time series mean catch per tow from the Estuarine Juvenile Finfish Survey, 1959 to 2024.

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7. Personal communication from the National Marine Fisheries Service, Marine Recreational Information Program, Fisheries Statistics Division. June 16, 2025.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBCS FMP	Chesapeake Bay Atlantic Croaker and Spot Fishery Management Plan
BCS	Blue Crab Trawl Survey
EJFS	Maryland Estuarine Juvenile Finfish Survey
FMP	Fisheries Management Plan
MDNR	Maryland Department of Natural Resources
TC	Spot Technical Committee
TLA	Traffic Light Approach

Section 21. Spotted Seatrout (*Cynoscion nebulosus*)

Spotted seatrout is a medium sized member of the drum family and can reach up to three feet in length and 15 years of age. Most individuals grow to be under 25 inches and rarely age over five years. The species' core range is from the Chesapeake Bay through Florida. Spotted seatrout prefer water temperatures between 60°F and 80°F, and mortality events can begin to occur when temperatures fall below 45°F. In southern states they are non-migratory, but in the Chesapeake Bay region they do move south in the winter to avoid low water temperatures and return north in the spring. Spotted seatrout is generally a bycatch of commercial fisheries in Maryland, but are targeted by recreational anglers in the lower region of Maryland's portion of the Chesapeake Bay.

Fishery Management Plans

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. The plan was revised in 2003 and addresses only weakfish and not spotted seatrout.

The Atlantic States Marine Fisheries Commission (ASMFC) adopted the Interstate Fishery Management Plan (FMP) for Spotted Seatrout in 1984 for states from Maryland to Florida. An Omnibus Amendment to the Interstate Fishery Management Plans for Spanish Mackerel, Spot, and Spotted Seatrout (2011) was developed to bring spot, spotted seatrout, and Spanish mackerel under the authority of the Atlantic Coastal Fisheries Cooperative Management Act (1993) and the ASMFC charter (1995), and it was approved in 2012.¹ The Omnibus Amendment includes recommended measures to protect the spotted seatrout spawning stock by restricting catch to mature fish and requires a coastal minimum length limit.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the spotted seatrout compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the spotted seatrout FMP, respectively, are available at: asmfc.org/wp-content/uploads/2025/01/SpottedSeatrout_FMP_Review_FY2022.pdf and asmfc.org/wp-content/uploads/2025/01/SpottedSeatroutFMP_Review_FY2023.pdf.

Stock Status

The ASMFC has not recommended a coastwide stock assessment because spotted seatrout are largely considered to be a non-migratory species in their southern range, and there is very little data available on migration where it does occur. State

assessments have been completed on local stocks (Virginia, North Carolina, South Carolina, Georgia, Florida) with state-by-state variability and no regional trend. A peer-reviewed stock assessment was completed for Virginia in 2014. Based on the results, it appeared that the stock was not overfished and overfishing was not occurring. However, the lack of a stock assessment makes it difficult to implement an effective management framework.

Current Management Measures

The interstate FMP requires a minimum size limit of 12 inches (total length). Net mesh sizes corresponding to this size limit for directed fisheries, data collection, and state stock assessments were also recommended. In 2014, Maryland increased the recreational size limit to 14 inches and decreased the recreational creel limit to four fish per day as requested by recreational anglers. Maryland also updated the commercial spotted seatrout regulation in 2014 with a size limit of 14 inches, a minimum stretched mesh sizes of 3-3/8 inches for trawls and 3 inches for gill nets (the same mesh size restrictions apply to weakfish), and a 150 pound per trip harvest limit for all gear.

The Maryland Fishery

The Marine Recreational Information Program (MRIP) estimated that Maryland's annual recreational harvest has ranged from 0 to 36,314 fish per year over the past 10 years, with an average of 15,411 fish per year.² The 2024 harvest estimate of 11,958 fish was below the 10 year mean and the 1981 to 2024 time series mean of 24,894 fish per year (Figure 1). Creel and size limit restrictions were more liberal in years prior to 2014, so a decline in harvest is not unexpected. Most estimates have a high proportional standard error (PSE) value, which indicates that the estimates are highly uncertain in those years.

Release estimates provided by MRIP in the past 10 years have ranged from 334,805 (2019) to 49,493 (2023) fish per year, but have been highly variable with no trend and high PSE values. The 10 year mean of 149,016 fish per year is higher than the time series mean of 75,766 fish per year, likely indicating increased availability in recent years. Increases in releases were also expected due to the higher size limit and lower bag limit enacted in 2014. The 2024 release estimate of 149,758 fish was similar to the 10 year mean and nearly twice the long term mean.

Maryland's yearly commercial landings since 1982 have mostly been under 2,500 pounds per year, except for a peak from 1996 to 2002 where the average was 18,312 pounds per year (Figure 2). The average landings across the full dataset (1981 to 2024) were 3,321 pounds per year. Over the past 10 years, the average landings were 497 pounds per year. Currently, spotted seatrout commercial landings are bycatch of fisheries targeting other species. It is unclear how much of the decrease in landings was due to decreased effort in these fisheries or the regulation changes put in place in 2014. However, the maximum reported landings from a single trip for 2022, 2023, and 2024 were 17, 135, and 83 pounds, respectively. These reports indicate that the

trip limit of 150 pounds did not limit commercial harvest in recent years, and they support the idea that any regulatory reduction in harvest would be from the 2-inch increase in the minimum size limit.

Management Priorities and Concerns

Spotted seatrout larvae and juveniles prefer seagrass habitats but will also utilize shallow marsh habitats. These areas need protection as important fish habitats. Juvenile spotted seatrout are prey for larger fish, including striped bass. Spotted seatrout are vulnerable to winter mortality when temperatures are unusually cold. A study in North Carolina confirmed that natural mortality in winter was often the highest source of mortality throughout the year, and varied with winter severity.⁵ Warmer estuary waters should increase the duration of the year spotted seatrout will be available to Maryland fisheries, but it is unlikely many will be able to overwinter in Maryland waters.

Figures

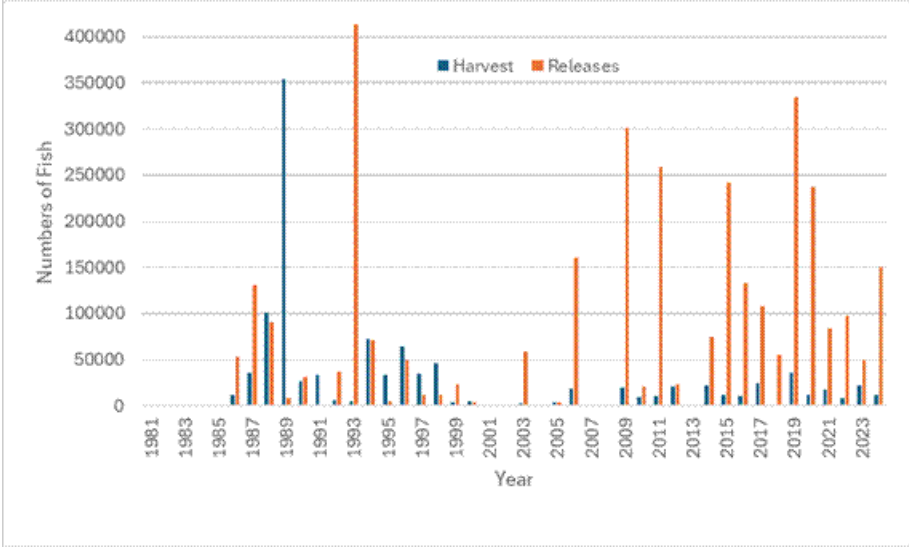


Figure 1. Maryland spotted seatrout recreational harvest and release estimates in numbers of fish.

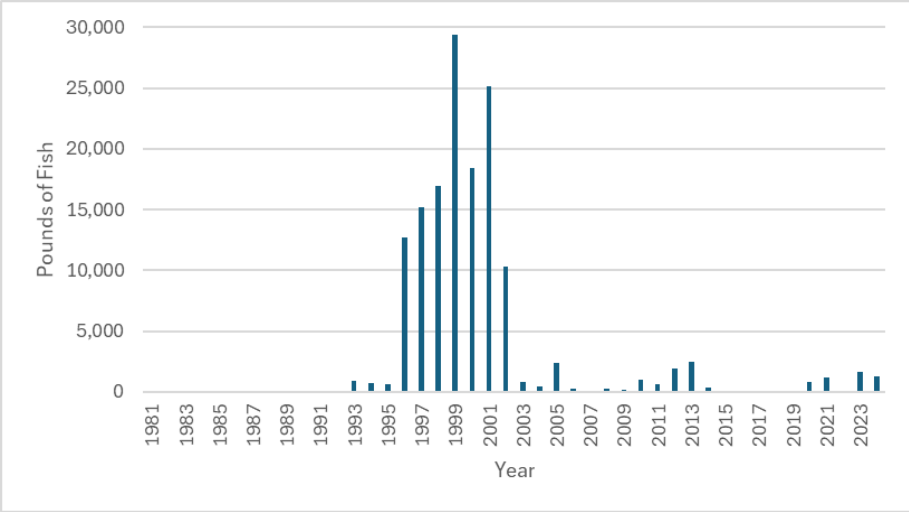


Figure 2. Maryland spotted seatrout commercial landings in pounds, from Maryland’s mandatory reporting system.

References

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3. Ellis, T. A., J. E. Hightower, and J. A. Buckel. 2018. Relative importance of fishing and natural mortality for spotted seatrout (*Cynoscion nebulosus*) estimated from a tag-return model and corroborated with survey data. Fisheries Research 199:81-93.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBW/SS FMP	Chesapeake Bay Weakfish and Spotted Seatrout Fishery Management Plan
FMP	Fishery Management Plan
MRIP	Marine Recreational Information Program
PSE	Proportional Standard Error

Section 22. Striped Bass (*Morone saxatilis*)

Striped bass, locally known as rockfish, is the state fish of Maryland and provides valuable recreational and commercial fisheries on the East Coast of the United States. It plays an important role in the economy and culture of many communities. The species ranges from Canada to Florida, although the Atlantic coastal stock managed here ranges from Maine to North Carolina. The Chesapeake Bay spawning areas produce the majority of the coastal stock, with additional contributions from the spawning grounds of the Hudson and Delaware rivers. Striped bass are anadromous, spending the majority of their adult life in coastal estuaries or the ocean, migrating north and south seasonally, and ascending to the freshwater reaches of rivers to spawn in the spring. Striped bass are managed as a coastal stock by the Atlantic States Marine Fisheries Commission (ASMFC). A 2024 stock assessment update determined that the Atlantic striped bass stock is overfished, but not experiencing overfishing.¹ Conservation measures are ongoing to rebuild the spawning stock biomass by 2029.

Fishery Management Plans

In 1989, the Chesapeake Bay Program developed the Chesapeake Bay Striped Bass Fishery Management Plan (CBSB FMP) to coordinate management among the Chesapeake Bay jurisdictions, and to comply with ASMFC requirements. Amendment 1 to the CBSB FMP in 1998 formally adopted ASMFC's Amendment 5 management framework for the Chesapeake Bay. The CBSB plan and amendment have been regularly updated, and periodically reviewed. The most recent review, conducted in 2013/2014, concluded that the use of coastal management indices (Fishing mortality [F], Spawning Stock Biomass [SSB], and Juvenile Abundance Index [JAI]) are sufficient for decision-making in the Chesapeake Bay. The Maryland Plan Review Team recommended the development of a new amendment to incorporate the coastal management framework, and recommended utilizing ecosystem-based management specific to the Chesapeake Bay when feasible.

The ASMFC developed the Interstate Fisheries Management Plan for Striped Bass in 1981. Several amendments and addenda have since been adopted to adjust management measures. Amendment 5 (1995) required an annual juvenile abundance survey in Maryland and Virginia to monitor recruitment. Amendment 6 (2003) superseded all previous ASMFC management documents and included provisions to effectively manage mortality, spawning potential, and age diversity. Several addenda to Amendment 6 have been enacted to require additional data collection, improve commercial harvest monitoring practices, and reduce coastwide fishing mortality. In Maryland, harvest reductions included a 25% reduction in the Atlantic coast and Chesapeake Bay trophy fisheries relative to 2013 harvest levels and a 20.5% reduction in the Chesapeake Bay summer/fall and winter fisheries relative to 2012 levels.² Addendum VI (2019) was implemented to further reduce total striped bass removals by 18% relative to 2017 levels to achieve the fishing mortality target.³

The striped bass stock is currently managed under Amendment 7 (2022) which builds on previous actions of Amendment 6 and establishes a plan to rebuild the stock by 2029.⁴ Addendum I (2023) allows for voluntary ocean commercial quota transfers when the stock is not overfished. Addendum II (2024) was approved to: (1) reduce fishing mortality in 2024, (2) support stock rebuilding, (3) establish two requirements for states that authorize filleting of striped bass at sea, and (4) establish a mechanism allowing the board to respond to a stock assessment via board action if the stock is not projected to rebuild by 2029. Draft Addendum III is pending, and it considers recreational and commercial management measures for implementation in 2026 to support rebuilding the stock by 2029.

The Maryland Department of Natural Resources (MDNR) is required to submit annual compliance reports to ASMFC. Included in this FMP report are the striped bass compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the striped bass FMP, respectively, are available at: asmfc.org/wp-content/uploads/2025/01/StripedBassFMPReview_FY2022.pdf, asmfc.org/wp-content/uploads/2025/01/AtlStripedBassFMPReview_FY2023.pdf, and asmfc.org/wp-content/uploads/2025/08/AtlStripedBassFMPReview_FY2024.pdf.

Stock Status

The most recent stock assessment update (2024) determined that the striped bass stock is overfished, but overfishing is not occurring.

Striped bass are managed as one coastal stock under biological reference points for F and SSB via regular stock assessments. The target female SSB is equal to 125% of the threshold female SSB. The current target F for striped bass is 0.17 and the threshold F is 0.21, which takes into account the recent period of low recruitment. The target female SSB is 247 million pounds with the SSB threshold at 197 million pounds (Figure 1). The most recent stock assessment update was conducted in November 2024, using the same forward projecting statistical catch at age model from the approved, peer-reviewed 2018 Benchmark Stock Assessment.⁵ The terminal year (2023) estimate of F is 0.18, which is between the target and threshold and indicates that overfishing is not occurring. The 2023 estimate of SSB is 191 million pounds, which is below both the target and threshold and indicates that the stock is overfished. The next benchmark stock assessment is scheduled for 2027.

Current Management Measures

Striped bass are currently managed under Amendment 7 (2022) to the interstate FMP with various management measures implemented over the last several years to achieve reductions in recreational and commercial removals.

The Chesapeake Bay is managed under a separate commercial quota from the Atlantic Ocean. Maryland's portion of the Chesapeake Bay striped bass commercial quota was 1.44 million pounds in 2022 and 2023, and the 2024 commercial quota was 1.34 million pounds (Figure 2). The 2024 quota was reduced by 7% to meet Addendum II requirements. Maryland's Chesapeake Bay commercial fisheries operated with a total length slot limit of 18 to 36 inches.

Commercial fisheries in the Chesapeake Bay are managed using quotas and seasonal restrictions by gear type. Most watermen have an individual transferable quota (ITQ), but some opted to remain in the traditional common pool management framework. The common pool fishery has a single quota shared among all participants, while the ITQ system guarantees each participating fisherman a portion of the commercial quota. The final year for the common pool fishery was 2024. The Chesapeake Bay commercial seasons are open January to February and June to December.

Maryland's Atlantic Ocean commercial quota was 89,094 pounds in 2022 and 2023, and 82,857 pounds in 2024 (Figure 3). The 2024 Atlantic quota was also reduced by 7% to meet Addendum II requirements. The Atlantic Ocean drift gill net and otter trawl fisheries had a 24-inch total length minimum size limit. The Atlantic Ocean seasons are open from January to May and October to December.

Striped bass caught by the commercial fishery must be individually tagged and landed at a certified check station prior to sale.⁶ All harvested fish are counted and weighed. Check stations verify each fisherman's daily harvest record on the fisherman's harvest permit. Fishermen submit monthly harvest reports to MDNR. Check stations call in harvest numbers and submit a weekly report. Fishermen and check stations have the option to submit harvest data electronically through FACTS™ or SAFIS reporting systems. Check stations are randomly sampled by MDNR biologists to collect age, length, and weight data for federal compliance reporting.

Recreational harvest is managed with a number of seasonal, size, and spatial restrictions. Regulations for striped bass in Maryland may be adjusted annually based on ASMFC requirements and stakeholder concerns. Multiple regulatory changes have been made in recent years to reduce harvest and discards in the Chesapeake Bay including: emergency regulations in 2023 which placed a 31-inch maximum size on the early summer, summer, and fall seasons; discontinuation of the spring trophy season in 2024; a summer no-targeting closure from July 16 to 31; a one fish per person per day creel limit for all modes in 2024; and a 19 to 24-inch slot limit for all modes in 2024. Full details of the 2022 to 2024 annual fishing seasons, gear restrictions, area closures, creel limits, and size limits can be found in the attached compliance reports (Appendices A-C).

The Atlantic Ocean recreational seasons have also changed in recent years to control harvest. The 2022 Atlantic coast recreational fishery regulations were one fish per person per day from 28 to 35 inches year-round. In 2023, emergency regulations

were enacted to change the slot to 28 to 31 inches from May 16 to December 31. The one fish per person per day from 28 to 31 inches regulation remained in effect for all of 2024. Striped bass may not be harvested in the Exclusive Economic Zone (3 to 200 miles from the shore).

Striped bass regulation maps of current closed, catch and release, and harvest areas are available at: dnr.maryland.gov/fisheries/Pages/sb_reg_maps.aspx. An overview of current recreational and commercial regulations are available at: dnr.maryland.gov/Fisheries/Pages/regulations/index.aspx. The complete list of commercial and recreational harvest restrictions is printed in the Code of Maryland Regulations.

The Maryland Fishery

In the Chesapeake Bay, the commercial fishery harvest averaged 1.34 million pounds between 2022 and 2024 (Figure 2). In 2024, the Maryland Chesapeake Bay commercial fishery harvested 1.35 million pounds.⁷ Approximately 95% of the harvest was attributed to gill nets and pound nets, with the remaining 5% from hook and line.

Atlantic Coast commercial landings averaged approximately 87,000 pounds per year from 2022 to 2024 (Figure 3). Preliminary 2024 Atlantic coast landings were 88,857 pounds, exceeding the quota by 6,000 pounds.⁷

Recreational harvest estimates are produced by the National Marine Fisheries Services' Marine Recreational Information Program (MRIP). The MRIP uses a combination of in-person, telephone, and mail-based surveys to produce catch and effort estimates for many important fish species.⁸

The 2022 Chesapeake Bay recreational harvest estimate was 3.1 million pounds. This declined to 2.2 million pounds in 2023 and 0.8 million pounds in 2024 (Figure 4). Estimates of live discards also declined during this period, from 3.3 million fish in 2022 to 2.3 million fish in 2024 (Figure 5). By convention, fisheries managers assume that 9% of these live discards die after release.

Atlantic Ocean recreational estimates are sometimes unavailable because fewer anglers with striped bass are intercepted for interviews on the coast. The Atlantic harvest estimate was 30,777 pounds in 2023. Harvest estimates were unavailable in 2022 and 2024 (Figure 6). Estimates of live discards declined from approximately 124,000 fish in 2022 to less than 10,000 fish in 2024 (Figure 7). By convention, fisheries managers assume that 9% of these live discards die after release.

Management Priorities and Concerns

Amendment 7 includes actions to rebuild the stock by 2029. Given the poor recruitment of the 2019 through 2024 year classes, and a high coastwide harvest in 2022, the probability of rebuilding has decreased. Draft Addendum III was initiated

in December 2024 to consider recreational and commercial management measures for implementation in 2026 to support rebuilding the stock by 2029. Options will consider a range of reductions for the recreational and commercial fisheries. Commercial measures will consider quota reductions. Recreational reductions will consider season and size limits that take into account regional differences, including no-harvest and no-targeting closures. Additional measures being considered in the new addendum include: standardizing the definition of ‘total length’ to address concerns about the lack of consistent measurement requirements of striped bass for regulatory compliance, particularly within narrow slot limits, and allowing for restructuring of Maryland’s recreational seasons.

The MDNR has conducted the Estuarine Juvenile Finfish Survey since 1954 to measure young of year (YOY) striped bass abundance and to calculate a JAI using a geometric mean. The JAI is a predictor of year class strength and is used to monitor YOY recruitment success. If any of the four JAIs used in the stock assessment model to estimate recruitment (NY, NJ, MD, VA) shows an index value that is below 75% of all values (i.e., below the 25th percentile) in the respective JAI from 1992 to 2006 (high recruitment period) for three consecutive years, then an interim target F and interim threshold F calculated using the low recruitment assumption will be implemented.⁴ The MD JAI value has been below the average of 4.32 since 2019. The 2022 JAI was 1.78, the 2023 JAI was 0.57, and the 2024 JAI was 1.06 (Figure 8). The NJ, MD, and VA JAIs all tripped the recruitment trigger based on 2021 to 2023 data, with each index having three consecutive years below the Amendment 7 recruitment threshold.

Projections indicate fishing mortality may increase in 2025 due to the above average 2018 year class entering the recreational ocean slot limit and the absence of strong year classes behind it.

A previous tagging data analysis indicated that natural mortality (M) has been increasing, particularly in the Chesapeake Bay, and is above the assumed value. Increased M in the Chesapeake Bay may be linked to the increased prevalence of mycobacteriosis or other factors affecting health.⁹ Nutritional status of striped bass has been discussed as a possible health index. Further studies of mycobacteriosis infections in striped bass and its relation to M are needed.

Figures

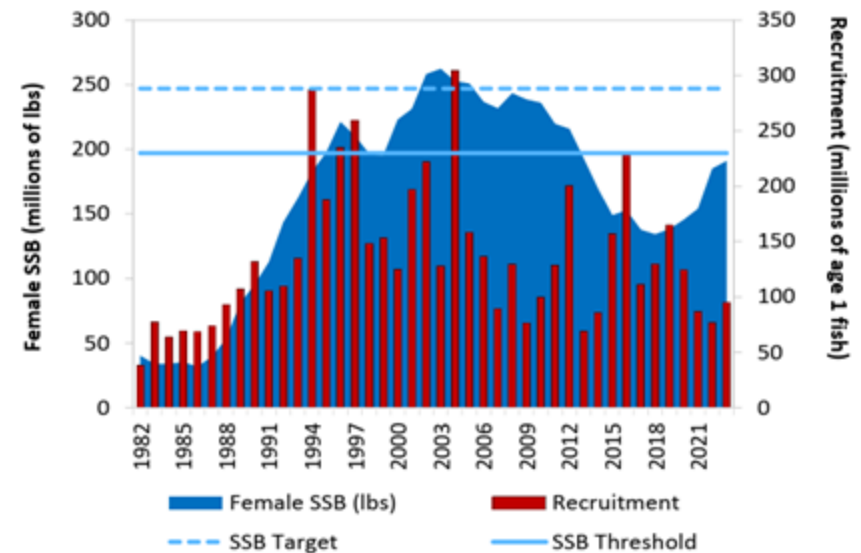


Figure 1. Striped bass female spawning stock and recruitment values from the 2024 ASMFC stock assessment update.¹

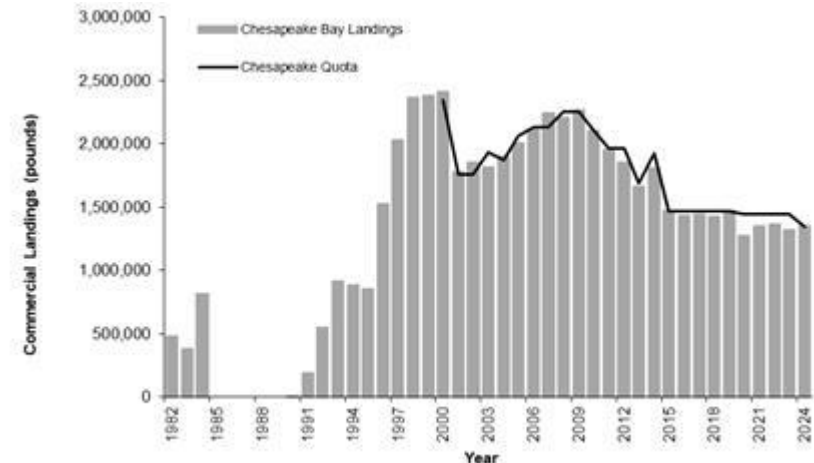


Figure 2. Chesapeake Bay commercial striped bass landings in Maryland from 1982 to 2024.⁷ Chesapeake Bay quota is shown for 2000 to 2024. The striped bass harvest moratorium was in effect from 1985 to 1989.

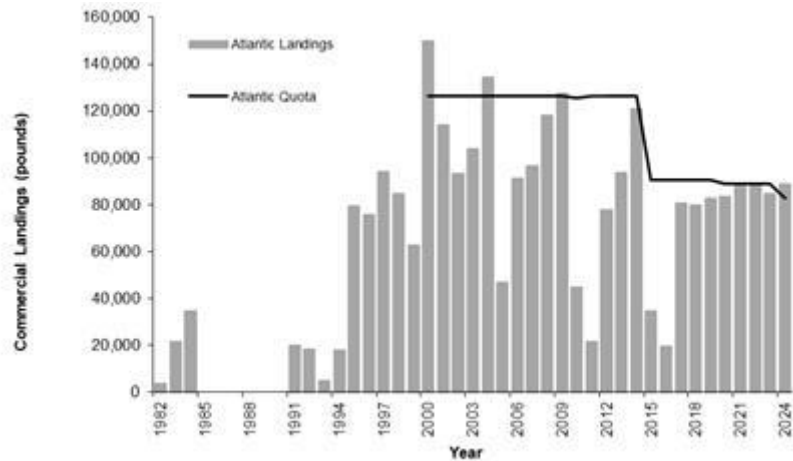


Figure 3. Atlantic Ocean commercial striped bass landings in Maryland from 1982 to 2024.⁷ Atlantic quota is shown for 2000 to 2024. The striped bass harvest moratorium was in effect from 1985 to 1989.

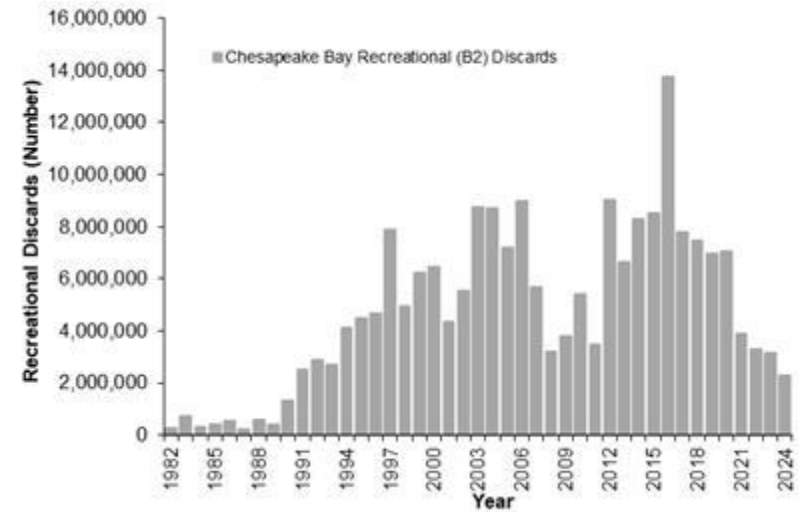


Figure 5. Maryland's Chesapeake Bay recreational striped bass live releases (B2), in numbers of fish, from 1982 to 2024.^{7,8}

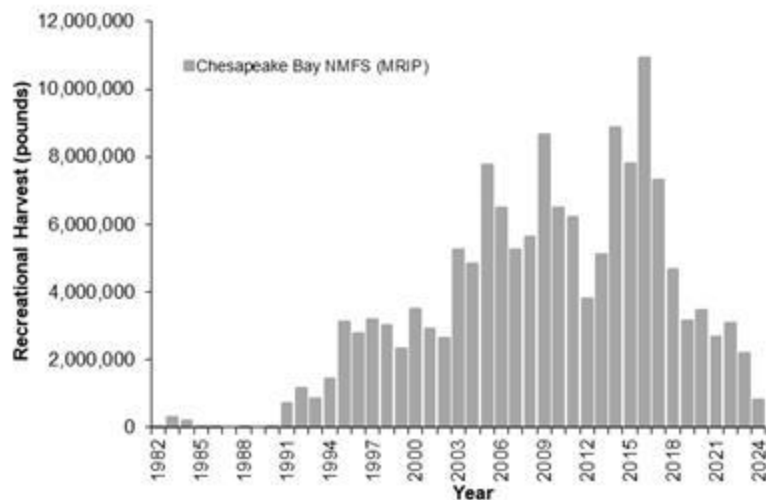


Figure 4. Maryland's Chesapeake Bay recreational striped bass landings from 1982-2024.^{7,8} The striped bass harvest moratorium was in effect from 1985 to 1989.

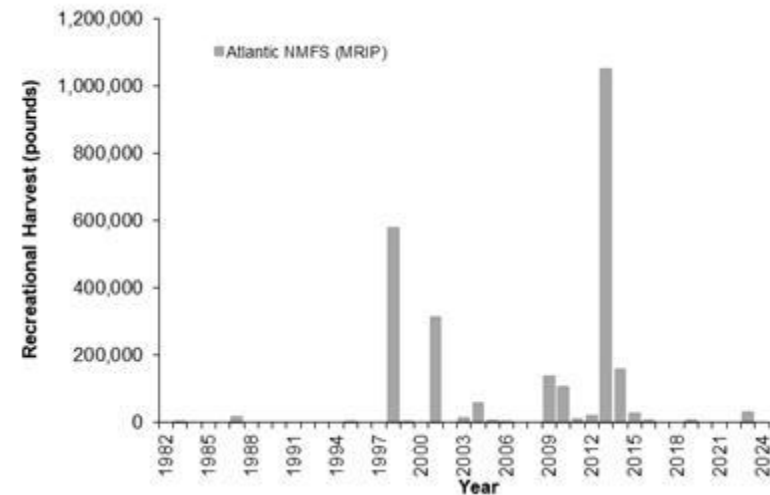


Figure 6. Maryland's Atlantic Ocean recreational striped bass landings from 1982-2024.^{7,8} The striped bass harvest moratorium was in effect from 1985 to 1989.

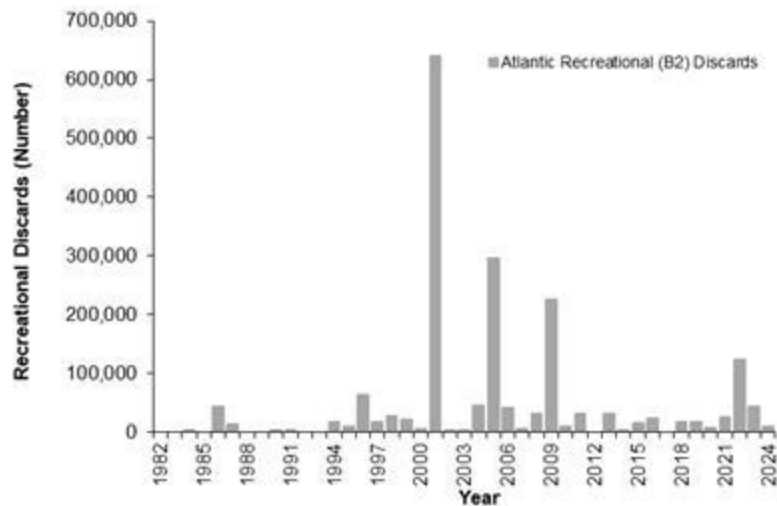


Figure 7. Maryland's Atlantic Ocean recreational striped bass live releases (B2), in numbers of fish, from 1982 to 2024.^{7,8}

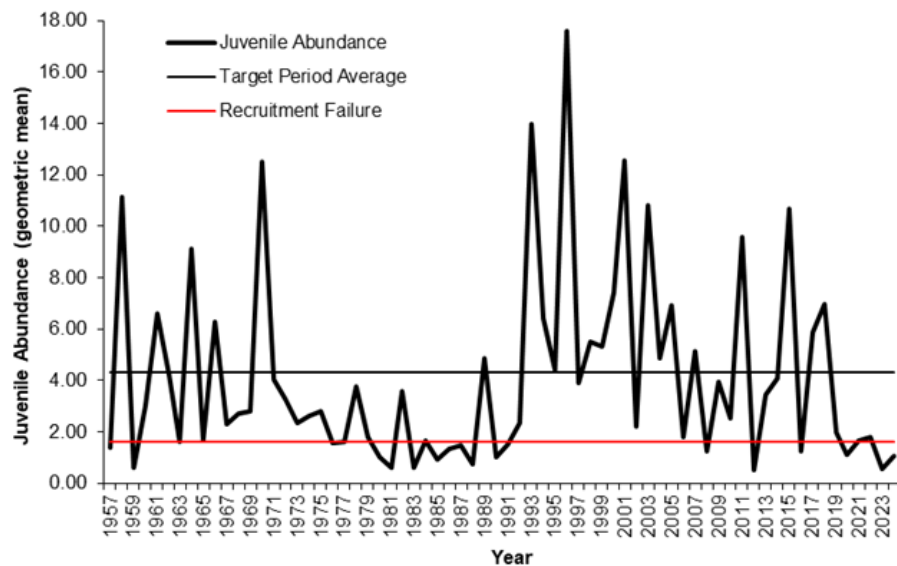


Figure 8. Maryland's striped bass juvenile abundance index geometric mean values: 1957 to 2024.⁷ The red line represents the recruitment failure definition (1.60) and the black line defines the target period average (1959 to 1972) of stable recruitment. The moratorium was in place from 1985 to 1989.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBSB FMP	Chesapeake Bay Striped Bass Fishery Management Plan
F	Fishing Mortality
FACTS™	Fishing Activity and Catch Tracking System
FMP	Fishery Management Plan
ITQ	Individual Transferable Quota
JAI	Juvenile Abundance Index
M	Natural Mortality
MD	Maryland
MDNR	Maryland Department of Natural Resources
MRIP	Marine Recreational Information Program
NJ	New Jersey
NY	New York
SAFIS	Standard Atlantic Fisheries Information System
SSB	Spawning Stock Biomass
VA	Virginia
YOY	Young of Year

Section 23. Summer Flounder (*Paralichthys dentatus*)

Summer flounder is one of the most sought after commercial and recreational fish along the Atlantic coast. The summer flounder fishery in the United States operates from Maine to the North Carolina/South Carolina border. Summer flounder spawn in the late fall to early winter on near shore shoals. The larvae travel to inlets and coastal bays in the late winter and spring to develop and grow during their first year. An updated stock assessment is expected to be completed in 2025.

Fishery Management Plans

The summer flounder fishery is managed jointly by the Mid-Atlantic Fishery Management Council (MAFMC) in federal waters and the Atlantic States Marine Fisheries Commission (ASMFC) in state waters. The National Marine Fisheries Service (NMFS) serves as the implementing body for rules and regulations within the fishery.

In 1991, the Chesapeake Bay jurisdictions adopted the Chesapeake Bay Summer Flounder Fishery Management Plan (CBSF FMP). The CBSF FMP implemented management measures to reduce fishing mortality (F) and increase the spawning stock biomass (SSB). The CBSF FMP strategies and actions were based on guidelines established by ASMFC and MAFMC. As the summer flounder stock improved, the Chesapeake Bay jurisdictions developed Amendment 1 to the CBSF FMP in 1997. This amendment adopted all future reference points and quotas determined by the ASMFC and MAFMC. The Chesapeake Bay jurisdictions continue to implement commercial and recreational management measures as needed to meet these requirements. Amendment 1 also implemented a system of individual fishing quota (IFQ) permits for the commercial fishery.

In the late 1980s, the Atlantic coast summer flounder stock was overfished and depleted. The ASMFC developed the Interstate Fishery Management Plan (FMP) for Summer Flounder in 1982. The interstate plan established a 14-inch minimum size limit and specified trawl net mesh size for fishing in state waters (≤ 3 miles from shore). The MAFMC developed a complementary federal FMP for summer flounder in 1988 to govern federal waters (3-200 miles from shore). The federal FMP required fishermen to abide by the more conservative of either state or federal requirements. Summer flounder management was later consolidated into a joint FMP with ASMFC and MAFMC.

From 1991 to 1995, MAFMC adopted seven amendments to adjust summer flounder management actions. The ASMFC and MAFMC adopted Amendments 8 and 9 to incorporate scup and black sea bass, respectively, into the summer flounder FMP. Between 1997 and 2007 ASMFC adopted two amendments (10 and 13) and 8 addenda (III, IV, VIII, and XV-XIX) to modify summer flounder management. In that same time period, MAFMC adopted five amendments (10-13, 15, 16, and 19) and five frameworks (1, 2, and 5-7) to modify summer flounder management. The ASMFC adopted Addendum XXV (2014) to implement regional conservation

equivalency for one year. Addenda XXVI (2015), XXVII (2016) and XXX (2018) extended the regional management approach for additional years. On October 19, 2020, ASMFC approved the Summer Flounder Commercial Issues Amendment 21 which changed the marginal state allocations when a commercial quota is over a threshold of 9.55 million pounds. Amendment 21 was implemented beginning January 1, 2021.

In 2020, Framework 15 established a requirement for commercial vessels with federal permits for all species managed by the Mid-Atlantic and New England councils to submit vessel trip reports electronically within 48 hours after entering port at the conclusion of a trip. Amendment 21 modified the commercial state quota allocation system and FMP goals and objectives. Framework 16 modified the council's acceptable biological catch control rule and risk policy. The revised risk policy is intended to reduce the probability of overfishing as stock size falls below the target biomass while allowing for increased risk and greater economic benefit under higher stock biomass conditions.

In 2022, Amendment 22 revised the commercial and recreational sector allocations for the species. In 2023, Framework 17 established a new process for setting recreational bag, size, and season limits (i.e., recreational measures). This action also modified the recreational accountability measures.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the summer flounder compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022, 2023, and 2024 fishing year reviews of the summer flounder FMP, respectively, are available at:
asmfc.org/wp-content/uploads/2025/01/SummerFlounder_FMPReview_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/SummerFlounder_FMPReview_FY2023.pdf
asmfc.org/wp-content/uploads/2025/08/SummerFlounder_FMPReview_FY2024.pdf.

Stock Status

Based on this 2025 management track assessment, the summer flounder (*Paralichthys dentatus*) stock is not overfished and overfishing is not occurring. Spawning stock biomass (SSB) in 2024 was estimated to be 40,516 (mt) which is 83% of the biomass target (SSBMSY proxy = 48,571). The 2024 fully selected fishing mortality was estimated to be 0.35 which is 74% of the overfishing threshold proxy (FMSY proxy = 0.47).¹

Current Management Measures

The commercial fishery is managed using commercial quotas (allocated to each state), size limits, and gear requirements. The recreational fishery uses size limits, seasons, and creel limits to manage summer flounder.

Together, NMFS and MAFMC determine coastwide annual catch limits, commercial quota, and recreational harvest limits. Commercial coastwide quota is allocated among states based on their historic proportion of landings modified by recent landings patterns. The 2024 summer flounder commercial quotas are allocated to states based on a system that considers both existing allocations and a share of any additional quota exceeding 9.55 million pounds. When the coastwide quota is 9.55 million pounds or less, allocations are distributed according to Amendment 4. When it exceeds 9.55 million pounds, the first 9.55 million pounds are distributed based on Amendment 4, and any additional quota is divided equally among all states, except for Maine, Delaware, and New Hampshire, who split 1% of the additional quota.

Maryland implements catch share management to equitably distribute the commercial quota among harvesters in Atlantic coastal waters, coastal bays and tributaries, the Chesapeake Bay (primarily bycatch), and the Potomac River. The catch share system assigns a specific IFQ to each fisherman, which allows them to manage their business for best economic yield. Commercial hook and line harvest is managed with a 16.5-inch minimum length, and all other gears have a 14-inch minimum length. Commercial fishermen without an IFQ are restricted to 100 pounds per person per day, in coastal waters and 50 pounds per person per day, in the Chesapeake Bay and its tidal tributaries. The commercial season is year-round. The Potomac River Fisheries Commission manages the Potomac River with a 14-inch minimum size. Net design and mesh size are also regulated.

The Maryland Fishery

In 2024 and 2025, the Maryland minimum size was 16 inches from January 1 through May 31 and 17-½ inches from June 1 through December 31. The recreational catch limit was four fish per person per day in 2024 and 2025.

Maryland's 2025 recreational catch of summer flounder was estimated at 32,428 fish (PSE 27.8) with an estimated total weight of 68,927 pounds (PSE 28.8; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 21, 2026).²

The commercial minimum size for hook and line has varied over the last several years to maintain consistency with recreational rules. In 2022, from January 1 through April 17 the minimum size was 16-½ inches and from April 18 through December 31, it was 16-½ inches. In 2023, from January 1 through December 31 the minimum size was 16 inches. In 2024 and 2025, from January 1 through May 31 the hook and line minimum size was

16 inches and from June 1 through December 31, it was 17-½ inches. The commercial size limit for all other gears has remained at 14 inches.

Maryland's commercial quota is allocated to the Atlantic coastal waters, the Chesapeake Bay, and the Potomac River. The Potomac River quota is set aside from both Maryland and Virginia by agreement. Maryland established individual fishing quotas for the Atlantic coastal waters, including the coastal bays, and their tributaries. The individual fishing quota system assigns a specific quota per fisherman and allows fishermen to plan and manage the fishing business for best economic yield. In 2024, there were seven permitted summer flounder harvesters in Maryland. There is additional Maryland quota not allocated to individual fishing quotas to allow for minimal bycatch on the coast and in the Chesapeake Bay.

Maryland's 2025 commercial quota was 179,233 and the harvest was 130,530 pounds, as reported by Maryland Commercial Logbooks. The majority of the harvest was by otter trawl. Maryland's 2024 commercial quota was 179,233 pounds and the harvest was 175,434 pounds. The Maryland's 2023 commercial quota was 891,913 commercial harvest was 468,382 pounds.

Management Priorities and Concerns

The NMFS released revised Marine Recreational Information Program catch and effort estimates from 1981 to 2017, based on adjustments to the angler intercept methodology and the transition to a revised system in 2018. This resulted in higher recreational catch estimates compared to previous ones. As a result, population estimates and quotas were adjusted substantially higher. In 2023, it was discovered that this adjustment was not completely correct and NMFS is in the process of conducting a study of the survey methodology that is expected to reduce the population estimates and quotas by around 40%. This adjustment will necessitate changes to the stock assessments, quotas, and possibly the commercial/recreational allocation split.

Figures

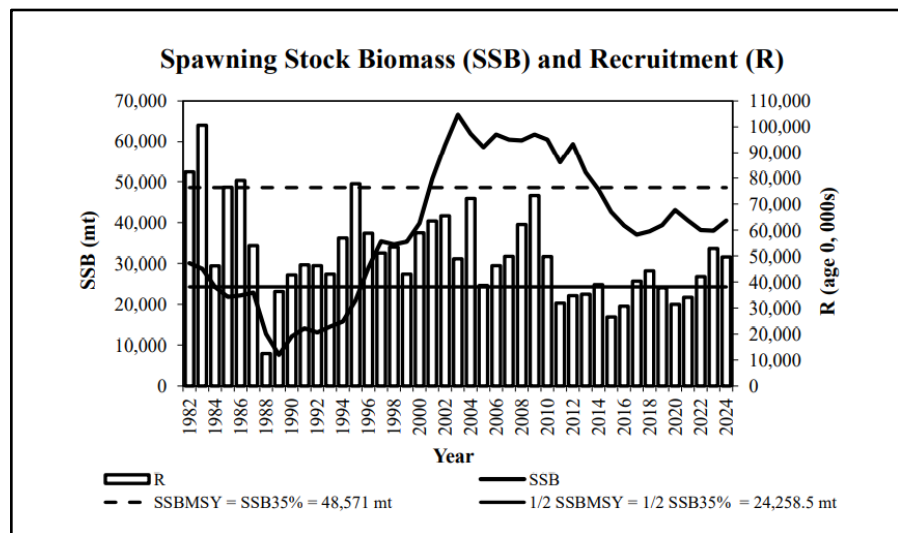


Figure 1. Summer flounder spawning stock biomass (SSB; solid line) and recruitment at age 0 (R; vertical bars), 1982 to 2024. The horizontal dashed line is the updated target biomass reference point. The horizontal solid line is the updated threshold biomass reference point. Source: 2025 management track assessment.

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2. Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 21, 2026.

Acronyms

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Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
CBSF FMP	Chesapeake Bay Summer Flounder Fishery Management Plan
F	Fishing Mortality
FMP	Fishery Management Plan
IFQ	Individual Fishing Quota
MAFMC	Mid-Atlantic Fishery Management Council
NMFS	National Marine Fisheries Service
PSE	Percent Standard Error
SSB	Spawning Stock Biomass

Section 24. Tautog (*Tautoga onitis*)

Tautog is a long-lived, slow-growing, and predominately recreational fishing species. The species ranges from the outer coast of Nova Scotia to Georgia and is managed from Massachusetts through Virginia. Tautog prefer nearshore coastal waters, especially rocky reef areas, but have been caught as far inland as the Maryland Chesapeake Bay Bridge. They generally move inshore in the spring and summer and offshore in the fall and winter. Spawning occurs in the Atlantic Ocean during May and June, and juvenile fish can be found in the eelgrass beds within Maryland's Coastal Bays. Previously managed as a single coastal stock, regional management began in 2018 with four management areas: Massachusetts and Rhode Island (MARI); Long Island Sound (LIS); New Jersey and New York Bight (NJ-NYB); and Delaware, Maryland, and Virginia (DelMarVa).

Fishery Management Plans

The Atlantic States Marine Fisheries Commission (ASMFC) developed an Interstate Fishery Management Plan (FMP) in response to concerns about the vulnerability of tautog to overfishing and the increasing fishing pressure in the early 1990s.¹ It established goals and objectives for tautog management and adopted a fishing mortality rate (F) target of 0.15 to rebuild the stocks and prevent overfishing. However, an interim target of 0.24 was applied for two years (1997 through 1998). States were required to implement state-specific plans, approved by the Tautog Management Board, to reduce F from the coastwide average of 0.58 (i.e., a 55% reduction), or an alternative state-specific F, if it could be demonstrated as equivalent. Recreational and commercial minimum size limits of 13 inches in 1997 and 14 inches beginning in 1998 were required. Tautog pots and traps were also required to have degradable fasteners on one panel or door.

Addendum I (1997) modified the interstate FMP's compliance schedule to allow all states until April 1, 1998 to implement management measures to reach the interim target F.² Due to data deficiencies, several states were having difficulty determining a state-specific F to meet the original compliance schedule. In addition, the compliance schedule implemented the interim target F one year earlier in the area north of Delaware Bay (April 1, 1997) than further to the south (April 1, 1998). The addendum also delayed the implementation of management measures to achieve the permanent target F from April 1, 1999 to April 1, 2000. Finally, the Addendum included *de minimis* requirements and corrected several typographical errors in the FMP.

Addendum II (1999) further extended the compliance schedule to achieve the permanent target F until April 1, 2002 because the effects of the regulations to achieve the interim target F were uncertain.³ It also listed four issues to be considered in subsequent revisions of the FMP: (1) development of alternative F targets that will allow states to quantify harvest reductions associated with a variety of management approaches, (2) clarification of the F targets to be met by sector or overall state program, (3) monitoring requirements to improve fisheries and

biological data collection, and (4) data requirements to analyze management options by fishing modes within commercial and recreational fisheries.

Addendum III (2002) addressed the four issues listed in Addendum II.⁴ It adopted a new target F based on achieving 40% of the spawning stock biomass (SSB), which was estimated at 0.29 (compared to the coastwide average F estimate of 0.41). The addendum required states to maintain current or more restrictive measures for 2002 and to implement measures to achieve the new target F, a 48% reduction through restrictions in the recreational fishery only, by April 1, 2003. It also updated information on tautog habitat and established monitoring requirements to support stock assessments, including the collection of 200 age and length samples per state within the range of lengths commonly caught by the fisheries. Technical Addendum 1 (2003) corrected a typographical error in Addendum III.⁵

Addendum IV (2007) established target and threshold SSB reference points based on a benchmark stock assessment completed in 2005.⁶ The target was set as the average SSB over 1982 to 1991, and the threshold at 75% of this value. It also set a new target F of 0.2 to initiate rebuilding. States were required to implement recreational management programs to achieve a 28.6% reduction in F relative to 2005 (and maintain existing commercial management programs) by January 1, 2008.

As individual states developed management proposals to comply with Addendum IV's mandated reduction in fishing mortality, it became apparent that commercial harvest of tautog had grown in proportion to the recreational fishery in some states. The Management Board approved Addendum V (2007) to give states flexibility for implementing reductions in their recreational and/or commercial fisheries to reach the target F of 0.2 established in Addendum IV by January 1, 2008.⁷

Based on the 2011 stock assessment update, which indicated that tautog were still overfished and experiencing overfishing, Addendum VI (2011) reduced the target F to 0.15 to rebuild the stock.⁸ States were required to implement regulations, approved by the Management Board, in their commercial and/or recreational fisheries to reduce harvest by 39%. The addendum also allowed for regional considerations if a state or group of states could demonstrate that the local F is below the rates indicated in the stock assessment update.

Amendment 1 (2017) replaced the original FMP, with an implementation date of April 1, 2018 for most measures.⁹ Major revisions to the FMP include: new goals and objectives, establishment of four tautog stocks for regional recreational and commercial management, and creation of a commercial harvest tagging program (implemented in 2020).

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the tautog compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the tautog FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/Approved_TautogFMPReviewFY2022.pdf
asmfc.org/wp-content/uploads/2025/03/TautogFMPReview2023.pdf.

Stock Status

The four regions currently used for management are: Massachusetts-Rhode Island (MARI), Long Island Sound (LIS; Connecticut and New York waters north of Long Island), New Jersey-New York Bight (NJ-NYB; New Jersey and New York waters south of Long Island), and Delaware-Maryland-Virginia (DelMarVa). Maryland is included in the DelMarVaRegion.

Current stock status is based on the 2021 stock assessment update, which uses the methodology that was approved for management use as part of the 2016 benchmark stock assessment. The assessment evaluates each of the four regions separately using the Age Structured Assessment Program statistical catch at age model with landings and index data through 2020. This is the first stock assessment for tautog to use recreational catch estimates from the Marine Recreational Information Program (MRIP) since major revisions to its methodology in 2018. The new MRIP estimates resulted in higher estimates of SSB and recruitment in all regions, but had less of an impact on fishing mortality.

The 2021 stock assessment update found improvements in most regions since the 2017 assessment. Overfishing was no longer occurring in any region in 2020 (a change for LIS and NJ-NYB), while only the NJ-NYB region remained overfished in 2020 (with LIS and DelMarVa moving out of this category). The F value was below the target in the DelMarVa and MARI regions, and between the target and threshold in the LIS and NJ-NYB regions. Strong year classes in MARI and LIS in recent years appear to have contributed to increasing trends in SSB, while a significant decline in F in DelMarVa since 2012 has resulted in a local increase in SSB. While the NJ-NYB region remains overfished, the SSB has been trending upward since the last assessment. The current overfishing and overfished definitions for management use are shown in Table 1. Fishing mortality and SSB for the DelMarVa region relative to the respective targets and thresholds are shown in Figures 1 and 2. The next assessment update, with data through 2024, is scheduled to be presented to the Board in 2025.

Current Management Measures

Maryland is included in the DelMarVa region and has the most restrictive management measures within the region. The commercial fishery is very small and restricted to the recreational size limit of 16 inches, individual possession limits, and commercial tagging requirements. There was a 45-day spring spawning closure (May 16 to July 1), followed by a reduced possession limit of two fish until November 1. The possession limit increased to four fish from November 1 to May 15. The Code

of Maryland Regulations pertaining to tautog are available at:
dsd.maryland.gov/regulations/Pages/08.02.05.20.aspx.

The Maryland Fishery

Tautog were a primary targeted species mainly during black sea bass and summer flounder recreational fishery closures. January through April provided large fish that attracted local and interstate anglers in search of a 20-pound tautog. The International Game Fish Association World Record tautog was caught off Ocean City, Maryland on January 2, 2015. More recently, catch and release of large fish, especially female fish, was practiced and advertised by the for-hire community. Adult males and females can be identified by phenotypical characteristics, as they display sexual dimorphism. The commercial fishery was held to the same season, possession limits, and size requirements as recreational and for-hire anglers, although pots and traps were permitted in addition to hook and line.

Management Priorities and Concerns

Protecting juvenile nursery habitat is a top priority in Maryland. The seagrass beds in the Coastal Bays support many young of year tautog that will populate the ocean reefs and spawn around age 3. Increasing water temperature above eelgrass thresholds (30°C) will have a negative effect on tautog recruitment. Structured habitat is vital to a successful tautog fishery. Other concerns include overfishing if black sea bass or summer flounder are not available, an increase in commercial fishing pressure due to easy targeting of tautog with pots and traps over structured areas, which is limited in the region, and Spotlock technology. The artificial reefs programs in Maryland and Delaware were very popular for anglers, and new technology allowed for more precise fishing in key tautog habitat.

Tables and Figures

Table 1. Tautog 2020 stock status (SSB) in millions of pounds for the four management regions.¹⁰

Region	Target	Threshold	2020 Estimate	Status
MARI	10.09	7.57	14.90	Not overfished
LIS	14.83	11.12	14.70	Not overfished
NJ-NYB	14.45	10.78	10.54	Overfished
DMV	9.90	7.40	9.66	Not overfished

Table 2. Tautog 2020 fishing mortality status (F) for the four management regions, estimated using the 3-year average F.¹⁰

Region	Target	Threshold	2020 Estimate	Status
MARI	0.28	0.49	0.23	Not overfishing
LIS	0.26	0.38	0.30	Not overfishing
NJ-NYB	0.19	0.30	0.26	Not overfishing
DMV	0.17	0.27	0.06	Not overfishing

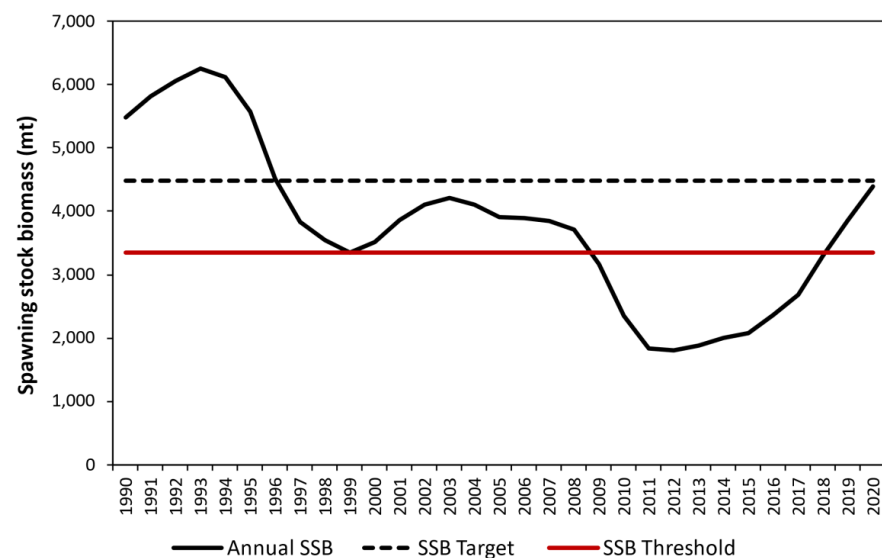


Figure 1. Estimated SSB, with target and threshold levels, for DelMarVa region.¹⁰

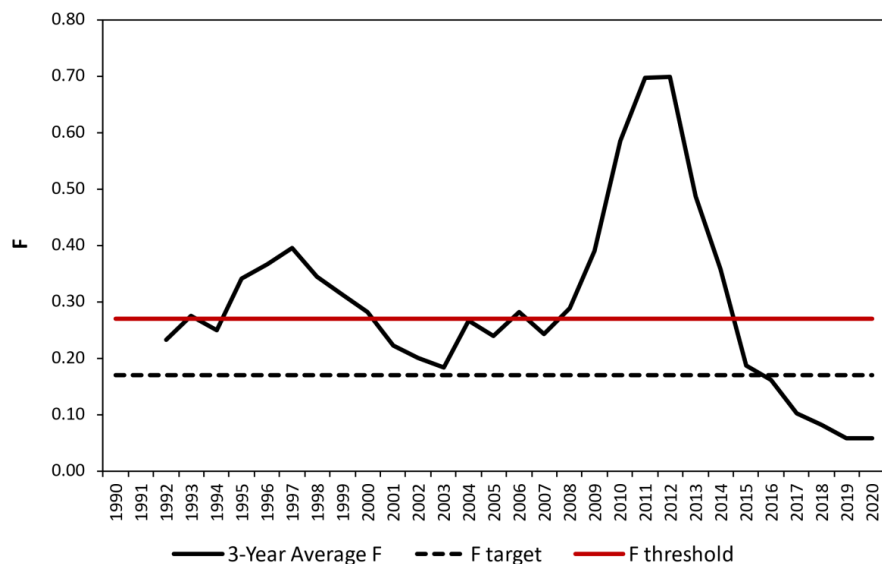


Figure 2. Three-year average F plotted with the F target and threshold, for DelMarVa region.¹⁰

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Acronyms

Table 2. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
F	Fishing Mortality
FMP	Fishery Management Plan
SSB	Spawning Stock Biomass
DelMarVa	Delaware, Maryland, and Virginia
MARI	Massachusetts and Rhode Island
NJ-NYB	New Jersey and New York Bight
LIS	Long Island Sound

Section 25. Weakfish (*Cynoscion regalis*)

Weakfish are found along the Atlantic coast from Nova Scotia to Florida, but they are most abundant from New York to North Carolina. They can reach lengths up to 29 inches. The oldest aged weakfish was 17 years old, but fish over the age of 12 are rare, even when the species is abundant. Weakfish spawn around the mouths of estuaries, with larvae and juveniles using the estuaries as nursery areas. Adults use estuaries as feeding areas in summer and fall and migrate to warmer coastal ocean waters during colder months. Weakfish were historically abundant in Maryland's portion of the Chesapeake Bay, and were important both commercially and recreationally. The coastwide stock has been in a depleted state for over a decade, leading to very low availability in Maryland in recent years.

Fishery Management Plans

The Chesapeake Bay Weakfish and Spotted Seatrout Fishery Management Plan (CB FMP) was adopted in 1990 to enhance and perpetuate the Chesapeake Bay's weakfish and spotted seatrout stocks. The plan was revised in 2003 and addresses only weakfish and not spotted seatrout. The revised plan was developed in response to the improvement in the status of the weakfish stock at that time from overfished (below a threshold) to fully exploited (fished at maximum sustainable yield) and included new biological data pertinent to the Chesapeake Bay. The 2003 CB FMP follows the compliance requirements set forth in the Atlantic States Marine Fisheries Commission (ASMFC) Amendment 4 to the Interstate Fishery Management Plan (FMP) for Weakfish (2002)¹ and several addenda (2003 to 2009).

The ASMFC has been managing weakfish under an FMP since 1985. Additional management measures were adopted with Amendments 1-3 (1992, 1995, and 1996). Amendment 4 (2002) and subsequent addenda (I (2005), II and III (2007), IV (2009)) developed targets and thresholds for fishing mortality rates (F) and spawning stock biomass (SSB). The biological reference points (BRPs) were updated and implemented in 2010. Management measures to protect weakfish and reduce bycatch are still in effect.

The Maryland Department of Natural Resources is required to submit annual compliance reports to ASMFC. Included in this FMP report are the weakfish compliance reports for calendar years 2022, 2023, and 2024 (Appendices A-C, respectively). All confidential data have been redacted by being removed or replaced with a [C].

The ASMFC utilizes coastwide data to conduct annual reviews of the interstate FMPs. The 2022 and 2023 fishing year reviews of the weakfish FMP, respectively, are available at:

asmfc.org/wp-content/uploads/2025/01/WeakfishFMPReview_FY2022.pdf
asmfc.org/wp-content/uploads/2025/01/WeakfishFMPReview_FY2023.pdf.

Stock Status

A coastwide benchmark stock assessment was prepared in 2015, peer reviewed, and accepted for management by ASMFC in 2016.² An updated assessment, using the benchmark model with data through 2017, was completed in 2019.³ The updated model also uses the new Marine Recreational Information Program recreational estimates, unlike the benchmark. Both the benchmark and its update indicate the Atlantic weakfish stock is depleted, and has been since 2003, but overfishing is not occurring. The term “depleted” is used when factors other than fishing mortality have contributed to a decline in biomass. The models use a Bayesian statistical catch at age approach to examine time varying natural mortality, in addition to fishing mortality and recruitment. BRPs based on total mortality (Z) were adopted with the threshold set at 30%, and the target set at 20% of an unfished stock experiencing average fishing mortality. In the early 2000s, natural mortality increased significantly then stabilized at a high level, which led to an increase in Z. The F from 2011 to 2017 was low, but Z remained high. The Z from 2002 to 2017 was above the threshold, indicating total mortality was too high to allow for stock recovery. The SSB is well below the threshold and will require multiple years of reduced total mortality to recover. Despite current restrictive management measures, the depleted weakfish stock is unlikely to recover quickly without a decrease in natural mortality.^{1,2} Prevailing theories for the increase in natural mortality are predation, competition, and changes in climate, but no definitive cause has been determined. A stock assessment update is expected to be completed in the summer of 2025.

Current Management Measures

Management measures implemented by ASMFC's Addendum IV required states to implement a recreational creel limit of one fish per person per day and a commercial bycatch trip limit of 100 pounds.⁴ These management measures resulted in an estimated 60% reduction in commercial and recreational exploitation. Since 2010, Maryland has had a recreational minimum size limit of 13 inches and a creel limit of one fish per day. The commercial harvest has been restricted to a minimum size limit of 12 inches, a landing limit in the Atlantic Ocean and its Coastal Bays of 100 pounds per day, and a landing limit in the Chesapeake Bay and its tributaries of 50 pounds per day.

The Maryland Fishery

Both estimated recreational harvest and commercial landings of weakfish decreased in the early 2000s to very low values (Figures 1 and 2). Harvest estimates and landings values have remained at historically low levels. The recreational harvest estimates in 2022, 2023, and 2024 were 1,290 fish, 21,455 fish, and 494 fish, respectively.⁵ The time series average annual estimated harvest (1981 to 2024) was 347,041 fish per year, with the past 15 year average being 7,978 fish per year. Recreational release estimates for 2022, 2023, and 2024 were 8,196 fish, 31,351 fish, and 7,006 fish, respectively.⁵ The average of release estimates from 1981 to 2024 was 304,041 fish per year, while the average of the past 15 years was 82,280 fish per

year. Most of the recent yearly estimates had high proportional standard errors, indicating these estimates are imprecise. Reported commercial landings from Maryland’s mandatory reporting system for 2022, 2023, and 2024 were 1,044 pounds, 1,493 pounds, and 977 pounds, respectively. The average landings from 1981 to 2024 were 146,870 pounds per year, with the past 15 years averaging 1,259 pounds per year. The 2024 commercial landings were considered preliminary at the time of writing (July 2025).

The fishery-dependent and fishery-independent monitoring of Maryland’s fishery has shown a decrease in adult sample size, a decrease in maximum age encountered, and low juvenile abundance. The commercial pound net survey averaged 560 weakfish sampled per year from 1993 to 2005, but has only averaged 35 weakfish sampled per year from 2006 to 2024. The 2022, 2023, and 2024 number sampled were six, three, and one fish, respectively. Sample size for age analysis since 1999 has been too low for meaningful comparisons, but age-3 and age-4 fish have become rare, when they were more common in the early 2000s. The juvenile index, derived from the blue crab trawl survey sites in Tanger and Pocomoke sounds, has been below the time series average since 2006 (Figure 3).

Management Priorities and Concerns

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

Results of a weakfish tagging study in North Carolina were published in 2020.⁶ North Carolina is believed to be the primary overwintering area for weakfish. The researchers used both the tagging study data and age data from a fishery-independent gillnet survey to construct a model to estimate total mortality, fishing mortality, and natural mortality in North Carolina by season. The study concluded that total mortality was similar to the last benchmark assessment, but natural mortality was likely a higher component of total mortality than what was estimated in the last benchmark assessment. As discussed above, natural mortality is already considered to be the driving factor for the current depleted status. The assessment also concluded that the winter period and the migration periods to and from the wintering area account for the majority of the natural mortality, and that natural mortality is low when weakfish are within North Carolina estuaries.⁶

Figures

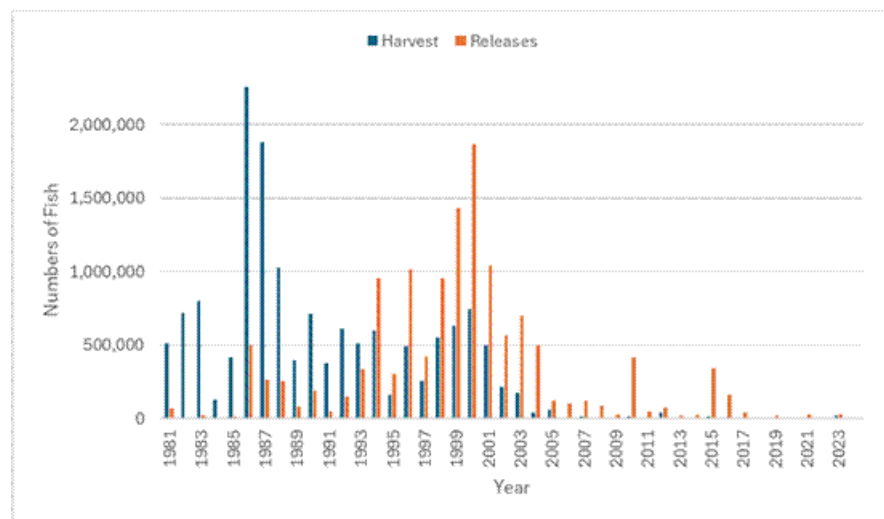


Figure 1. Maryland weakfish recreational harvest and release estimates in numbers, 1981 to 2024.

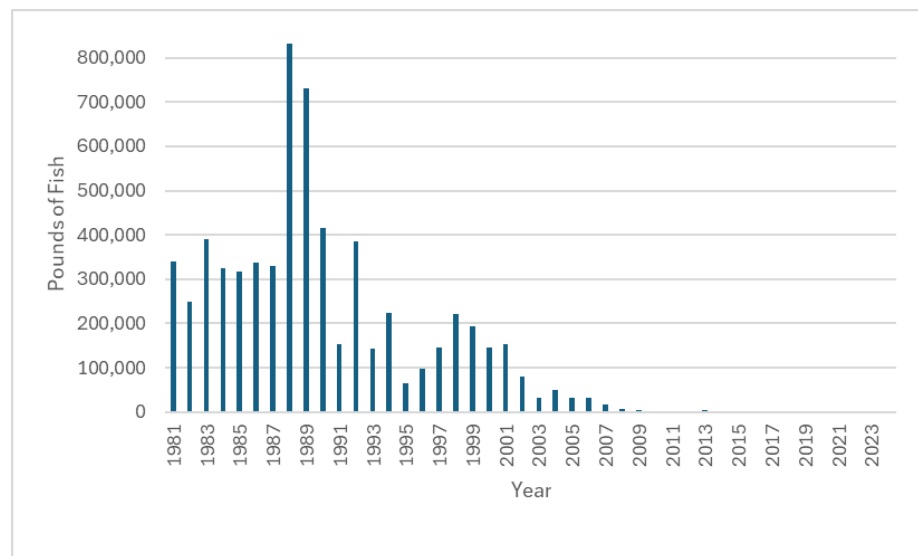


Figure 2. Maryland weakfish commercial harvest in pounds from Maryland DNR’s mandatory reporting system, 1981 to 2024.

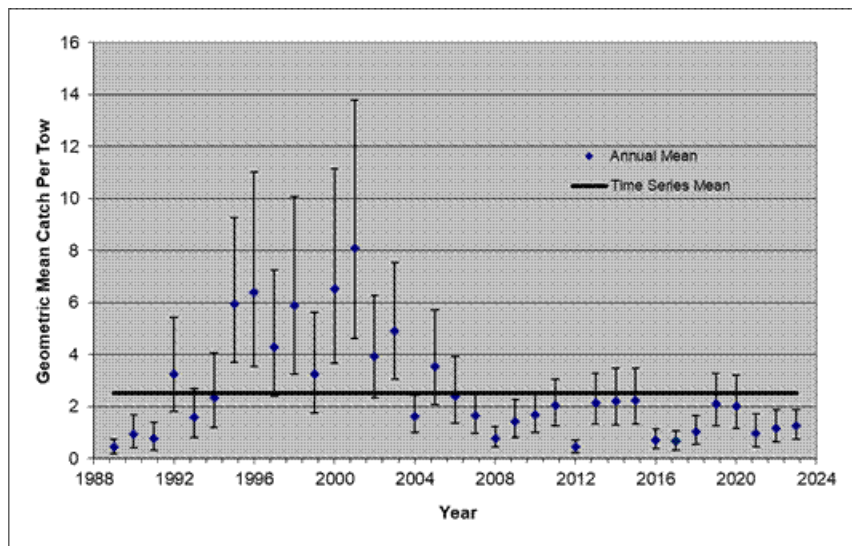


Figure 3. Maryland juvenile weakfish geometric mean catch per trawl, 95% confidence intervals and time series mean for Maryland's lower Chesapeake Bay, 1989 to 2024.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
ASMFC	Atlantic States Marine Fisheries Commission
BRP	Biological Reference Point
CB FMP	Chesapeake Bay Weakfish and Spotted Seatrout Fishery Management Plan
F	Fishing Mortality Rate
FMP	Fishery Management Plan
SSB	Spawning Stock Biomass
Z	Total Mortality

Section 26. White Perch (*Morone americana*)

White perch provide popular recreational and commercial fisheries throughout the Chesapeake Bay region. They have a widespread, ubiquitous distribution and are found throughout Maryland's tidal and tidal-fresh waters. White perch reach a maximum size of about 16 inches. They spawn from mid-March through April. Adults overwinter in deep channels in the Chesapeake Bay and its tributaries, then migrate to upstream reaches of the tributaries on their spawning run. White perch disperse throughout the Chesapeake Bay and its tributaries after spawning.

Fishery Management Plans

A Maryland Fishery Management Plan (FMP) for white perch was drafted in 1990, but was never formally adopted into Maryland regulations. The Maryland FMP continues to provide a framework for managing the white perch resource. The FMP includes descriptions of the life history, fisheries, economic perspective, resource status, habitat issues, management unit, status of traditional fishery management approaches, and data needs. The management framework includes goals and objectives, problem areas, and management strategies.

Stock Status

White perch population data, including relative abundance, year class strength, and fishing mortality are estimated annually.¹ The Maryland Department of Natural Resources (MDNR) performs a stock assessment every three years. The latest stock assessment was performed in 2024. The assessment utilized a Catch Survey Analysis for the areas above the William Preston Lane Jr. Memorial Bridge (Upper Bay stock) and the Choptank River population. For all other areas in Maryland, commercial landings and effort and the MDNR juvenile finfish survey were analyzed to suggest population trends.²

White perch population dynamics were modeled with a Catch Survey Analysis for the upper Chesapeake Bay stock and the Choptank River population. In the upper Chesapeake Bay, total population size declined from 2016 through 2023 but still exceeded the time series average by 12% (2000 to 2023). Instantaneous fishing mortality was trendless over the last five years and bootstrap analysis indicated a 0% probability that overfishing was occurring. The Choptank River white perch Catch Survey Analysis utilized data from a fishery-independent fyke net survey. The population expanded relatively quickly and for a sustained period from 1998 to 2010. Population abundance declined thereafter with the 2023 estimate being 36% below the time series average (1989 to 2023). The last time the estimate was greater than the average was in 2018. Instantaneous fishing mortality was at or slightly below suggested target levels, but the terminal year estimate was very low. Bootstrap analysis indicated a 0% probability that overfishing was occurring. Lower Chesapeake Bay white perch stocks were assessed qualitatively by utilizing fishery-dependent relative abundance and fishery-independent metrics from the Potomac River. The fishery-dependent indices gave somewhat conflicting advice, but

populations appeared to peak somewhere between 2012 and 2018. Population metrics then declined with indices at or just below median levels. The fishery-independent index indicated that populations were at recent lows in 2021 but increased in 2022 and 2023. Both the 2022 and 2023 estimates were above the time series median (1985 through 2023). The Lower Bay juvenile index in 2023 was below median levels, continuing a trend since 2019.

Current Management Measures

There are no recreational management measures for white perch in Maryland. There are no closed seasons, no minimum size limits, and no daily catch limit. The commercial fishery has no closed season and no daily or annual catch limits, but the commercial fishery does operate under an 8-inch minimum size limit when caught with gear other than hook and line. The commercial fishery has general gear restrictions that are intended to manage other fisheries such as striped bass or yellow perch. These general regulations do impact the commercial white perch fishery. For example, there are minimum gill net mesh sizes intended to reduce the capture of undersized striped bass at certain times of the year and upstream fyke net prohibitions for each tributary which are intended to reduce commercial fishing pressure and angler conflicts in the yellow perch fishery.

The Maryland Fishery

White perch provide robust commercial and recreational fisheries in Maryland. The commercial fishery landings averaged 1.3 million pounds annually since 2000 (Figure 1). Recently, fyke nets accounted for almost 50% of the total landings, and gill nets and pound nets each accounted for 25% of the commercial landings. The commercial white perch fishery is active in all months, but in 2023 and 2024, 67% of the commercial harvest occurred from January through March.

Recreational fishery landings averaged 1.7 million pounds annually since 2000 (Figure 2).³ Boat fishermen accounted for 72% of the recreational landings and shore based anglers accounted for 28% of the recreational landings in 2023 through 2024. Charter boat landings were negligible. The early spring spawning runs are important to shore based recreational anglers, but peak recreational landings occur in July and August.

Management Priorities and Concerns

The largest unknown factor in white perch population dynamics is the effect of invasive species on population abundance. Blue catfish are the most likely predator of all size ranges of white perch, but Northern snakehead *Channa argus* (also known as Chesapeake Channa in Maryland) may exert predatory pressure during the spawning season and juvenile growth periods.

Population levels declined over the past several years, and juvenile production was below average in seven of the last ten years, including the latest six years,

consecutively (Figure 3). Consecutive years of low juvenile production will likely cause population levels to decline over the next several years. Low juvenile production over an extended period of time would fail to replace adult white perch lost to natural and fishing mortality, causing population levels to decline.

Commercial landings in Maryland decreased dramatically since 2019. Causes for the decline may be due to market factors (low dockside prices), lower participation, declining population levels, or commercial underreporting. The landings decline was more rapid than the population decline, so underreporting or market factors may make the landings decline less representative of the magnitude of the population decline.

Figures

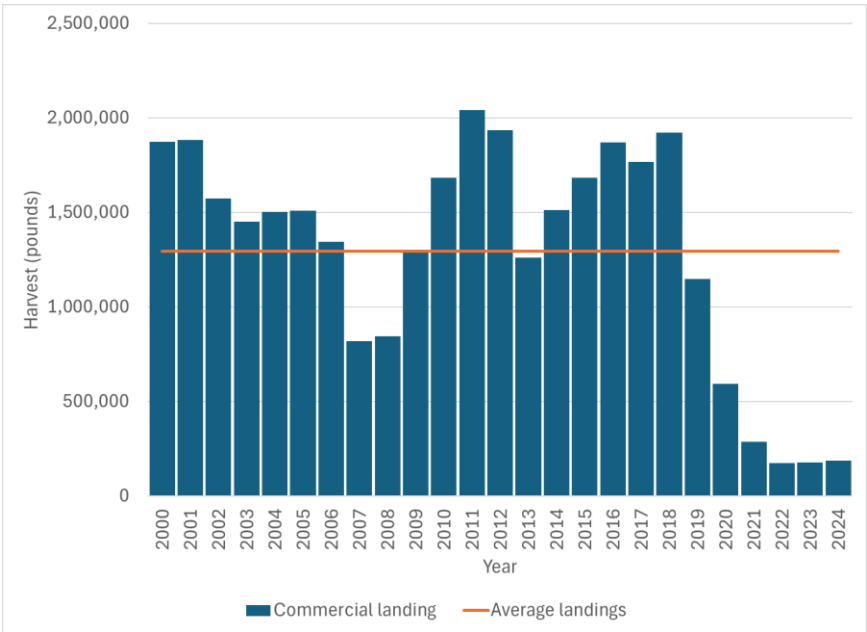


Figure 1. Commercial white perch landings in Maryland, 2000 through 2024.

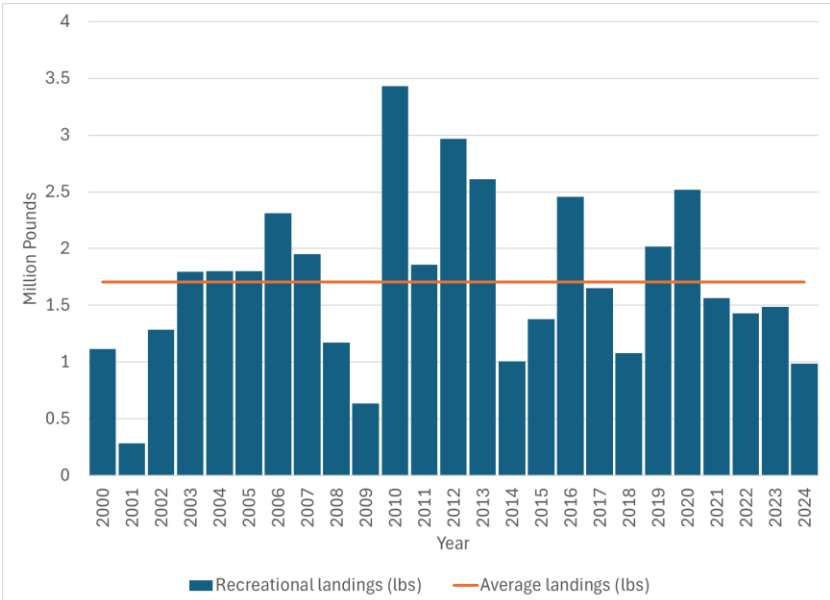


Figure 2. Recreational white perch landings in Maryland, 2000 through 2024.³

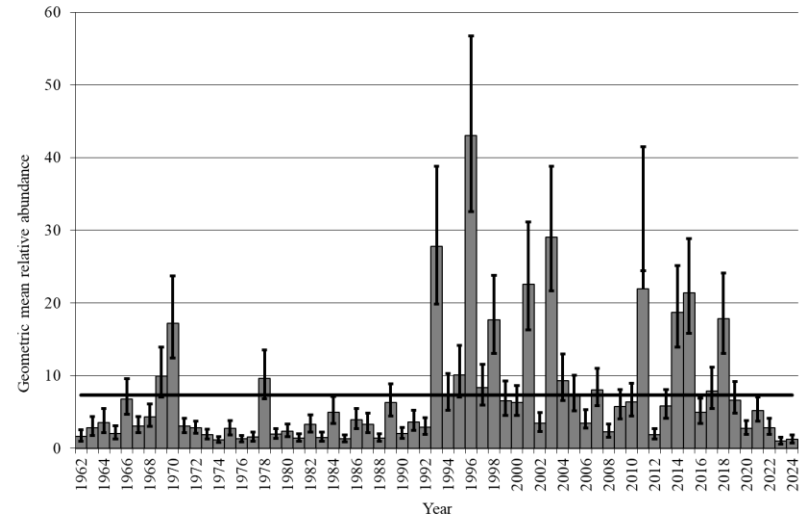


Figure 3. Baywide white perch young of year relative abundance, 1962 through 2024.

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Acronyms

Table 1. Acronyms used in this section

Acronym	Term
FMP	Fishery Management Plan
MDNR	Maryland Department of Natural Resources

Section 27. Yellow Perch (*Perca flavescens*)

Yellow perch provide recreational and commercial fishers an important local fishery during the early winter to early spring seasons. Yellow perch life history is responsible for much of the popularity for the two fisheries. Yellow perch begin to move to shallower waters in late fall. As water temperatures cool, yellow perch seek out warmer and deeper waters. They start their spawning migration to upstream sections of Chesapeake Bay tributaries in mid to late February. Both the recreational and commercial fisheries largely target yellow perch as they move to upstream spawning habitats. This timing of the spawning run makes yellow perch a very popular fishery because it is one of the first species for anglers and commercial fishers to target. Yellow perch scatter after spawning and can be more difficult to target.

Fishery Management Plans

The Maryland Tidewater Yellow Perch Fishery Management Plan (YPFMP), adopted in 2002, improved on the traditional Fisheries Management Plan (FMP) format by including guidelines for ecosystem-based management. Ecosystem-based surveys utilizing yellow perch data have been important in developing guidelines for habitat preservation and land use decisions.¹ Meetings with interested and impacted parties were conducted during 2008 to develop objectives for the commercial and recreational fisheries. An amendment process began in 2013 to adopt the new management strategies taken in 2009. The amendment process was completed in 2018 with input from workgroups and the two fisheries advisory commissions. Amendment 1 to the Maryland YPFMP revised the management plan objectives, continued important ecosystem management considerations such as land/habitat conservation, multi-species interactions and climate change, improved commercial and recreational fishing opportunities, and addressed possible user conflicts.

Stock Status

Yellow perch are assessed every three years, but the assessment is updated annually to determine the next year's commercial total allowable catch, or quota. The only areas assessed are the upper Chesapeake Bay, defined as those areas above the William Preston Lane Jr. Memorial Bridge, exclusive of the Chester River, and the Choptank River.

Yellow perch population dynamics in the upper Chesapeake Bay were described with a statistical catch at age model, and the Choptank River yellow perch population was described by linear regression of relative abundance in either increasing or decreasing phases.² In the upper Chesapeake Bay, abundance decreased to time series lows. Estimates of fishing mortality (F) indicated that terminal year F was below the target. Recruitment levels have been very low in five of the last seven years. Invasive blue catfish predation may be having an as yet unquantifiable effect on yellow perch populations. The 2024 update of the assessment indicated that yellow perch populations in the upper Chesapeake Bay are at low levels, but

somewhat stable. Recruitment is also low and is the ultimate cause of the low population levels.

Choptank River yellow perch experienced a similar decline in relative abundance. Analysis indicated that relative abundance of the population increased from 1991 to 2014, but the population declined steadily from 2014 through 2023. The estimated instantaneous rate of decrease was -0.19.

Current Management Measures

The recreational yellow perch fishery is open throughout the tidal areas of Maryland, with no closed season. Recreational anglers have a daily creel limit of 10 fish and a minimum size limit of 9 inches.

The commercial fishery is limited to the upper Chesapeake Bay and its tributaries, the Chester River, and the Patuxent River. Each tributary has an upstream limit where no fyke nets are allowed until after the yellow perch spawn has ended. All three areas open to commercial fishing are managed under a total allowable catch. The commercial yellow perch season begins on December 1. Commercial fishers report their catches daily so the quota may be managed expeditiously. Once the regional quota is approached, the fishery for that region is closed by public notice. If the quota is not expected to be reached, the fishery closes at the end of March. The commercial fishery operates under a slot limit where legal yellow perch must be larger than 8 ½ inches and less than 11 inches.

The Maryland Fishery

The commercial fishery is open in three tidal regions of Maryland, areas above the William Preston Lane Jr. Memorial Bridge (upper Chesapeake Bay), excluding the Chester River which is managed separately, and the Patuxent River. Each area has its own quota. The most extensive commercial fishery is the upper Chesapeake Bay. Historically, upper Chesapeake Bay quotas ranged from 59,662 pounds in 2018 to 14,148 pounds in 2024 (Figure 1). The Chester River quota is a set percentage of the upper Chesapeake Bay quota (Figure 2). The Patuxent River fishery usually does not land any yellow perch due to a lack of participating commercial fishers (Figure 3). In all areas, the fyke net fishery accounted for nearly 100% of harvest. The majority of the harvest occurs during a three week period from the last week of February through the second week of March, and is often temperature dependent.

The recreational fishery is largely undocumented. The National Oceanic and Atmospheric Administration's Marine Recreational Information Program does not sufficiently canvas upstream, more freshwater areas. Those areas are where the recreational fishery targets the yellow perch spawning run. The fishery is largely a shore based fishery, but depending on the year, boat based anglers target yellow perch while they congregate in usually well known deep holes near the mouths of tributaries. Most of the directed recreational fishing effort occurs during February and March, but anglers may encounter yellow perch at any time throughout the year.

However, since yellow perch disperse after spawning, it is difficult to target large concentrations, so they are often a bycatch for recreational anglers targeting other species.

Management Priorities and Concerns

Sustained poor recruitment has caused yellow perch populations to decline. In seven of the previous eight years, reproductive success was below average (Figure 4). Environmental influences, rather than fishing pressure, are believed to be causative since declines are documented in areas with no commercial fishery and an extremely limited recreational fishery.

Efforts to determine and manage a commercial yellow perch total allowable catch are no longer proportional to the value of the fishery. New management techniques and quota setting procedures need to be investigated, but should preserve the dynamic model of annual quota estimation without the need to perform full population assessments. These new techniques would likely not prompt revisions to Amendment 1.

Population levels are low enough that discussions on the appropriateness of the long-standing recreational creel limit should be advanced. Total allowable commercial harvest is altered annually and is reflective of the population status, whereas the recreational creel limit is static, regardless of population status.

An unknown factor in yellow perch population dynamics is the effect of invasive species on population abundance. Blue catfish are most likely a predator of all size ranges of yellow perch, but Northern snakehead *Channa argus* (also known as Chesapeake Channa in Maryland) may exert predatory pressure during the spawning season and juvenile growth periods.

Figures

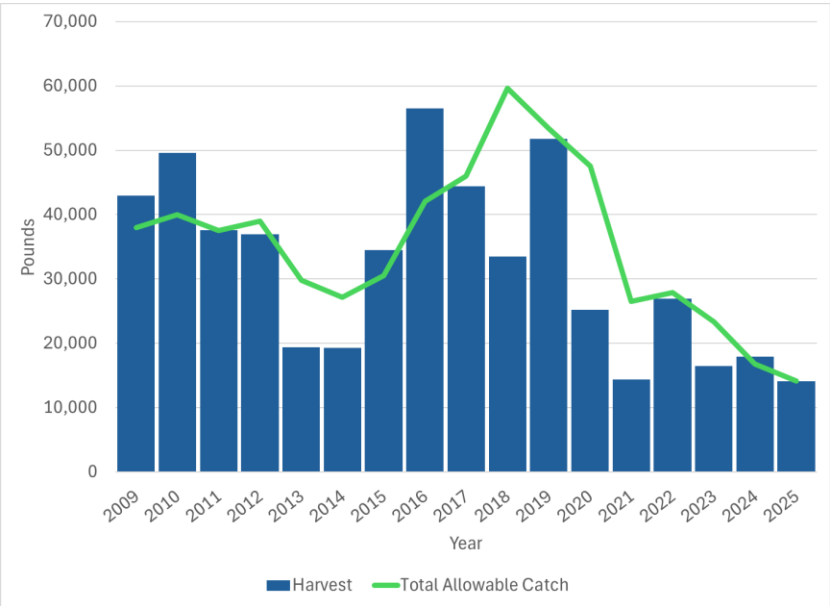


Figure 1. Upper Chesapeake Bay yellow perch commercial harvest and total allowable catch from 2009 through 2025.

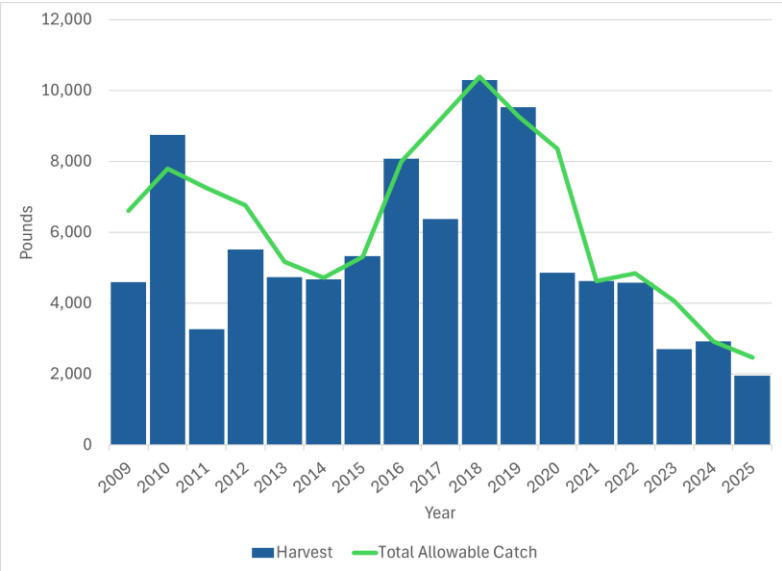


Figure 2. Chester River yellow perch commercial harvest and total allowable catch from 2009 through 2025.

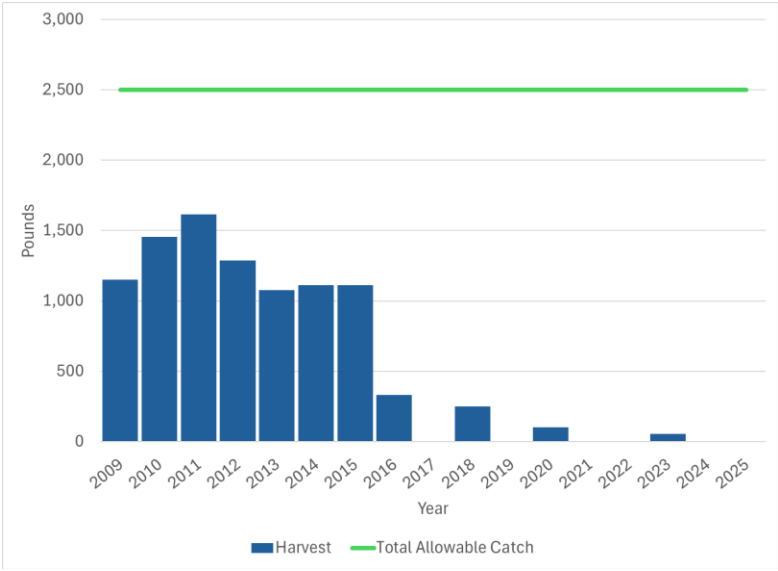


Figure 3. Patuxent River yellow perch commercial harvest and total allowable catch from 2009 through 2025.

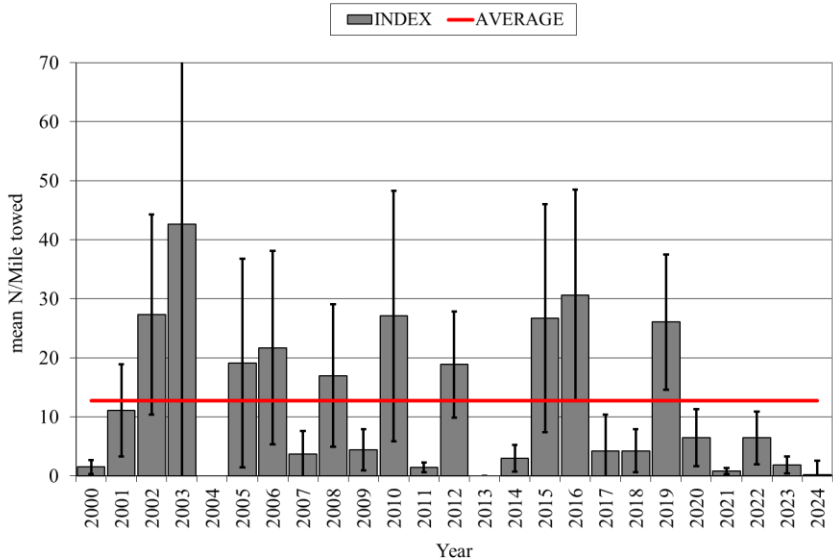


Figure 4. One year old yellow perch abundance index from the upper Chesapeake Bay trawl survey.³

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2. Piavis, P. and E. Webb. 2024. Population assessment of head-of-bay yellow perch stocks in Maryland. In, Chesapeake Bay finfish investigations. Maryland Department of Natural Resources, US FWS Federal Aid Project F-61-R, Annapolis, Maryland.
3. Piavis, P. and K. Whiteford. 2024. Population vital rates of resident finfish in selected tidal areas in Maryland's Chesapeake Bay. In, Chesapeake Bay finfish investigations. Maryland Department of Natural Resources, US FWS Federal Aid Project F-61-R, Annapolis, Maryland.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
F	Fishing Mortality
FMP	Fishery Management Plan
YPFMP	Yellow Perch Fishery Management Plan

Section 28. Pilot Programs

Pilot programs allow the Department of Natural Resources (MDNR) to demonstrate and evaluate new approaches to managing fisheries. Rules for creating a pilot program are stated in the Code of Maryland Regulations (COMAR 08.02.01.10). Each program operates under its own set of guidelines which are defined in the permits issued to the participants. Under Natural Resources Article, §4-215, Annotated Code of Maryland, the General Assembly has required that fisheries be managed in accordance with the fisheries management plans adopted by MDNR. The MDNR uses pilot programs to test different methods of achieving the goals and objectives set out in those plans to determine the best management strategy.

E-Reporting Pilot

Implemented in 2012, the E-Reporting Pilot Program using the Fishing Activity and Catch Tracking System (FACTS™) is a real-time electronic commercial harvest reporting system (e-reporting) that provides increased accountability for capturing accurate harvest data. It was initiated in response to the 2008 Federal Fisheries Disaster for Chesapeake Bay blue crabs declared by the National Oceanic and Atmospheric Administration (NOAA). Led by the Blue Crab Design Team, a partnership of MDNR and industry, the pilot program was developed to help prevent future blue crab fishery disasters. Since then, the program was expanded to include finfish, charter (fishing guides), and shellfish reporting (for both harvesters and dealers). The first expansion was in 2015 when the striped bass fishery was added. Starting in 2016, all finfish species harvest occurring in the Chesapeake Bay and its tidal tributaries could be reported. In 2020 the ability for fishing guides to report was added and in October 2021, shellfish reporting was added. The MDNR continues to partner with the following organizations for the development and management of the program: Oyster Recovery Partnership, Electric Edge Systems Group, and Versar, Inc. (Versar subcontract contract ended in 2023).

FACTS™ requires participants to use their own mobile device (smartphone or tablet), phone (e.g., using the 24-hour call center), or personal computer to report their daily commercial harvest activity. Participants use the system only on days when they expect to engage in commercial harvest activity (i.e., no need to report on “no harvest” days). When a participant starts a commercial fishing trip in FACTS™, they are alerting the system to expect a harvest report at the end of the day. This is called the hailing cycle and it is a critical component of the real-time reporting system. The ‘start hail’ is sent prior to leaving the dock, and it includes information on where and when they expect to land their harvest. The trip ‘end hail’ is their harvest report, and it is sent before they land their catch. This real-time approach using hails provides the opportunity for dockside monitors to verify harvest and provides enforcement the ability to verify reporting compliance.

The use of independent dockside (roving) monitors early in the program demonstrated that the hailing system improves accountability, paving the way for continued program expansion. This random and unannounced sampling was done

when participants landed their catch at the time and location indicated by their hailing activity. Due to the receipt of additional NOAA grants, dockside monitoring was active seasonally for some fisheries through November 2022. During 2022 to 2024, there were no roving monitors for blue crab and finfish e-reporting due to funding limitations. Roving monitors were active for charter (for-hire) e-reporting from June through September in 2022 and shellfish e-reporting through November 2022. The E-Reporting Pilot Program continues to submit funding proposals for both roving monitors and to scope the feasibility of developing a seafood dealer e-reporting module (Phase I to be completed in 2025, seeking funding for Phase II).

The increased accountability (i.e., daily harvest reporting with a hailing system) also provides opportunities to offer specific harvest flexibilities for participants. Flexibilities were first added in 2012 for blue crabs and have expanded as the program has expanded. E-reporting participants have the option to use the flexibilities. These flexibilities are added or modified in accordance with FMPs and federal requirements. For example, blue crab participants are exempted from some regulations by opting to set pots and remove crabs from crab pots in the Chesapeake Bay up to two hours before sunrise. Program participants alert Natural Resource Police (NRP) on the day they opt to do this prior to leaving land through the hailing system so that NRP is aware of the activity in real-time. These business flexibilities allow the harvester to try to be more efficient with their harvesting activities while being more accountable to MDNR and NRP.

Important aspects of the E-Reporting Pilot Program are outreach and support for the volunteer program participants. Training support is provided by MDNR staff and program partners. Over the course of the program, there has also been an increased number of experienced participants mentoring new users in the use of the system. This training support from industry members is an important part of the program’s success as a commercial reporting option. In addition, an introductory series of videos is available in the FACTS™ system and on the E-Reporting Pilot Program’s webpage. This additional source of training reinforcement is a convenient online training option, enhancing program accessibility. Available: dnr.maryland.gov/fisheries/pages/e-reporting/index.aspx.

In addition to supporting commercial harvesters and program managers, FACTS™ is accessible to NRP with specialized features to more effectively enforce reporting requirements and monitor fishing activity. An online training program specifically for officers is available and training on the system has been mandated by NRP leadership for all officers, including training for each graduating academy class. It is important to note that while NRP has access to information about real-time fishing activity, reported harvest data remains confidential, and requires a subpoena to access. The pilot program continues to work closely with NRP leadership to ensure effective communication for all system and program updates.

The pilot program adapts to the needs of participants, provides customer service through a 24-hour helpline, supports increasing numbers of participants, conducts feedback surveys, and assists in monitoring quota-managed fisheries. What was

initially developed as a better way for commercial harvesters to submit accurate, verifiable, and enforceable harvest data has become much more. It is now an important real-time fisheries management resource for MDNR, a business tool for industry participants that provides access to their trip and harvest data, and a way for enforcement officers to streamline their efforts to ensure compliance and maritime safety.

Blue Crab E-Reporting

The flexibilities that e-reporting participants could choose were:

- While participants still may not crab on more than six days during any crabbing week, except as otherwise specifically permitted by MDNR for holidays, participants can take any day of the week off that they choose.
- Participants may set crab pots and remove crabs from pots in the Chesapeake Bay up to two hours before sunrise and must cease removing crabs from pots six hours after sunrise.
- On July 3 and July 4, participants may set crab pots and remove crabs from pots in the Chesapeake Bay up to three hours before sunrise and must cease removing crabs from pots six hours after sunrise.

The number of blue crab program participants increased from 15% (n = 800) in 2022 to 17% (n=889) in 2023 to 18% (n = 964) in 2024 of all the commercially licensed crabbers in Maryland. Program and trip activity is reported by participants harvesting in the Chesapeake Bay and its tidal tributaries, and the Coastal Bays. Over the course of each crabbing season (April 1 through December 15) the percent of trips reported via FACTS™ increased from 2022 to 2024. In 2022, 17% (n = 11,520) trips were reported in FACTS™ and this increased to 18% (n = 13,745) in 2023 to 20% (n= 14,385) in 2024. Participants reported 13%, 14% and 17% of the annual total reported hard crab harvest by all commercial crabbers for 2022, 2023 and 2024 respectively. Reported soft and peeler harvest by participants consisted of 14%, 11% and 12% of annual total reported harvest for 2022, 2023 and 2024 respectively.

Finfish E-Reporting

The flexibilities that e-reporting participants could choose were:

Striped Bass

- Participants no longer are issued a paper permit card. The system is used to check-in catch and it updates remaining allocation in real-time.
- Participants may check-in harvest on the day after harvest.
OR
Participants may designate a representative to check-in harvest under their license. The representative must check-in the harvest the same day as it is fished.

Yellow Perch

- Participants are allowed to use box tags in place of individual fish tags for harvest.
- Participants are no longer issued a paper permit card and no longer need to call in daily to the Yellow Perch Hotline. The system provides participants with a daily update for the remaining yellow perch quota by area.

Atlantic Menhaden

- Participants harvesting from pound nets do not have to report on the day of harvest by text message or online form because their daily trip activity in FACTS™ already meets the reporting requirement.

The yellow perch flexibilities demonstrate the success of e-reporting with hailing to the industry and fishery managers. During the 2022 to 2024 seasons, the percentage of yellow perch harvest reported by FACTS™ participants continued to represent over 80% of the total reported harvest (85% in 2022 and 2023, and 83% in 2024). Due to the hailing component, MDNR was able to accurately assess the daily fishing pressure and manage closings based on known effort. This resulted in the decision to take a less conservative approach to managing fishing effort which allowed more time for permit holders to harvest up to the full quota.

In 2023, the system was updated so that participants could review their striped bass quota history. The “Striped Bass Quota Ledger” was developed in response to industry feedback, making it easier for participants to see their initial quota, all completed check-ins, and quota share transfers in one summary, including prior seasons, something not available to those using paper permit cards.

Finfish e-reporting participation increased from 16% (n = 411) in 2022 to 17% (n = 454) in 2023 to 17% (n = 483) in 2024 of all the commercially licensed finfish harvesters. Program and trip activity is reported by participants harvesting in the Chesapeake Bay and its tidal tributaries only. The percent of commercial finfishing trips reported in FACTS™ was 10% (n = 1,219) in 2022 to 9% (n = 1,164) in 2023 to 12% (n = 1,420) in 2024 of all reported trips. The percentage of industry participating in the program was affected by factors such as the addition of new invasive species finfish licenses available for purchase, but overall the program continues to demonstrate both growth and impact.

Charter (Fishing Guide) E-Reporting

The flexibilities that e-reporting participants could choose were:

- During 2022 and 2023, participants were able to allow anglers on their vessel to keep two striped bass per day.
- In 2024, the ability to keep two striped bass per person was removed; however, the captain and one mate could each possess up to one striped

bass per person per day within the open recreational and charter boat summer and fall fishery.

During calendar years 2022 to 2024, the proportion of all charter vessels participating in FACTS™ increased from 59% in 2022 to 64% in 2023 and to 66% in 2024. As a result, comparative participation numbers are based on percentages of vessels using FACTS™ as part of the Chesapeake Bay fleet versus the Maryland for-hire fleet as a whole (Chesapeake Bay and its tidal tributaries, the Coastal Bays, and the Atlantic Ocean). This activity level has been refined further to assess the impact of FACTS™ reporting as a portion of all vessels actively reporting harvest (i.e., active vessels with at least one trip reported per season, electronically or on paper). The results of this analysis indicate that while active FACTS™ vessels were between 59% and 66% of the fleet annually, those same vessels represented 90%, 90% and 97% of all active vessels in the fleet for 2022, 2023 and 2024 respectively. Furthermore, the percentage of the reported harvest by e-reporting participants is 97%, 97% and 92% of all reported harvest in 2022, 2023 and 2024 respectively.

From 2022 to 2024, the FACTS™ system functionality was updated to include several new features, supporting program participants and providing improved data quality for both harvest and vessel information. In 2022, a feedback survey was sent to all of the charter participants. The responses highlighted the need for business tool improvements (e.g., charter angler count feature created in 2022 to help captains calculate their annual earnings), identified data issues (e.g., only reporting striped bass on multiple-species charter trips), and enhanced understanding of how the fishery works (e.g., captains fishing on the Atlantic Coast in the spring and then moving to the Chesapeake Bay later in the season). To improve data quality for reporting all species caught during a charter trip, the end hail was updated in 2022, asking the captain to report any additional species caught and/or released fish besides striped bass. Also, a report feature was added in 2023 that allows FACTS™ to support identifying charter vessels, marinas, and landings for the federal Access Point Angler Intercept Survey for recreational fishing.

Shellfish E-Reporting - Harvesters and Dealers

The flexibilities that e-reporting participants could choose were:

- Participants may designate a representative to deliver harvest to dealers if the representative is also a commercially licensed individual allowed to harvest shellfish and declared to report harvest using e-reporting with hailing.
- Participants may start harvesting up to ½ hour before sunrise, but must cease harvest ½ hour earlier than the stop times listed in COMAR 08.02.04.03 (oysters), COMAR 08.02.02.03 (soft-shell clams), and COMAR 08.02.07.03 (hard-shell clams).

In 2022, the participation cap of 100 users during the 2021 developmental phase was lifted, allowing access to the entire industry. In 2024, the online training for the

shellfish pilot was completed, streamlining the training process. As a result, participation of the entire licensed industry increased from 5% (n = 75) in 2022 to 8% (n = 139) in 2023 and to 9% (n = 152) in 2024. Participant numbers and harvest data provided for this section of the report correspond to the 2022 to 2024 commercial public shellfish seasons: oystering October 1 through March 31 and clamming September 1 through August 31. The number of trips reported in FACTS™ increased from 4% (n = 1,621) during the 2021-22 season to 12% (n = 5,297 in 2022-2023; n = 3,388 in 2023-2024) in the 2022-2023 and 2023-24 seasons.

Harvest activity over the three year period was predominantly oysters, with razor clams being the the main species reported by clammers (hard and soft (Mya and razor)). FACTS™ participants reported between 5% in 2021-2022 to 15% in both 2022-2023 and 2023-2024 seasons of the annual total reported commercial public fishery oyster harvest and 1% in 2021-2022 season to 24% and 27% of the annual total reported commercial razor clam harvest in the 2022-2023 and 2023-2024 seasons respectively.

In response to feedback from the industry and NRP about the ½ hour early start flexibility, the availability of the early start time was updated for each of the 2022 to 2024 harvest seasons. During the 2023 season the flexibility was available for the full season and 81% of all shellfish trips reported in FACTS™ elected to use the early start option. For 2025, the flexibility is scheduled to be available for the full season.

Roving monitors were active for random landing intercepts during the 2022 season from October 2021 to March 2022 and October to November 2022. During that season, feedback surveys were distributed to both participants (mid-season) and roving monitors (end of season). Survey results showed that 80% of the participant responses rated their satisfaction with the program as at least an 8 out of 10 (highest rating). The practical feedback from roving monitors continued to inform MDNR's plans for expansion of dockside intercept activity (all fishery modules), providing increased accountability for capturing accurate harvest data.

Another component of shellfish e-reporting is the ability for licensed Maryland Seafood Dealers to submit electronic buy tickets for oysters, soft clams and hard clams. The buy ticket process is simplified in FACTS™ since trip information is mostly autopopulated from a participating shellfish harvester. Shellfish dealer e-reporting initially focused on small businesses, to keep in sync with the smaller scale approach for the harvester module. Over the last three years the program has been working with industry to increase participation, including mid-size dealers. Feedback from dealers indicated a willingness to participate and understanding that reporting would be easier. However, those dealers only saw the benefit of doing so after the majority of the harvesters were participating in FACTS™. Dealer participation increased from five dealers in 2022 to six in 2023 and 2024 and less than 1% of all the buy tickets were submitted via FACTS™.

E-Reporting Pilot Updates and Future Development

The E-Reporting Pilot Program's team approach between industry and MDNR and the flexible software design of FACTS™ have proven to be especially effective when responding to timely fishery management plan changes, adapting special harvest flexibilities based on wider federal management requirements, implementing program enhancements, providing user support, and incorporating user feedback. Over the last three years, the FACTS™ system has been updated to proactively manage the increasing number of users (e.g., 2023 additional computer server), higher volume of trips being reported, and streamlining harvest data downloads to MDNR.

In 2024 the Maryland General Assembly paved the way for updating Maryland's commercial fisheries harvest reporting requirements (2024 Md. Laws, Chap. 519). The legislation requires individuals licensed by MDNR to report in accordance with adopted regulations. After thirteen years of demonstrated success as a pilot program, this legislation makes it possible for using the FACTS™ system to transition to a formal reporting option. The necessary regulations for the reporting requirements are being drafted for submission in 2025.

In 2024, as part of the transition process to a formal reporting option, the program team (MDNR staff and program partners) identified the initial priorities, including: required system updates, enhanced 24-hour helpline support to an increasing and diverse user group, robust data management plans for trip and harvest information, staffing requirements, updating program materials (e.g., flyers/FAQs and web content), continued integration of FACTS™ with the new MD Outdoors licensing system, and expanding recruitment outreach. This outreach will in part focus on smartphone-using license holders who are under the age of eighteen, since they were previously excluded from participating due to legal age requirements associated with signing a pilot program permit agreement.

Shrimp Pilot

The motivation for the shrimp pilot was the successful Virginia penaeid shrimp fishery which harvests white (*Penaeus setiferus*) and brown (*Penaeus aztecus*) shrimp. Commercial harvesters asked MDNR for a similar opportunity.

Partially due to the short lifespan of shrimp, abundance can be boom or bust. Trawl and beach seine surveys conducted by MDNR document a fluctuation in brown shrimp abundance from 1989 to the present (Figures 1 and 2). These surveys also document a low to negligible abundance in white shrimp from 1989 until the last 10 to 15 years of the dataset when abundance begins to increase (Figures 3 and 4). The increase in white shrimp may supplement the presence of brown shrimp to support a combined penaeid shrimp fishery. However, boom and bust patterns are largely influenced by water temperatures, tides, currents, and wind patterns. During favorable conditions, shrimp may spillover to Maryland from the spawning center off of North Carolina. The past few years may reflect more stable conditions since

they follow a period of above average abundance. Harvest is expected to improve when oceanic conditions shift back to favoring warmer water temperatures.

The expansion of white shrimp in Maryland may indicate that coastal environmental conditions can be favorable to predominantly southern fishery species. This phenomenon was previously demonstrated by the emergence of cobia, red drum, and sheepshead. As ocean conditions shift with climate change, the abundance of fish species along the coast is expected to fluctuate. It is essential for MDNR to streamline a process for establishing novel fisheries as species migrate along the Atlantic coast.

In 2022, MDNR worked with the Tidal Fisheries Advisory Commission's Shrimp Workgroup to develop the pilot program in state waters of the Atlantic Ocean using small trawl gear. Staff also consulted the Virginia Marine Resources Commission to obtain information on its successful program. The pilot allows someone in possession of a Maryland Unlimited Tidal Fish License or Unlimited Finfish Harvester License to use a 16 foot beam trawl to target shrimp in an area that is normally off limits for that gear. Participants must also possess a Shrimp Pilot Program Permit. Transfers of these permits are prohibited.

The season for the shrimp pilot is September 15 through January 31, though MDNR may close the season early at any time. Legal shrimp fishing may occur 30 minutes prior to sunrise through 30 minutes after sunset. While shrimping, the permit holder must be on board the vessel at all times. The pilot operates in Maryland waters of the Atlantic Ocean. The Ocean City Inlet is a dividing line of north and south fishing zones. In the north zone, shrimp fishing may occur between ¼ to 3 nautical miles off the coast. In the south zone, shrimp fishing is limited between ½ to 3 nautical miles off the coast due to the federal prohibition of new commercial fishing activities inside ½ nautical miles of Assateague Island National Seashore.

Participants must follow these requirements:

- Trawl criteria:
 - A fixed frame net must have an opening no larger than 16 feet in width and no higher than 4 feet in height (i.e. beam or frame trawl).
 - Net mesh must be between 1.5 and 2.0 inches stretched mesh.
 - Net must be equipped with a properly installed National Marine Fisheries Service-approved Bycatch Reduction Device.
- Tows may not exceed 30 minutes.
- All gear must be inspected and approved by MDNR staff prior to the final issuance of the Shrimp Pilot Program Permit.

Currently, quota-managed species may not be harvested in this program. Interactions with all protected species must be reported within 24 hours to the National Oceanic and Atmospheric Administration and MDNR. Permittees must notify MDNR at least 48 hours in advance of trips and allow observer staff onboard to collect data on

shrimp and bycatch. Fishing is permitted without observers onboard. All set level catch, including estimated bycatch, must be reported after each trip in a spreadsheet provided by MDNR. These data are confidential. A minimum landings requirement was implemented with the 2024-2025 season. Permittees will need to show at least 200 total pounds of harvest in the first two years of holding a permit in order to maintain eligibility in the program.

Though the pilot program was active for the 2022-2023 season, no participants were able to acquire gear at that time. One participant fished in each of the following two seasons. Landings and discards from those trips were low and are confidential.

Coastal Survey Data

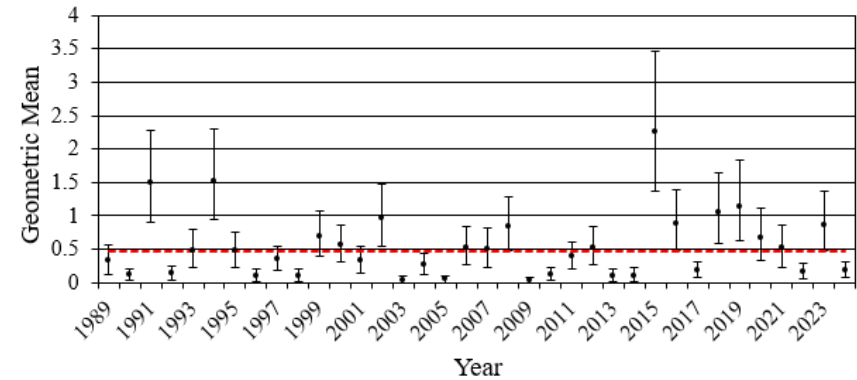


Figure 1. Brown shrimp trawl index of relative abundance (geometric mean) from 1989 to 2024. The dotted line represents the average index value across the time series. Data sourced from the Maryland Coastal Bays trawl survey.

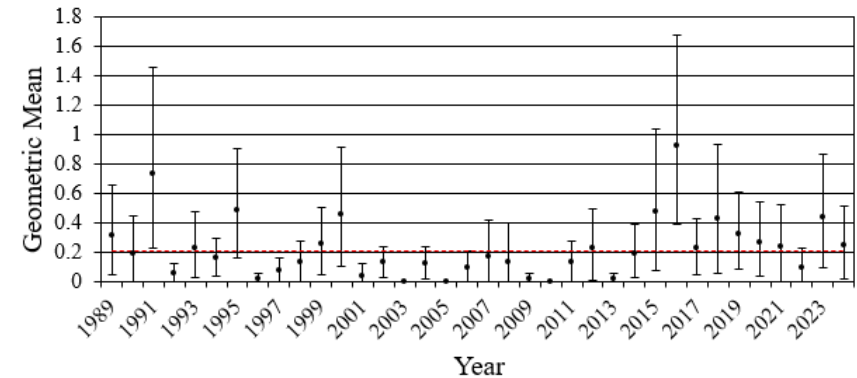


Figure 2. Brown shrimp beach seine index of relative abundance (geometric mean) from 1989 to 2024. The dotted line represents the average index value across the time series. Data sourced from the Maryland Coastal Bays seine survey.

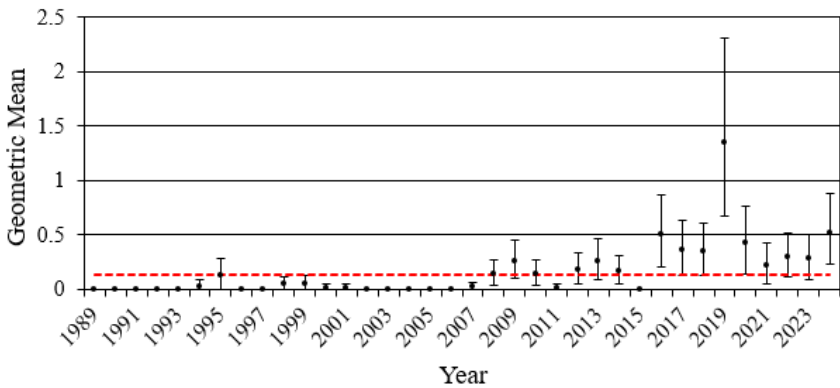


Figure 3. White shrimp trawl index of relative abundance (geometric mean) from 1989 to 2024. The dotted line represents the average index value across the time series. Data sourced from the Maryland Coastal Bays trawl survey.

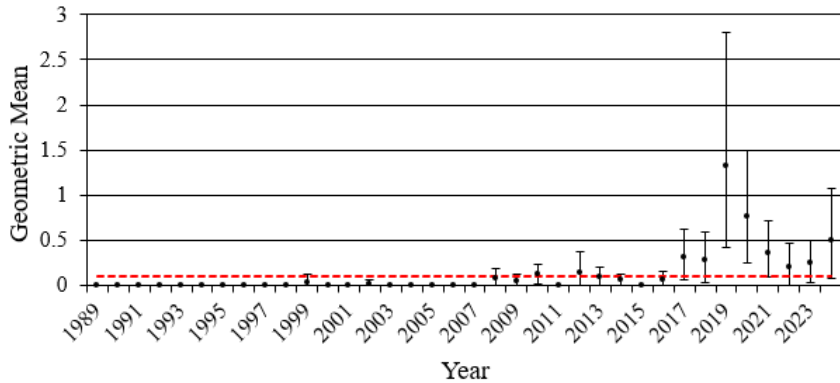


Figure 4. White shrimp beach seine index of relative abundance (geometric mean) from 1989 to 2024. The dotted line represents the average index value across the time series. Data sourced from the Maryland Coastal Bays seine survey.

Finfish Trotline Pilot

The finfish trotline pilot was created due to the expiration of the Invasive Catfish Finfish Trotline License in June 2022. That license had been created by the General Assembly with a sunset period that was not repealed or amended. The pilot was created to allow commercial licensees who would not otherwise be able to use the gear or harvest the fish the ability to continue to use finfish trotlines to harvest blue and flathead catfish.

Any individual with a license issued under Natural Resources Article, §4-701, Annotated Code of Maryland was allowed to participate. A total of 69 permits were issued during the pilot period. Participants were required to follow existing trotline regulations and to report harvest on their Daily Record of Commercial Fishing.

The pilot ran from October 2022 through August 2023. It ended because the General Assembly recreated the Blue and Flathead Catfish Finfish Trotline License, effective April 24, 2023. On this date, MDNR stopped taking new applications to the pilot program but allowed current participants to finish the license year under the pilot.

Acronyms

Table 1. Acronyms used in this section

Acronym	Term
COMAR	Code of Maryland Regulations
MDNR	Maryland Department of Natural Resources
NOAA	National Oceanic and Atmospheric Administration
NRP	Natural Resources Police, Maryland Department of Natural Resources

Appendix

Appendix A. Compliance Reports to the Atlantic States Marine Fisheries Commission for Calendar Year 2022

The Atlantic States Marine Fisheries Commission (ASMFC) requires the states to prepare annual compliance reports to ensure that they are implementing the coastwide management requirements stated in the fishery management plans. Maryland reports on the following species: American eel, Atlantic croaker, Atlantic menhaden, Atlantic striped bass, Atlantic sturgeon, black drum, black sea bass, bluefish, horseshoe crab, Spanish mackerel, red drum, American shad and river herring, scup, spot, spotted seatrout, summer flounder, tautog, and weakfish. Appendix A includes the 2022 calendar year ASMFC compliance reports for these species in the order listed. All confidential data have been redacted by being removed or replaced with a [C].

Additional information on stock status and fishery management measures for these migratory fish species can be found at asmfc.org and mafmc.org. Contact information for ASMFC staff is available at asmfc.org/species/, and the publications library is available at asmfc.org/category/resources/.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

State of Maryland American Eel (*Anguilla rostrata*) Compliance Report to the Atlantic States Marine Fisheries Commission Calendar Year 2022

**Prepared by: Keith Whiteford
Fishing and Boating Services
Maryland Department of Natural Resources
August 2023**

Tawes State Office Building – 580 Taylor Avenue – Annapolis, Maryland 21401
410-260-8DNR or toll free in Maryland 877-620-8DNR – dnr.maryland.gov – TTY Users Call via the Maryland
Relay

I. COMMERCIAL FISHERY

a. Synopsis of regulations in place – 2022 season

1. The Secretary of the Department of Natural Resources may establish or modify catch limits, size limits, and seasons for American eel in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for American Eel, by issuing a public notice on the Fisheries Service website.
2. A license is required to catch eels for sale in tidal waters. Commercial fishing is prohibited in non-tidal waters. Limited entry exists for new commercial fishermen.
3. Submittal of monthly commercial catch reports with daily information (lbs. landed, gear type, and amount by area) is required.*
4. Except by spear or baited traps or pots, eels may not be taken between September 1 and December 31.**
5. A person may not catch, possess, land, or sell eels for commercial purposes which are less than 9 inches total length, except as permitted under COMAR 08.02.(appropriate aquaculture permit).**
6. No possession limit.
7. An eel pot must be constructed with a minimum wire mesh size of 1/2" by 1/2" inch in entirety.**
8. A person may not set buoyed eel pots in those channels designated as crab pot buoy-free channels or other prohibited channels.
9. A commercial crabber licensed to catch crabs may use up to 50 eel pots per day to catch eels for personal use as trotline bait with no harvest limit and must submit eel catch reports (lbs. landed and gear amount by area). Commercial crabbers are subject to the same minimum harvest size and pot mesh requirements of commercial eel harvesters.

b. Estimates of directed harvest-calendar year 2022

1. Pounds landed by life stage and gear type

A distinction is not made between life stages of American eel in Maryland commercial records. Legal commercial gear in Maryland waters does not retain glass and elver stage eels. In 2021, approximately 99% of all eels landed were caught with eel pots, similar to previous years. These are believed to be entirely yellow eels.*

Total reported commercial eel harvest for Maryland in 2022 was 188,903 pounds. A total of 187,810 pounds were reported on finfish reporting forms and 1,093 pounds were reported for personal use on the crab reporting forms. Harvest in 2022 decreased 39% from 2021 and has remained below the time series mean of 385,749 pounds for four consecutive years(Figure 1).* The fishery, which experienced lower demand and poor market conditions in 2019, was significantly impacted by the Covid-19 pandemic and the effects on the export market. The substantial drop in recent harvest over the last four years is believed to be market driven.

No pattern was discerned from monthly harvest. Over 99% of the harvest occurred from April-November and each month over the same time period contributed 7-18% of the annual total. Monthly eel landings in Maryland have historically indicated a bi-modal fishery with the biggest peak in the spring and another peak in the fall. A deviation from the bi-modal fishery has occurred since 2000 and harvest has been low and stable from month to month.

2. Biological data from representative sub-samples

A total of 553 and 1048 commercially harvested American eels were sampled from the eel pot fishery in the South and Elk rivers, respectively. Sagittal otoliths from 244 sub-sampled eels were extracted for age analysis and 131 eels were sub-sampled for sex determination. The prevalence rate of *Anguillicola crassus* was 49% (N = 84) for South River eels and 85% (N = 86) for Elk River eels. South River eels were 74% female and Elk River eels were 63% female. There was a noticeable difference in size distribution between the South and Elk river eels (Figure 2 and Figure 3). Elk River eels demonstrated a heavily skewed size distribution towards eels in the smallest size bins. Mean length of South River eels was 363 mm and 26% of the eels were > 400 mm (considered large by commercial standards). Mean length of Elk River eels was 308mm and 12% were > 400mm. *

Age structure for each system was determined using an age-at-length key. The maximum age for yellow eels in the South and Elk rivers was determined as 8 and 12 years, respectively. This resulted in an estimated M of 0.37 for the South River and 0.25 for the Elk River. The age structure ranged from 2-7 years for South River eels and 2-10 years for Elk River eels. Age at full recruitment (modal age) was age 3 for both tributaries. Age 3 and age 4's represented 80% of the catch for the South River and 70% of the catch for the Elk River. Application of Heincke's method for the South and Elk river eels indicated levels of fishing mortality at $F = 0.28$ and $F = 0.26$, respectively (Table 1).

3. Estimated percent of harvest going to food versus bait: Data not available.

c. Estimates of exports by season

Dealers are required to report the weight and price paid for American eels purchased, as well as the weight and price of eels sold, but are not required to report the export of eels. Therefore, estimates of exports by season cannot be made with any degree of accuracy.

d. Harvest data provided as catch-per unit-effort (CPUE)

In 2021, eel pot CPUE in state tidal waters was 1.18 pounds per pot, ranking third highest in the time series since effort information had been collected in Maryland in 1992 (Figure 4). This marked the tenth consecutive year CPUE has exceeded the time series mean of 0.74 pounds per pot. From 1992-2002, CPUE was stable at relatively low levels, increased sharply from 2002-2006 and remained stable at a relatively high level from 2007-2013 before steadily increasing since 2014. Overall, CPUE has shown a clear positive trend since 1992. Total eel pots fished in 2022 was second lowest in the time series. Eel pot effort has steadily declined over the last 10 years. The number of pots fished in 2022 represented 33% of the average effort from 2011-2018.*

e. Permitted catch for personal use, if available.

In 2022, licensed commercial crabbers harvested 1,093 pounds of American eel for use as trotline bait with a CPUE of 0.33 pounds per pot. Only once since 2014 has eel harvest from commercial crabbers exceeded the time series mean of 21,599 pounds. It should be noted that the reporting of eel harvest from crab reporting forms has been somewhat sporadic throughout the time series.*

II. RECREATIONAL FISHERY

a. Synopsis of regulations in place – 2022 season

1. Open Season: All year.
2. Minimum Length: 9 inches total length.**
3. Hook and line: tidal and non-tidal possession limit: 25 daily.**
4. A licensee authorized to catch crabs may use up to 10 pots to catch up to 25 eels daily for personal use as crab trotline bait without obtaining an authorization to catch finfish.
5. Recreational fishers who use pots to harvest eels are required to comply with the same pot construction requirements as commercial eel harvesters.

b. Estimate of recreational harvest by season - calendar year 2022 - N/A

III. FISHERY-INDEPENDENT MONITORING

a. Results of the annual young-of-year (YOY) abundance survey - spring 2022

A young-of-year (YOY) abundance survey was conducted at Turville Creek, a tributary to the Isle of Wight Bay, in Maryland's coastal bay watershed from 2/24/2022-4/15/2022. An Irish elver ramp/trap was fished 30 times over the 8-week period. A total of 118,660 glass eels were captured, which resulted in a CPUE of 112 eels/hour (Figure 5). CPUE in 2022 was 24% lower than the time series mean of 148 eels/hour. The total number of glass eels captured in 2022 ranked third lowest since 2014 and second lowest in CPUE over the same period. Peak catches occurred on an individual day in the first, second and fifth week, with each day exceeding 10,000 glass eels. The overall index from 2000-2022 is variable with no discernable trend in abundance for glass eels in Maryland's coastal bays.*

b. Description of other fishery-independent surveys and results

1. Sassafra River Eel Pot Survey

A Sassafra River fishery independent eel pot survey, previously conducted from 1998-2000, has been replicated annually since 2006. In 2022, 30 pots were set in fixed locations and fished on 12 separate days from 5/25- 7/1. A total of 999 American eels were collected over the course of the survey. Sagittal otoliths from 138 sub-sampled eels were extracted for age analysis and 73 were sub-sampled for sex determination. Prevalence rate of the swim bladder parasite was 71% (N = 109). Females comprised 72% of the catch in 2022. The 2022 daily CPUE in pounds per pot ranged from 0.48-1.14 with a mean of 0.88, a 10% increase over 2021 CPUE (Figure 6). This ranked third highest in survey history and the sixth consecutive year CPUE exceeded the time series

average of 0.54 pounds per pot. After CPUE approximately doubled in 2009 relative to the 1998-2000 and 2006-2008 periods, it remained in a tight range (0.48-0.62) in seven of eight years through 2016. Since 2016, the four highest CPUE's occurred in the time series. Overall, the Sassafras River eel population demonstrated a positive trend in abundance since 2006.

Size structure was compared for four separate time periods (1998-2000, 2006-2013, 2014-2018, and 2019-2022) (Figure 7). These time periods were chosen to demonstrate the notable changes in length distributions and trends in size structure over the history of the survey. For each successive time period, the length distributions have become more evenly distributed and there was a shift to larger eels. In 1998-2000 the proportion of eels considered large by commercial standards (≥ 400 mm) was 3%. The proportion of large eels was 12% from 2006-2013, 21% from 2014-2018, and 28% from 2019-2022. In addition, the mean size of Sassafras eels increased from 309 mm to 331 mm to 358 mm to 373 mm over the four successive time periods.

Age structure was determined using an age-at-length key. The age at full recruitment (modal age) for the Sassafras River eels was age 6. The modal age for the previous four years was age 5. Higher female composition has been seen since 2018 and there has been an overall shift to larger eels in the size structure. These factors likely led to increase in modal age from age 5 to age 6 in 2022. Application of Heincke's method for the Sassafras River eels indicated fishing mortality at $F = 0.27$, the third lowest F since 2006 and well below the average F (0.39) since 2010 (Table 1). Fishing mortality in the Sassafras River has averaged 0.29 since 2019.*

c. Projects planned for the next five years

1. YOY abundance survey in Maryland's coastal bays (Turville Creek).
2. Fishery independent yellow eel pot survey in the Sassafras River.

IV. CHARACTERIZATION OF OTHER LOSSES

There is no data available at this time to quantify other losses.

V. EEL MANAGEMENT PROGRAM FOR THE CURRENT CALENDAR YEAR

- a. In addition to continuing ongoing fishery independent surveys in 2023, fishery dependent sampling from the commercial eel pot fishery will be completed for the South and Chester rivers. In order to characterize the American eel population in Maryland's portion of the Chesapeake Bay, relative abundance, distribution, size, age, sex determination, and parasite infestation rates will be among information collected by this survey.

Addendum III Requirements

* Addendum III requirements implemented under **Monitoring Program**

** Addendum III requirements implemented under **Management Program**

Table 1: Estimated age distribution, instantaneous total mortality rate (Z) and fishing mortality rate (F) for South River (2022), Elk River (2022), and Sassafras River (2021-2022) American eels.

River	Year	Z	M	F	1	2	3	4	5	6	7	8	9	10
South	2022	0.65	0.37	0.28	0	44	243	200	40	19	7	0	0	0
Elk	2022	0.51	0.25	0.26	0	79	386	348	99	28	45	40	16	6
Sassafras	2021 2022	0.52	0.25	0.27	0	51	283	332	386	439	317	226	77	23

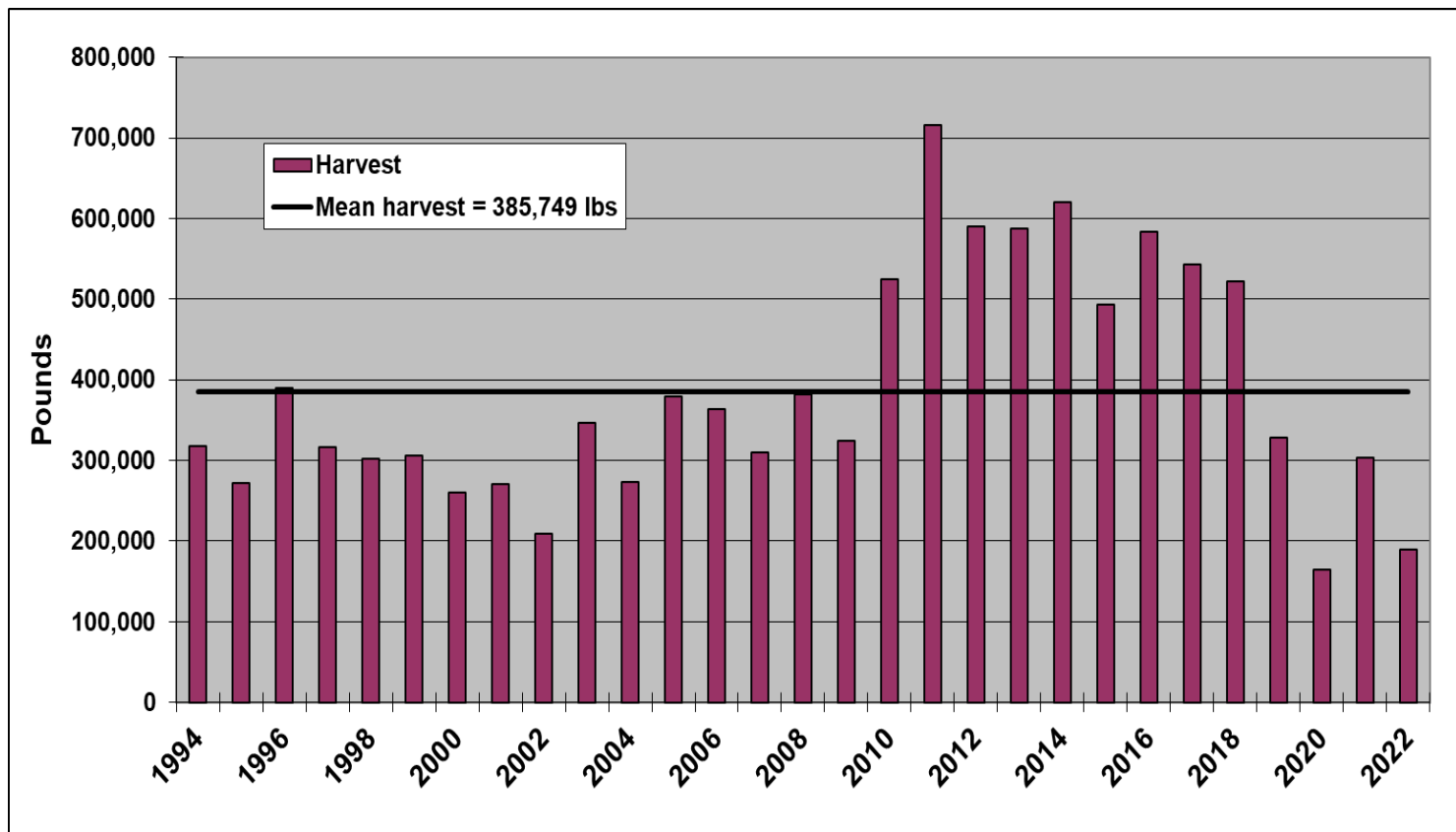
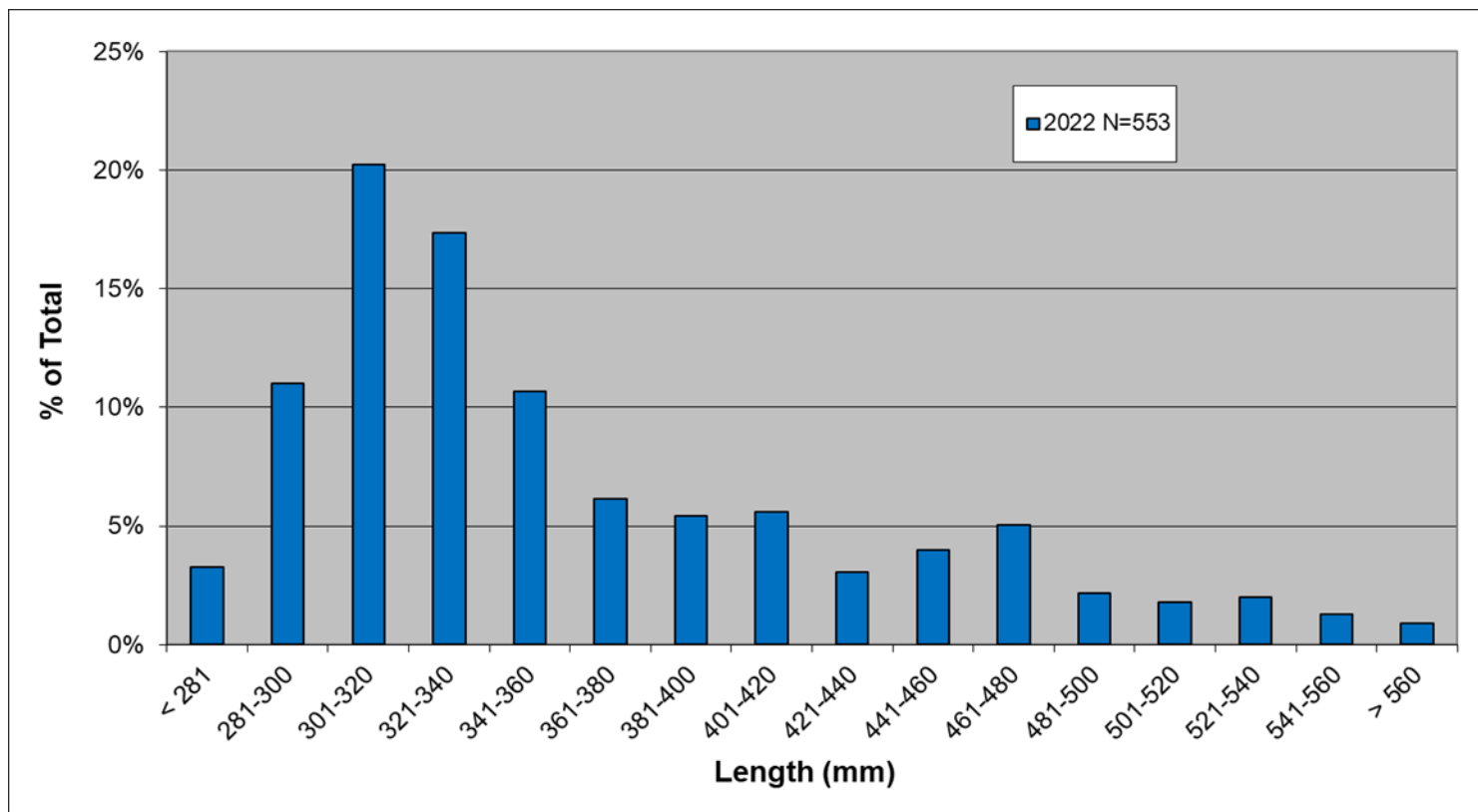
Figure 1. Reported American eel harvest from the Maryland Chesapeake Bay, 1994-2022.**Figure 2. Length distribution of commercially harvested eels from South River, 2022.**

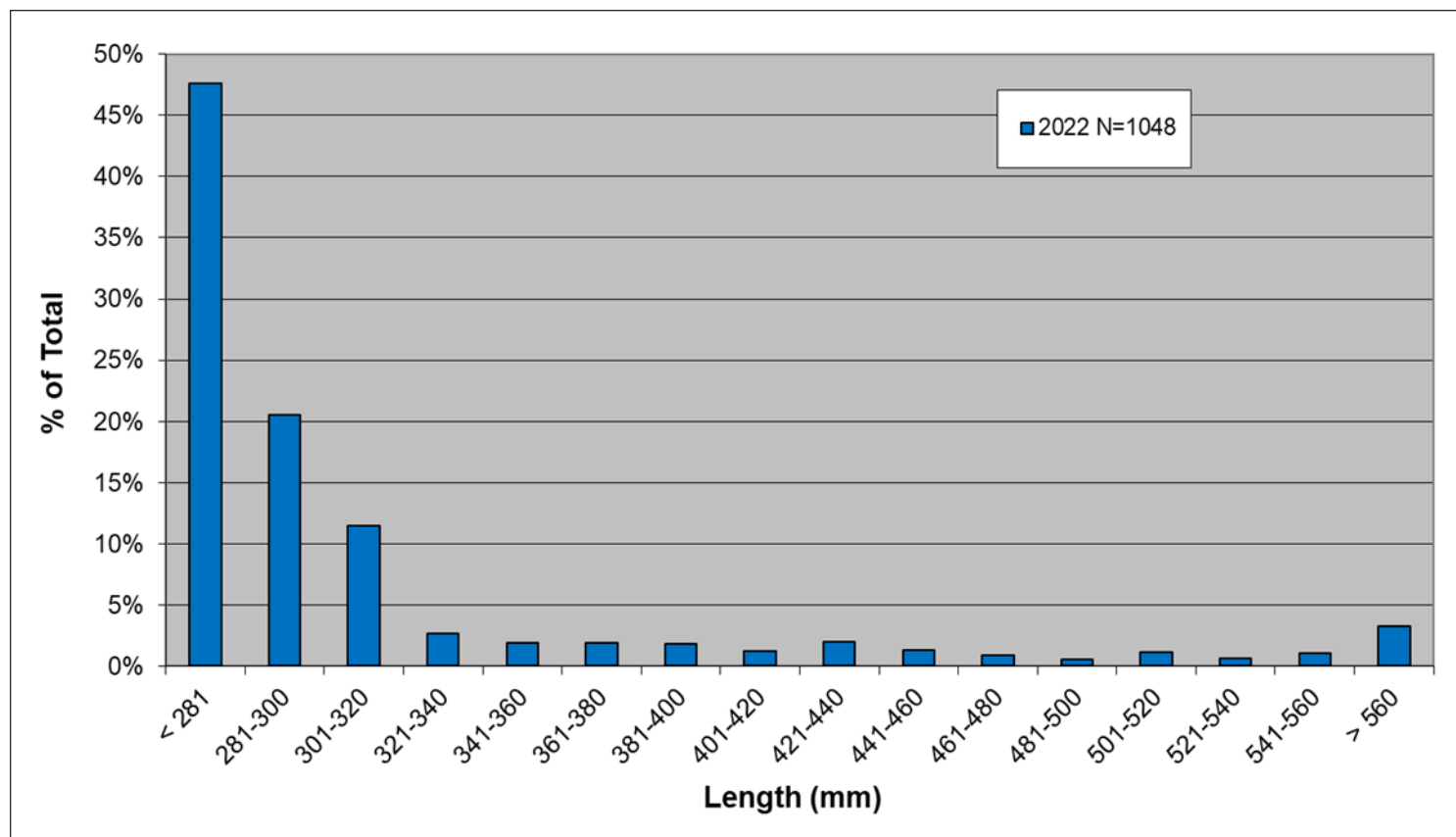
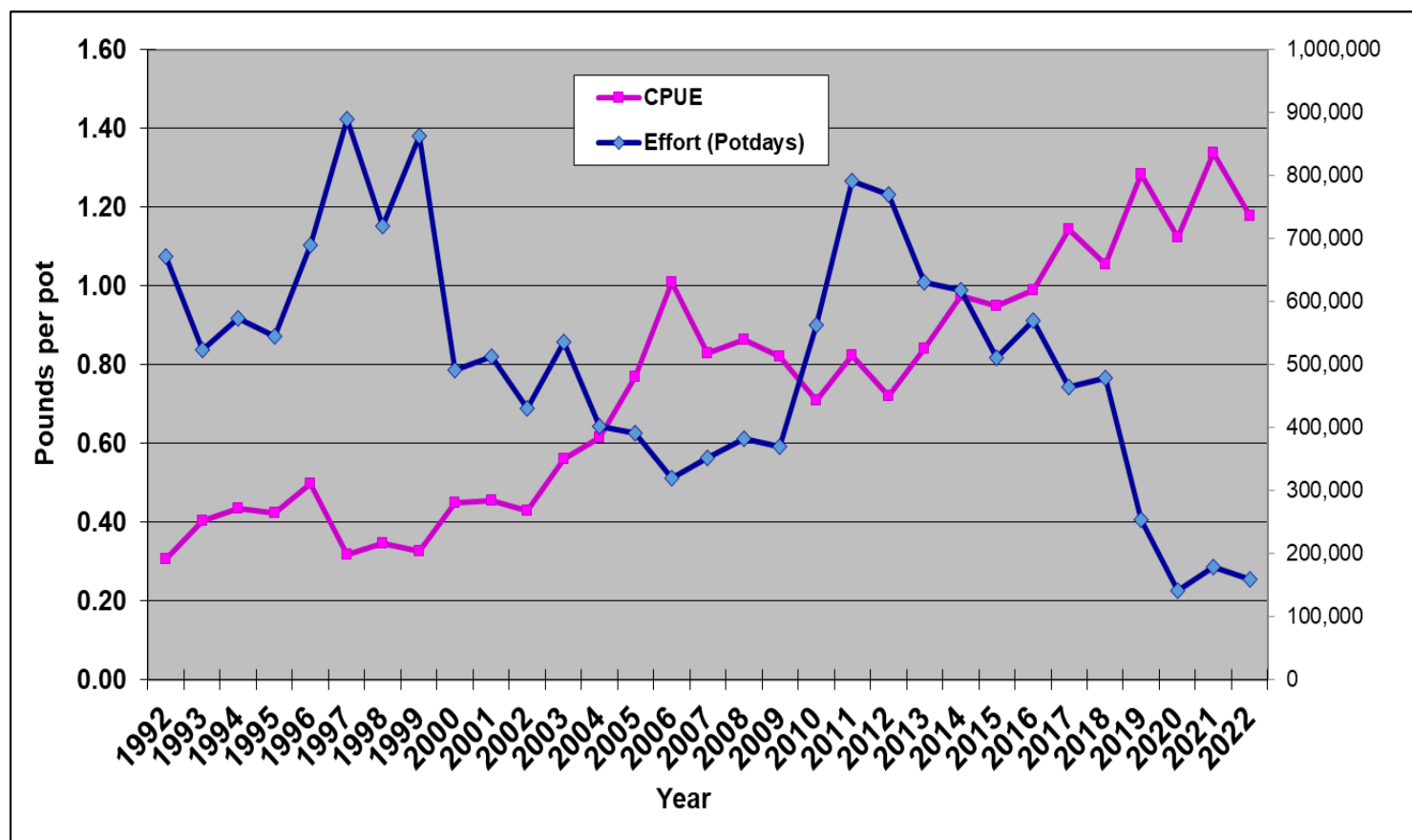
Figure 3. Length distribution of commercially harvested eels from Elk River, 2022.**Figure 4. Annual commercial eel pot CPUE (pounds per pot) and effort (eel pots * boat days), 1992-2021.**

Figure 5. Maryland (Turville Creek) American eel YOY arithmetic mean CPUE index with 95% CI's, 2000-2022.

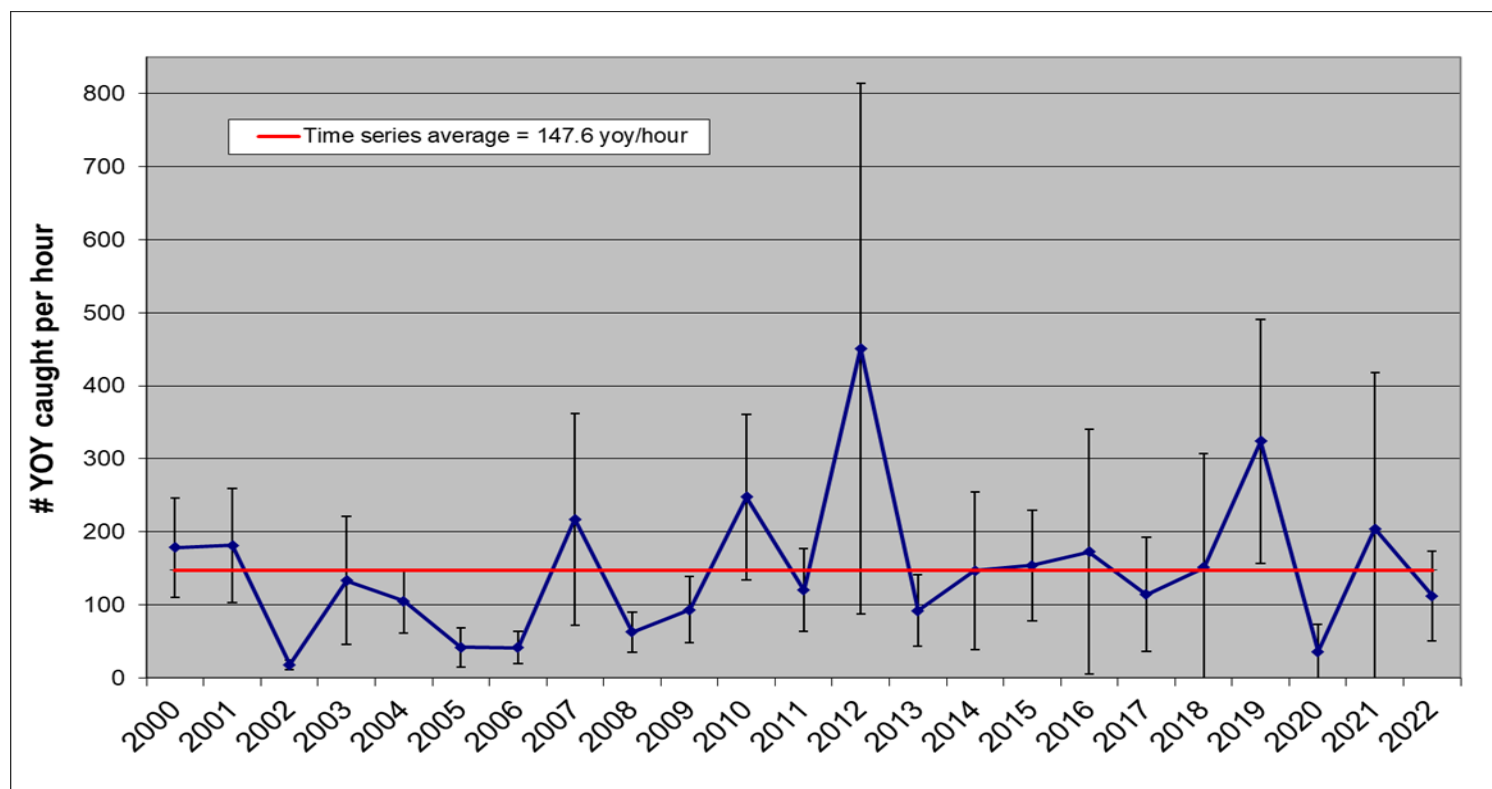


Figure 6. Mean annual CPUE and 95% confidence intervals from the Sassafras River fishery independent eel pot survey, 1998-2000 and 2006-2022.

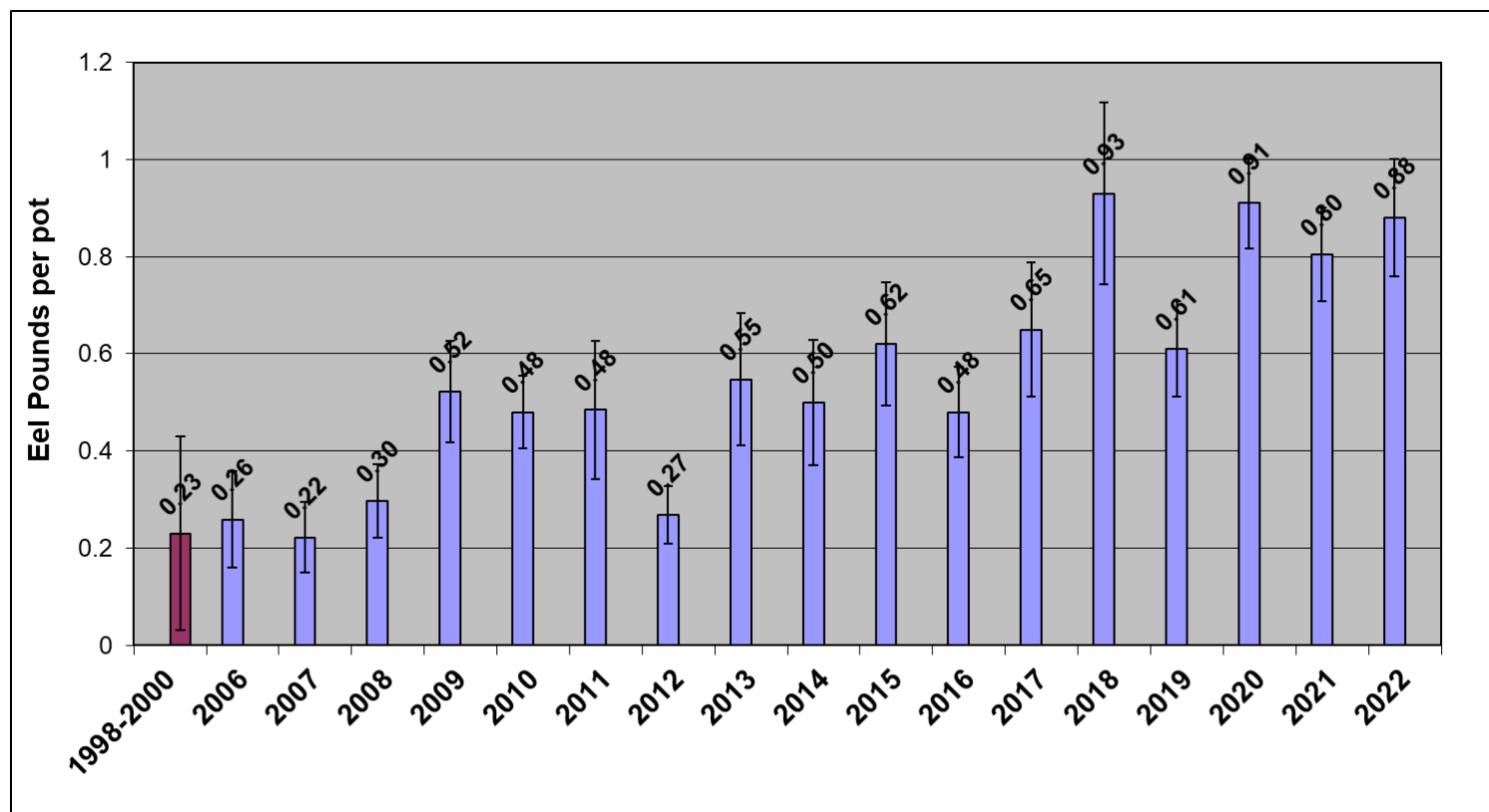
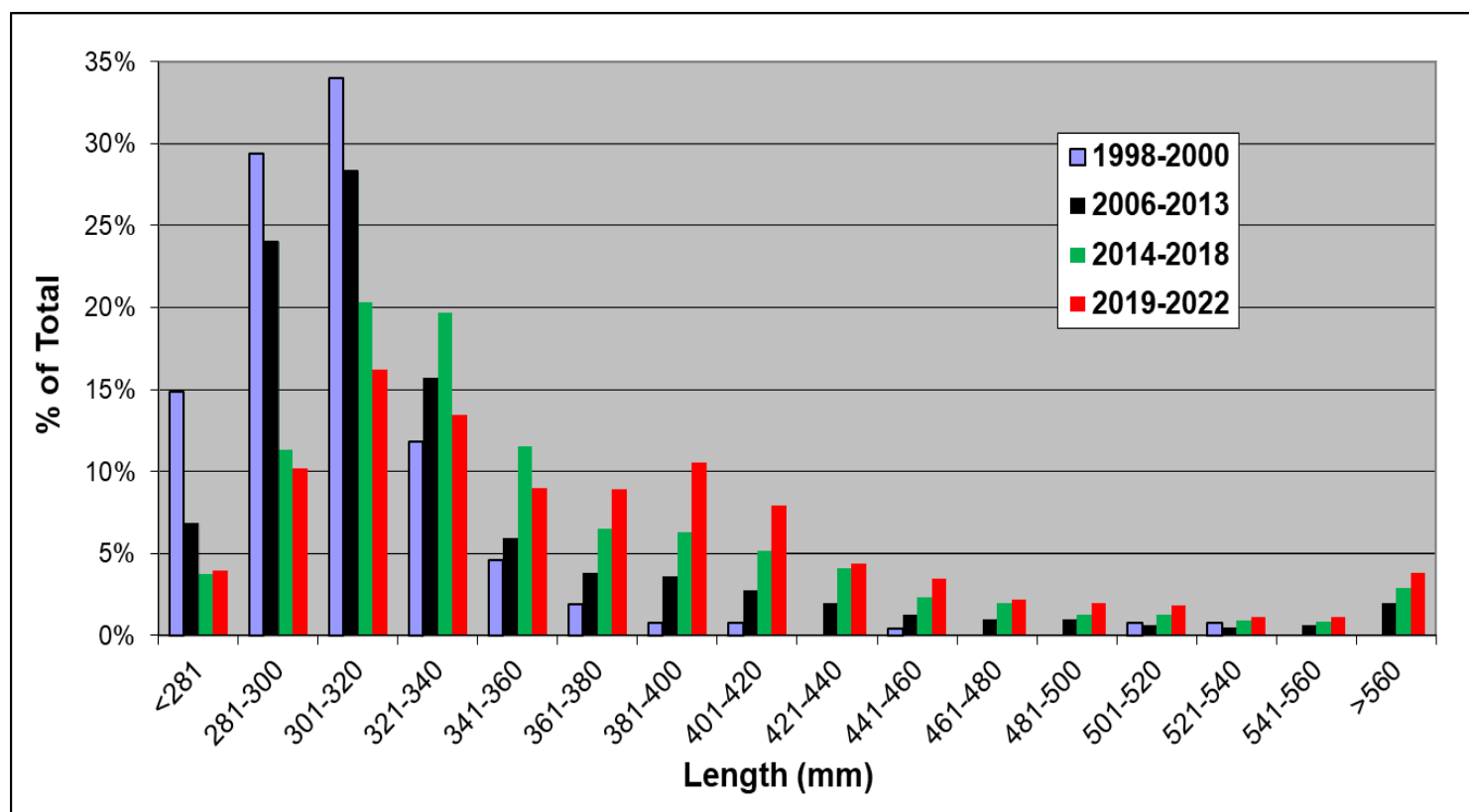


Figure 7. American eel length distributions from the Sassafras River fishery independent eel pot survey, 1998-2000, 2006-2013, 2014-2018, and 2019-2022.





Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Atlantic Croaker (*Micropogonias undulatus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2022

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

July 5, 2023

Table one redacted due to confidential data (6/30/25).

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Report commercial landings, in pounds, for 2022.

Maryland's directed commercial fishery landed 3,944 pounds of Atlantic croaker in 2022 (**Table 1**). 2022 landings are still preliminary, but are not expected to change significantly.

Recreational Fishery

Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2022.

a. Maryland recreational anglers landed an estimated 55,408 (PSE = 31.0) Atlantic croaker in 2022 weighing an estimated 21,043 pounds (PSE = 31.5). Maryland released an estimated 1,537,746 (PSE = 21.4) Atlantic croaker in their recreational fishery in 2022. All of the preceding recreational estimates were downloaded from the MRIP website on June 12, 2023 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division).

Additional recreational catch information is available through Maryland's Charter Boat Logbook Program, which began in 1993. Maryland charter boat captains are required to maintain daily logs of where they fish, how many fish of each species they harvest, how many they release and how many anglers participated. The 2022 data are preliminary but should not change significantly. Charter captains reported harvesting and releasing 1,806 and 259 Atlantic croaker, respectively (Table 2).

Table 2. Charter boat harvest, releases and total catch from Maryland's Charter Boat Logbook Program in numbers of fish, 2011-2022 (2022 data are preliminary).

Year	Harvest (# of fish)	Releases (# of fish)	Total Catch (# of fish)
2011	132,498	383	132,881
2012	113,470	43	113,513
2013	93,155	142	93,297
2014	81,188	1,199	82,387
2015	36,495	106	36,601
2016	12,210	299	12,509
2017	2,926	31	2,957
2018	689	1	690
2019	995	756	1,751
2020	1,203	3,664	4,867
2021	3,671	233	3,904
2022	1,806	259	2,065

III. Fishery Monitoring Programs

a. ***Fishery Dependent Monitoring: Summarize fishery dependent monitoring programs including bycatch monitoring programs.***

Department of Natural Resources biologists sampled commercial pound nets in Maryland's portion of Chesapeake Bay from May 25, 2022 through September 14, 2022. Sites were located in the western side of Chesapeake Bay just north of the Potomac River to Point No Point, inside the mouth of the Potomac River, and in the eastern side of Chesapeake Bay near Barren Island. Atlantic croaker mean length from the onboard pound net survey was 225 mm total length in 2022, which was identical to the 2021 value, and tied for the second lowest value of the 30 year time series. Only 25 Atlantic croaker were encountered during the survey in 2022, the second lowest number sampled (2020 was the lowest). All 25 Atlantic croaker were aged in 2022, with 36% being age zero, and age one and two each accounting for 32% of sampled fish. There were no croaker over age two for the first time in Maryland Atlantic croaker age sampling (1999 to present). Low sample size may have lead to missed ages, and a biased proportion at age for 2022.

Fishery Independent monitoring: Summarize fishery independent monitoring and provide a brief review of the results.

In 2013 Maryland began a summer gill net survey on the main stem of the lower Choptank River from an imaginary line extending from Howell Point to Jenkins Creek to the mouth of the river. The survey uses four 30.5m by 1.8m panels of monofilament gill net with 6.4cm, 7.6cm, 8.9cm and 10.1cm stretch mesh sizes rigged to sink. The section of river sampled was divided into a 457m by 457m block grid. The Choptank River gill net survey was conducted once per week from June 8, 2022 to September 2, 2022, with 52 sets being made over 13 sampling days. Atlantic croaker catches from the Choptank River gill net survey declined through the first three years, 476 fish in 2013, 269 fish in 2014 and 21 fish in 2015. Atlantic croaker catches have remained low since, with 11 fish being captured in 2022, the second lowest catch of the time series.

A 4.9m semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972. Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably. Consequently, index values for juvenile Atlantic croaker prior to 1989 are not as reliable and, therefore, were not computed. The geometric mean catch per hectare (GM) of juvenile croaker was used as an index of abundance. The 2022 value of 0.72 fish per hectare was below the long term mean and similar to 2020 and 2021 values. In the past ten years only the 2019 index value was above the long-term mean.

A Chesapeake Bay juvenile trawl index was calculated from the Blue Crab Trawl Survey as the annual geometric mean catch per tow from 1989 - 2022. Since juvenile Atlantic croaker have only been consistently caught in Tangier Sound, Pocomoke Sound, and the Patuxent River, only these areas were utilized in this analysis to minimize zeros that likely represent unsuitable habitat. Index values have varied without trend. Values above the 34 year time series mean were more common earlier in the time series. The 2019 index value was the third highest index value, with values declining each year since. The 2022 value of 1.30 fish per tow was below the time series mean of 3.01 fish per tow.

IV. Management Programs

Summarize any regulatory changes from the previous year or planned regulatory changes for the current year. Please include an update on Addendum III state implementation plans if applicable.

No regulatory changes for Atlantic croaker were made in 2022, or are planned in 2023.

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.

N/A



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Atlantic Menhaden (*Brevoortia Tyrannus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2022

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Service**

July 31, 2023

I. Request for *de minimis* and relinquishing quota

- a. Maryland does not request *de minimis* status.
- b. Maryland did not relinquish menhaden quota in 2022.

II. Previous calendar year's fishery

Directed Fishery (Complete Worksheet Tab 1)

a. Report commercial landings by year and major gear type in the excel worksheet for the entire landings time series since 1985. Throughout the report, please indicate confidential data with red font. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

Maryland's directed fishery landed 3,357,117 pounds of Atlantic menhaden in 2022. Directed landings did not exceed Maryland's quota of 8,029,511 pounds (5,529,511 pounds after transfers). Pound net was the major gear type and accounted for 99% of landings.

b. Include the official dated closure notice for directed commercial fisheries if the TAC (or percentage of TAC) was reached. Attach the official notice as an appendix and indicate the date and reason for closure here.

The directed fishery for Atlantic menhaden was not closed in 2022, since reported landings did not reach Maryland's quota.

c. Indicate if your state participated in a quota transfer (include transaction details). If your state participated in multiple quota transfers, please list each individual transfer in chronological order.

On July 19, 2022, the state of Maryland finalized two transfers totaling 1,500,000 pounds, one to the state of New Hampshire for 1,000,000 pounds and one to the state of Massachusetts for 500,000 pounds through a memo to ASMFC. On August 17, 2022, the state of Maryland finalized two transfers totaling 1,000,000 pounds, one to the Commonwealth of Virginia for 500,000 pounds and one to the State of Maine for 500,000 pounds through a memo to ASMFC. All four jurisdictions agreed to pay back any overage incurred by Maryland due to the transfers. Maryland's remaining 2022 quota, after all transfers, was 5,529,511 pounds, above Maryland's 2022 landings of 3,357,177 pounds. The transfer memos can be found in Appendix 1.

Incidental Catch Fishery (Complete Worksheet Tab 2)

- a. N/A

Episodic Event Set Aside (Complete Worksheet Tab 3)

- a. N/A

III. Mandatory Monitoring Programs (Complete Worksheet Tab 4 and 5)

a. Summarize reporting programs (e.g., frequency, harvester reporting, dealer reporting, data elements reported)

Maryland uses harvester reporting to monitor and track quota. All fishermen were required to report the quantity of fish landed by area fished, day, gear type, and species, as well as the, amount of gear used, duration the gear was in the water, hours fished and number of crew, using forms returned monthly to Maryland Department of Natural Resources for all of 2022. Fishermen can also use a voluntary daily electronic reporting system in place of the paper forms. The electronic system includes the same data elements, plus a hail in / hail out and point of landing for each day fished. All pound net fishermen were required to report daily for all of 2022 via text message from a cell phone, an online form, or use the electronic daily reporting system. Required information reported included their menhaden bycatch permit number, whether or not more than one permit holder was onboard, total number of nets fished, soak time of each net fished and quantity of menhaden harvested. Fishermen not using the daily electronic reporting system were still required to file their paper forms.

b. Maryland does not allow purse seining in state waters.

c. Age and length data from the commercial bait harvest.

Indicate the number of age and length samples collected from your commercial bait fishery only. Please identify the number of complete 10-fish collections the samples came from as required in the table below. Also, please specify gear types from which the samples were collected.

i. One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, DE

ii. One 10-fish sample (age and length) per 200 metric tons landed for bait purposes for MD, PRFC, VA, NC.

Maryland Department of Natural Resources biologists sampled commercial pound nets once per week in Maryland's portion of Chesapeake Bay from May 25, 2022, through September 14, 2022, as part of the Summer Migratory Species Project. Sites were located on the western side of Chesapeake Bay near Point No Point, on the eastern side of the Chesapeake Bay near Barren Island and inside the mouth of the Potomac River. Ten to 25 age and length samples were taken at each net and additional lengths were taken to reach at least 50 total measurements per day. All measurements were to the nearest millimeter fork length. In 2022, a total of 20 ten fish samples were collected and an additional nine fish sample was taken.

State MD	Total Bait Landings (pounds)	#10-fish samples required	#10-fish samples collected	Age samples collected	Length samples collected	Gear/Comments
2022	3,357,117	8	20	325	1,132	Pound net

d. Indicate that the following mandatory catch and effort data elements are being collected for the pound net fishery.

i. Total pounds (lbs.) landed per day

ii. Number of pound nets fished per day

Note – In order to characterize selectivity of this gear in each state, a goal of collecting five 10-fish samples from pound net landings annually is recommended. Report on any samples collected.

As indicated in section III a. above, Maryland does require pound net fishermen to report catch and effort data daily, including the number of nets fished. All of Maryland's commercial length and age samples were collected from the pound net fishery (see section III c. above for more detail).

e. Indicate if your state is collecting fishery-independent information on Atlantic menhaden through a survey. If so, is the survey collecting age (e.g., scales, otoliths) and length information on samples?

In 2013 Maryland Department of Natural Resources began an independent summer gill net survey, primarily targeting Sciaenid species, on the lower portion of the Choptank River. The survey collected menhaden lengths from 2013 to 2022, and collected and aged scales from 2015 to 2022. Otolith samples were also collected and archived for future analysis from 2017 to 2022. Age samples (paired scales and otoliths) were taken from 130 menhaden in 2022, and 443 were measured to the nearest millimeter fork length. The survey uses four 100 by 6-foot-panels of monofilament gill net rigged to sink. Stretch mesh sizes were 2.5, 3.0, 3.5 and 4.0 inches. Maryland also conducts a juvenile seine survey that encounters Atlantic menhaden, but this survey does not collect lengths or ages.

IV. Planned management programs for the current calendar year

a. Summarize any changes from previous years. Only indicate deviations from your Amendment 3 implementation plans if any.

N/A

b. Summarize any significant changes to your monitoring programs.

N/A

V. Law Enforcement Reporting Requirements

Identify any law enforcement issues that occurred.

N/A

Appendix 1. Transfer Memos



Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

Patrick C. Keliher (ME), Chair

A.G. "Spud" Woodward (GA), Vice-Chair

Robert E. Beal, Executive Director

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

July 19, 2022

Lynn Fegley
Division Director, Fishing and Boating Services
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

Lxw,
Dear Ms. Fegley,

This letter is to inform you that I have approved the transfer of 1,500,000 pounds of Atlantic menhaden commercial quota from Maryland to the state of New Hampshire (1,000,000 pounds) and the Commonwealth of Massachusetts (500,000 pounds). Maryland's new 2022 quota is 6,529,511 pounds. In the event that menhaden landings in Maryland during the remainder of the 2022 fishing year result in a quota overage, New Hampshire and Massachusetts will transfer 2023 quota to Maryland to cover the overage, up to the amount of this transfer.

Sincerely,

Robert E. Beal

cc: Atlantic Menhaden Management Board



Atlantic States Marine Fisheries Commission

1050 N. Highland Street • Suite 200A-N • Arlington, VA 22201
703.842.0740 • 703.842.0741 (fax) • www.asmfc.org

A.G. "Spud" Woodward (GA), Chair Joseph Cimino (NJ), Vice-Chair Robert E. Beal, Executive Director

Sustainable and Cooperative Management of Atlantic Coastal Fisheries

August 17, 2022

Lynn Fegley
Division Director, Fishing and Boating Services
Maryland Department of Natural Resources
Tawes State Office Building
580 Taylor Avenue
Annapolis, Maryland 21401

Lynn,
Dear Ms. Fegley,

This letter is to inform you that I have approved the transfer of 1,000,000 pounds of Atlantic menhaden commercial quota from Maryland to the Commonwealth of Virginia (500,000 pounds) and the state of Maine (500,000 pounds). Maryland's new 2022 quota is 5,529,511 pounds. In the event that menhaden landings in Maryland during the remainder of the 2022 fishing year result in a quota overage, Virginia and Maine will transfer 2023 quota to Maryland to cover the overage, up to the amount of this transfer.

Sincerely,

Robert E. Beal

cc: Atlantic Menhaden Management Board

L22-104

MAINE • NEW HAMPSHIRE • MASSACHUSETTS • RHODE ISLAND • CONNECTICUT • NEW YORK • NEW JERSEY • DELAWARE
PENNSYLVANIA • MARYLAND • VIRGINIA • NORTH CAROLINA • SOUTH CAROLINA • GEORGIA • FLORIDA



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Black Drum (*Pogonias cromis*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2022

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

June 22, 2023

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

Harry Rickabaugh – 301 Marine Academy Drive– Stevensville, Maryland 21666
410-643-6785 ext. 2109 – harry.rickabaugh@maryland.gov

I. Request for *de minimis*

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2022.**

Maryland's directed commercial fishery landed 2,462 pounds of black drum in 2022.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2022.**

Maryland recreational anglers harvested an estimated 2,945 black drum (PSE=72.8; MRIP 2023) weighing an estimated 19,580 pounds (PSE=76.6; MRIP 2023) in 2022. Maryland recreational anglers released an estimated 10,268 black drum (PSE 65.6; MRIP 2023) in 2022.

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2022, charter boat captains reported harvesting 8 black drum with an estimated weight of 157 pounds, and releasing one black drum with an estimated weight of 12 pounds.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Black drum are generally encountered in low numbers, but are enumerated and measured to the nearest millimeter when encountered. Seven black drum were encountered in 2022, with total lengths (TL) ranging from 217 to 1,128 mm TL, and a mean length of 545 mm TL.

b. Summarize fishery independent monitoring and provide a brief review of the results:

The Maryland Department of Natural Resources has conducted the Coastal Bays Fisheries seine survey in Maryland's Coastal Bays since 1972, sampling with a standardized protocol since 1989. Shore beach seine sampling was conducted at 19 fixed sites once per month in June and September. An annual geometric mean (GM) catch per haul in numbers was generated for standardized years (1989 – 2022). The young of the year index indicates no discernable trend and a high level of variation (Figure 1).

IV. Planned management programs for the current calendar year**a. Summarize any regulatory changes from the previous year.**

Maryland does not plan any regulation changes in 2023.

b. Please provide regulatory language that shows you are meeting required management measures:

The following regulations were in effect throughout 2022.

From the Code of Maryland Regulations: 08.02.05.15.15 Black Drum.

A. Recreational Fishery.

(1) The daily catch and possession limit per individual is one black drum.

- (2) The daily catch and possession limit per boat is six black drum.
- (3) A person may not catch or possess black drum less than 16 inches in total length.

B. Commercial Fishery.

- (1) Atlantic Ocean.
 - (a) The annual total allowable landings is 1500 pounds.
 - (b) A commercial licensee may not catch or possess black drum less than 16 inches in total length.
- (2) Coastal Bays of the Atlantic Ocean and Their Tributaries. Except for purposes of scientific investigation approved by the Department, a commercial licensee may not catch, possess, or sell black drum.
- (3) Chesapeake Bay and Its Tidal Tributaries.
 - (a) A commercial licensee may not catch or possess black drum less than 28 inches in total length.
 - (b) The daily catch and possession limit is ten black drum per vessel per day, regardless of the number of commercial licensees on board the vessel.

D. Public Notice.

- (1) The Secretary may establish or modify catch limits, size limits, and seasons for black drum in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Drum, by issuing a public notice on the Department's website.
- (2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.
- (3) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected person has a reasonable opportunity to be informed.
- (4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.

V. Law Enforcement Reporting Requirements

N/A

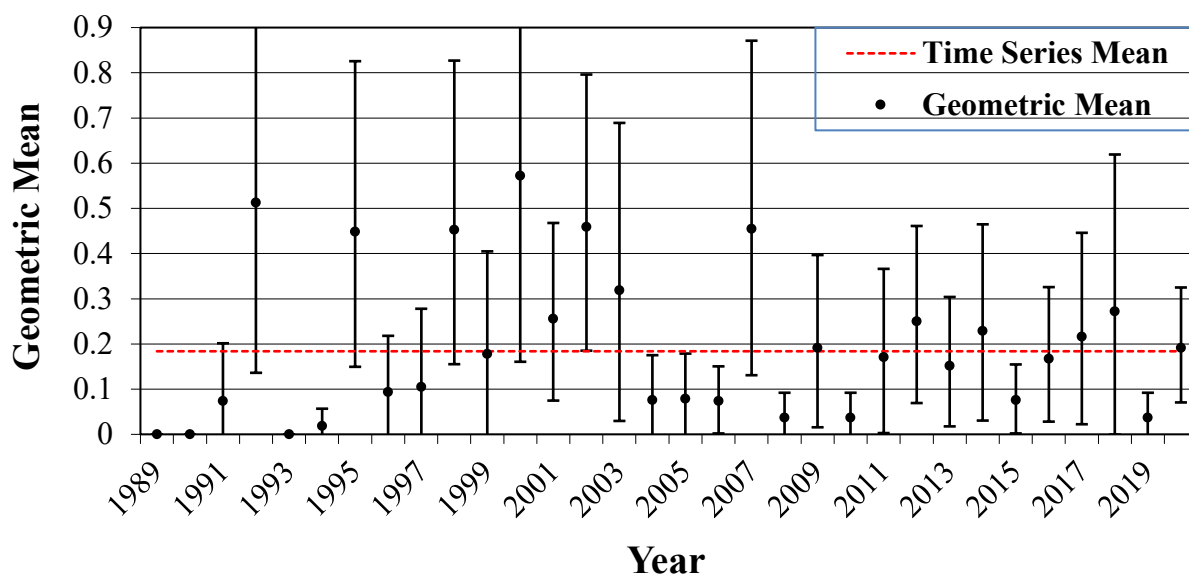


Figure 1. Geometric mean catch of young of the year black drum per seine haul and the 95% confidence intervals from Maryland's Coastal Bays Program, 1989-2022.

MRIP 2023, Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division June 21, 2023.



Maryland's 2022 Compliance Report for Black Sea Bass (*Centropristis striata*)
to the Atlantic States Marine Fisheries Commission
June 2023

Wes Moore
Governor

Josh Kurtz
Secretary

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05/2023

DNR

I. Introduction

Black sea bass were managed as one stock extending from North Carolina to Maine. In Maryland, black sea bass occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge. A Chesapeake Bay and Atlantic coast black sea bass fishery management plan was developed in 1993 by the National Oceanic Atmospheric Administration Chesapeake Bay Program. According to the 2019 operational assessment, the stock was not overfished, and overfishing was not occurring. Maryland and Virginia have a cooperative management plan for black sea bass within Chesapeake Bay.

Maryland has individual fishing quotas for black sea bass in Atlantic coastal waters including the coastal bays and their tributaries. In 2022, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit.

The recreational fishery is actively pursued in the Atlantic Ocean. Black sea bass recreational management allowed states to set their own regulations using conservation equivalency. Maryland chose to set regulations consistent with a region including Delaware and Virginia. These regulations were consistent with 2022 federal recreational measures.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2022 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to NOAA.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the APAIS survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Black sea bass were collected in 28 of 140 trawls (20%) and 12 of 38 beach seines (31.6%). A total of 127 juvenile black sea bass were collected in trawl (46 fish) and beach seine (81 fish) samples. The trawl and beach seine CPUE was 2.6 fish/ha and 2.1 fish/haul, respectively. In 2022, the trawl relative abundance index was equal to the grand mean and the beach seine relative abundance index was above the grand mean (Figures 1 and 2). This project has also included a SAV seine study since 2015. Black sea bass has been the six most abundant species collected in this study indicating that juvenile black sea bass use SAV as preferred habitat.

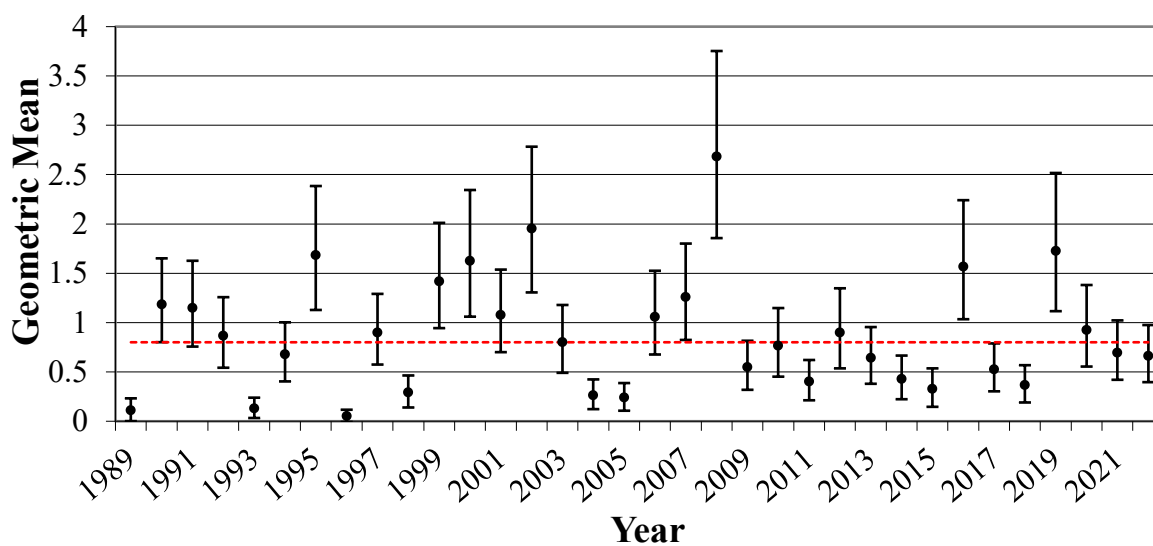


Figure 1. Black sea bass (*Centropomus striata*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2022). Dotted line represents the 1989 - 2022 time series grand mean ($n_{1989-2019, 2021} = 140/\text{year}$, $n_{2020} = 120$).

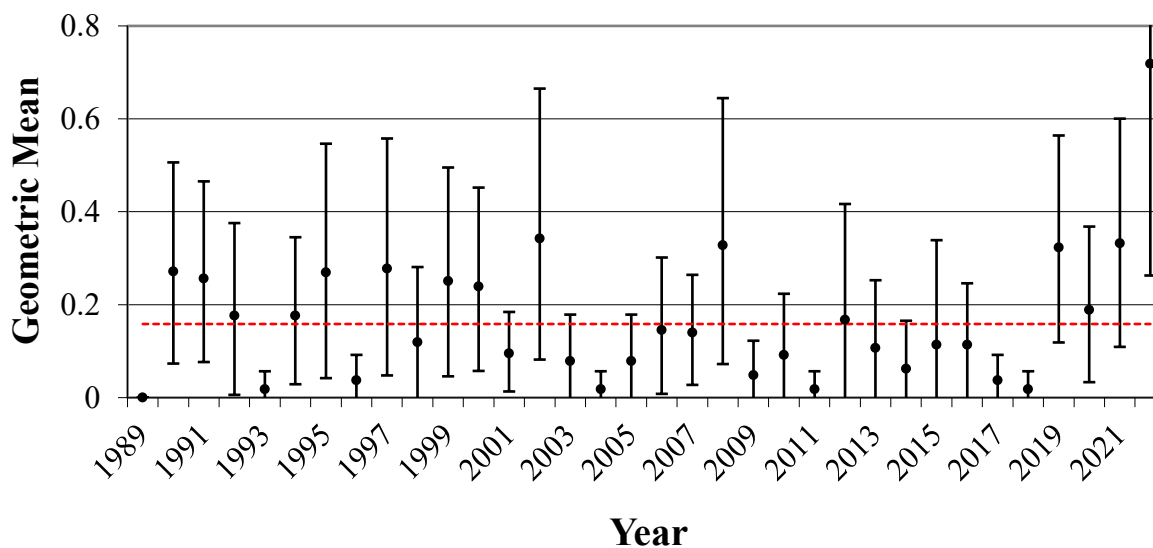


Figure 2. Black sea bass (*Centropomus striata*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2022). Dotted line represents the 1989 - 2022 time series grand mean ($n = 38/\text{year}$).

C. Copy of Regulations

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2022 Recreational Black Sea Bass Fishery - Effective April 15, 2022

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the recreational season, catch limit, and minimum size for black sea bass. Effective 12:01 a.m. April 15, 2022:

- The season is open May 15, 2022 through December 11, 2022. It is closed all other dates.
- Anglers may keep up to 15 black sea bass per person per day.
- The minimum size is 13 inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch black sea bass recreationally.

AUTHORITY

Code of Maryland Regulations [08.02.05.21](#)

Code of Maryland Regulations,

<https://dsd.maryland.gov/regulations/Pages/08.02.05.21.aspx>

.21 Black Sea Bass.

A. Recreational. The recreational size limit, catch limit, and season for black sea bass shall be established and may be modified through a public notice issued in accordance with §F of this regulation.

B. Commercial.

(1) Minimum Size. An individual who harvests black sea bass for commercial purposes may not catch or possess a black sea bass less than 11 inches in total length, excluding the tail filament.

(2) Quotas.

(a) The annual quota for Maryland is 11 percent of the annual Atlantic coast quota determined by the National Marine Fisheries Service.

(b) Quota Allocation.

(i) The total pounds of black sea bass that may be harvested by a black sea bass landing permit holder who applies for a permit for 2011 and subsequent years shall be based on the proportion of the total black sea bass harvest allocated to the permit holder in the previous year.

(ii) In addition to the quota allocation, as described in §B(2)(b)(i) of this regulation, the Department shall reallocate equitably among permit holders the quota of any permit holder who fails to apply for a permit for the following year, or who leaves the fishery without transferring the permit.

(c) A Maryland black sea bass landing permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an individual may not hold more than 20 percent of the total fishery allocation.

(d) An individual who possesses a Maryland black sea bass landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any quota transfers, shall have the overage deducted from the permit allocation for the following year.

(3) Daily Catch Limits. A vessel that does not have an individual on board who possesses a valid Maryland black sea bass landing permit may not catch, possess, or land more than 50 pounds of black sea bass per day.

(4) Black sea bass harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a federally permitted dealer.

C. Licenses and Permits.

(1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land black sea bass.

(2) A vessel which is used to catch, possess, or land black sea bass for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.

(3) A permittee may catch, possess, or land black sea bass for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) A tidal fish licensee shall declare their intent to fish for black sea bass by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared late in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland black sea bass landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Black Sea Bass Landing Permit.

(a) No more than 14 black sea bass landing permits may be issued by the Department. The number of black sea bass landing permits is based on the reported catch and landing records of black sea bass in Maryland during 1996—2001.

(b) The Department may issue a permit to catch and land black sea bass in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

- (i) Declared or was eligible to declare, in the previous year, an intent to fish for black sea bass in accordance with §C(4) of this regulation and has not transferred the permit; or
- (ii) Received a black sea bass landing permit through a permanent business transfer in accordance with §C(6) of this regulation.

(6) Permanent Transfer of a Landing Permit. The Department may approve a permanent transfer of a Maryland black sea bass landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(7) Temporary transfers of black sea bass landing permits are not permitted.

(8) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland black sea bass landing permit.

(c) An operator may catch, possess, or land black sea bass for commercial purposes on a vessel owned by a permittee and in possession of that permittee's permit.

(9) Regardless of the number of authorized individuals with Maryland black sea bass landing permits on board a federally permitted vessel, no more than two black sea bass quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) Trawls.

(a) Except for an individual landing less than a total of 500 pounds of black sea bass from January 1 through March 31 or 100 pounds of black sea bass from April 1 through December 31, a person may not use a trawl with mesh less than 4-1/2 inch diamond mesh applied throughout the:

- (i) Codend for at least 75 continuous meshes forward of the end of the net; or
- (ii) Entire net for codends with fewer than 75 meshes.

(b) An individual may not use a roller rig trawl with a roller diameter in excess of 18 inches.

(2) Pots and Traps. A pot or trap used to catch black sea bass shall have:

(a) Two unobstructed escape vents located in the parlor portion of the trap that are each at least a:

- (i) 2-1/2 inch diameter circular opening;
- (ii) 2 inch by 2 inch square opening; or
- (iii) 1-3/8 inch by 5-3/4 inch rectangular opening; and

(b) One panel or door that is a minimum of 3 inches by 6 inches that has hinges and fasteners made of one of the following degradable materials:

- (i) Untreated hemp or jute string of 3/16 inch in diameter or less;
- (ii) Magnesium alloy fasteners; or
- (iii) Ungalvanized, uncoated iron wire of 0.094 inch diameter or smaller.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland black sea bass landing permit shall record the harvest of black sea bass on the permit daily and submit the completed permit to the Department within 14 days from the end of the black sea bass season.

(2) A dealer shall transmit information weekly, or as requested, on each black sea bass transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may establish or modify catch limits, size limits, quotas, and seasons for black sea bass in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Sea Bass, by issuing a public notice on the Fisheries Service website.

(2) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.

(3) The Secretary shall make a reasonable effort to disseminate a public notice through various other media so that an affected individual has a reasonable opportunity to be informed.

(4) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coastwide quota is harvested and not exceeded.

(5) A violation of the restrictions set by the Secretary in accordance with §F of this regulation is a violation of this regulation.

The Atlantic States Marine Fisheries Commission commercial compliance requirements are included in Table 1.

Table 1. Maryland implementation of the required commercial black sea bass measures as mandated in the ASMFC FMP.

Measure	Implemented
11" minimum size	Yes
4.5" minimum mesh size for entire net or 4.5" diamond mesh in cod end (for large trawl nets)	Yes
Threshold to trigger minimum mesh requirements: (500 lbs for January - March; 100 lbs from April - December)	Yes
2.5" circular escape vents, 2" square escape vent, or 1.375" X 5.75" rectangular escape vent for pots/traps. Two vents required in parlor portion of pot/trap.	Yes
Pot and trap degradable fastener provisions: a) untreated hemp, jute, or cotton string 3/16" (4.8 mm) or smaller; b) magnesium alloy timed float releases or fasteners; c) ungalvanized, uncoated iron wire of 0.094" (2.4mm) or smaller. The opening covered by a panel affixed with degradable fasteners would be required to be at least 3"x 6".	Yes

D. Harvest by Gear Type**1. Commercial Landings**

In 2022, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit. Maryland's preliminary 2022 commercial black sea bass harvest was 385,762 pounds (Table 2; Source: Maryland Commercial Logbooks).

Table 2 redacted due to confidential data.

2. Recreational Landings

Maryland's 2022 recreational black sea bass catch was estimated at 158,822 fish (PSE 25.8) with a total weight of 189,383 pounds (PSE 25.0; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 15, 2023).

IV. Planned Management for 2023**A. Summary of Regulations that will be in Effect**

Commercial management measures will remain the same as 2022. Recreational management measures will include a 13-inch size limit, a 15 fish creel, The season is open May 15, 2023, through September 30, 2023, and then reopens October 10, 2023, through December 31, 2023. It is closed all other dates.

B. Summary of Monitoring Programs that will be in Effect

Same as 2022, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement Requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Information Program. Accessed May 15, 2023.
nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Northeast Fisheries Science Center. 2019. Black sea bass operational assessment. US Dept. Commerce, Northeast Fisheries Center.
nefsc.noaa.gov/SAW-Public/A.BSB/WP/A_BSB_OpAssess2019_a.pdf.



Wes Moore
Governor

Josh Kurtz
Secretary

**Maryland 2022 Bluefish (*Pomatomus saltatrix*) Compliance Report
To the
Atlantic States Marine Fisheries Commission**

**CONTAINS CONFIDENTIAL DATA
WHERE INDICATED IN RED**

Prepared by:

Eric Q. Durell

May, 2023

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Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

I. Introduction

Bluefish (*Pomatomus saltatrix*) are caught in Maryland's Atlantic Ocean and Chesapeake Bay waters. Maryland's recreational and commercial fisheries are open year-round and subject to an 8-inch minimum size limit. Recreational anglers fishing from for-hire boats had a daily creel limit of 5 fish; all other recreational anglers had a creel limit of 3 fish per person per day. Maryland's original 2022 commercial quota was 100,698 pounds. This was later adjusted to 70,698 pounds after a quota transfer to Rhode Island.

II. Request for *de minimis*

N/A

III. Fishery and Management Programs

a.) Per the Biological Monitoring Program implemented through Addendum I, Maryland is exempt from the cooperative otolith collection requirements.

b.) Monitoring

i. Fishery Dependent Monitoring

Fishery dependent sampling for bluefish consists of commercial pound net monitoring by the Chesapeake Bay Finfish Program's Migratory Species Survey. Bluefish encountered in pound nets in 2022 ranged from 120 to 500 mm TL, with an average length of 330 mm TL (n=603). The length frequency distribution shows that 64% of the sample was between 300 and 349 mm TL (Figure 1).

ii. Fishery Independent Monitoring

Fishery independent bluefish monitoring consists of seine surveys in the Chesapeake Bay and Atlantic coastal bays. Direct comparisons between the surveys are not possible because of differing gears and sampling methodologies.

The Striped Bass Program's Estuarine Juvenile Finfish Survey is used to develop an annual index of relative abundance for juvenile bluefish that informs the coastal stock assessment. The index is based on select sample sites where bluefish have historically been encountered, and is the geometric mean of the (catch+1) values. The 2022 Chesapeake Bay juvenile bluefish index of 0.04 was similar to the previous year and less than the time-series average of 0.2 (Figure 2).

The Atlantic Coastal Bays Program's Seine Survey also develops an index of relative abundance for juvenile bluefish using natural log transformed (catch+1) values. The 2022 Coastal Bays index of 0.07 was similar to last year and less than the average of 0.4 (Figure 3).

c.) Regulations

i. Maryland bluefish regulations for 2022:

FISHERIES SERVICE 08.02.05.10

.10 Bluefish.

A. Minimum Size. A person may not catch or possess bluefish less than 8 inches in total length.

B. Recreational Catch Limit. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than ten bluefish per day.

C. Commercial Catch Limit. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.

D. General. The Secretary:

(1) May modify catch limits or open or close a season in State waters by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

SOURCE: <https://dsd.maryland.gov/regulations/Pages/08.02.05.10.aspx>

- ii. The recreational daily creel limit was modified by public notice, effective January 1, 2022. Recreational anglers aboard for-hire vessels were allowed 5 fish per day; all others were allowed 3 fish per day
(https://dnr.maryland.gov/fisheries/Documents/PN_NLE/PubNotBluefish_Effective%201-1-2022_NLE.pdf).

iii. FMP Requirements

FMP Requirements Implemented?	YES	NO
Party/Charter Vessels license required*	x	
Commercial Vessels license required*	x	
Commercial Dealers license required*	x	
Recreational Bag Limit of 5 fish for anglers on for-hire boats, 3 fish for all others	x	

*[Maryland Natural Resources Article §4–701](#) establishes licensing requirements for these activities.

d.) Commercial and Recreational Landings

Maryland's original 2022 commercial bluefish quota of 100,698 pounds was adjusted to 70,698 pounds after transferring 30,000 pounds to Rhode Island, pursuant to the Interstate Bluefish Fisheries Management Plan ([Federal Register, Vol. 87, No. 152, pg. 48449](#)).

Maryland's 2022 commercial bluefish harvest was 10,282 pounds (Source: Joseph Myers, ACCSP, personal communication). This was a 16% decrease from the previous year (Table 1, Figure 4) and less than the adjusted quota of 70,698 pounds.

Approximately 85% (by weight) of the commercial harvest was caught in Chesapeake Bay and its tributaries, and 15% was caught on Maryland's Atlantic coast. Pound nets are typically responsible for the majority of the harvest, but records without gear codes complicate comparisons between years (Table 1). The majority of the harvest (72%) occurred from July to December (Table 2).

The 2022 Marine Recreational Information Program (MRIP) estimate of Maryland bluefish harvest (Type A+B1) was 249,382 fish, weighing 223,494 pounds (Table 3, Figure 5). This represents a 136% increase in the number of fish harvested compared to 2021 (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, April 28, 2023 query). MRIP estimates presented here reflect newly calibrated estimation methods.

The majority (99%) of the annual recreational harvest occurred between July and October (Table 4). Approximately 65% of the harvest was attributed to anglers on private boats (Table 5). Nearly 95% of the bluefish harvest occurred in inland waters (Table 6).

The 2022 MRIP estimate of Maryland recreational live discards (Type B2) was 237,374 fish, a 12% increase from 2021 (Table 3, Figure 6). Similar to the harvest, most of Type B2 discards occurred in inland waters during July-October. (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, April 28, 2023 query). MRIP estimates presented here reflect newly calibrated estimation methods.

IV. Planned Management for 2023

- a.) The National Marine Fisheries Service (NMFS) Final Rule issued Atlantic Bluefish Fishery Specifications for 2023 effective January 1, 2023. The coastal commercial bluefish quota for 2023 is 4.29 million pounds. Maryland's 2.69% share of the coastal quota is 115,409 pounds (Federal Register, Vol. 87, No. 244, pp. 78011-78013, December 21, 2022).

- b.) Maryland's recreational bluefish possession limit in 2022 was a temporary change to the standing regulation. The regulation was changed again by public notice, effective January 1, 2023, to renew the reduced possession limits. Recreational anglers fishing from shore or private boats can keep up to 3 bluefish per day. Recreational anglers fishing from for-hire boats can keep up to 5 fish per day (https://dnr.maryland.gov/fisheries/Documents/Public_Notices/PubNotBluefish_Effective%201-1-2023.pdf).
- c.) The Migratory Species Survey, Estuarine Juvenile Finfish Survey, and Coastal Bays Seine Survey will continue in 2023.

V. Law Enforcement Reporting Requirements

None

Table 1. Maryland commercial bluefish landings, in pounds, by gear type.

Year	Gill Net	Pound Net	Hook & Line	Other	Total
2011	[C]	[C]	[C]	[C]	80,551
2012	[C]	[C]	[C]	[C]	183,565
2013	[C]	[C]	[C]	[C]	49,831
2014	[C]	[C]	[C]	[C]	79,691
2015	[C]	[C]	[C]	[C]	91,105
2016	[C]	[C]	[C]	[C]	66,720
2017	[C]	[C]	[C]	[C]	37,035
2018	[C]	[C]	[C]	[C]	25,717
2019	[C]	[C]	[C]	[C]	22,776
2020	[C]	[C]	[C]	[C]	20,786
2021	[C]	[C]	[C]	[C]	12,228
2022	[C]	[C]	[C]	[C]	10,282

Table 2. Maryland commercial bluefish landings by month, 2022.

Month	Landings (Pounds)	Percent Landings
January	[C]	[C]
February	[C]	[C]
March	[C]	[C]
April	[C]	[C]
May	[C]	[C]
June	[C]	[C]
July	[C]	[C]
August	[C]	[C]
September	[C]	[C]
October	[C]	[C]
November	[C]	[C]
December	[C]	[C]
Total*	10,282	100.0

* Values may not sum due to rounding

Table 3. MRIP estimates of Maryland recreational bluefish harvest (Type A+B1) and discards (B2).

Year	Harvest (A+B1) numbers of fish	Harvest (A+B1) pounds	Discards (B2) numbers of fish
2012	348,944	410,637	520,768
2013	119,212	133,608	722,900
2014	395,558	484,888	490,971
2015	286,730	453,100	661,676
2016	212,419	304,991	556,307
2017	175,268	332,244	196,418
2018	274,834	493,192	417,810
2019	111,769	154,451	226,968
2020	173,846	214,991	320,368
2021	105,710	117,546	211,239
2022	249,382	223,494	237,374

Table 4. Maryland recreational bluefish harvest (Type A+B1) by MRIP wave, 2022.

Date	Wave	Harvest (numbers of fish)	Percent Harvest
January-February	1	0	0.0
March-April	2	6	0.0
May-June	3	2,786	1.1
July-August	4	202,623	81.3
September-October	5	43,947	17.6
November-December	6	20	0.0
Total*		249,382	100.0

* Values may not sum due to rounding

Table 5. Maryland recreational bluefish harvest (Type A+B1) by MRIP mode, 2022.

Mode	Harvest (numbers of fish)	Percent Harvest
Shore	37,641	15.1
Party boats	116	0.0
Charter boats	49,270	19.8
Private/rental boats	162,355	65.1
Total*	249,382	100.0

Table 6. Maryland recreational bluefish harvest (Type A+B1) by MRIP area, 2022.

Area	Harvest (numbers of fish)	Percent Harvest
Ocean (≤ 3 miles offshore)	1,067	0.4
Ocean (> 3 miles offshore)	11,920	4.8
Inland	236,396	94.8
Total*	249,382	100.0

* Values may not sum due to rounding

Figure 1. Length frequency of bluefish from Maryland's Chesapeake Bay pound net survey, June-September, 2022.

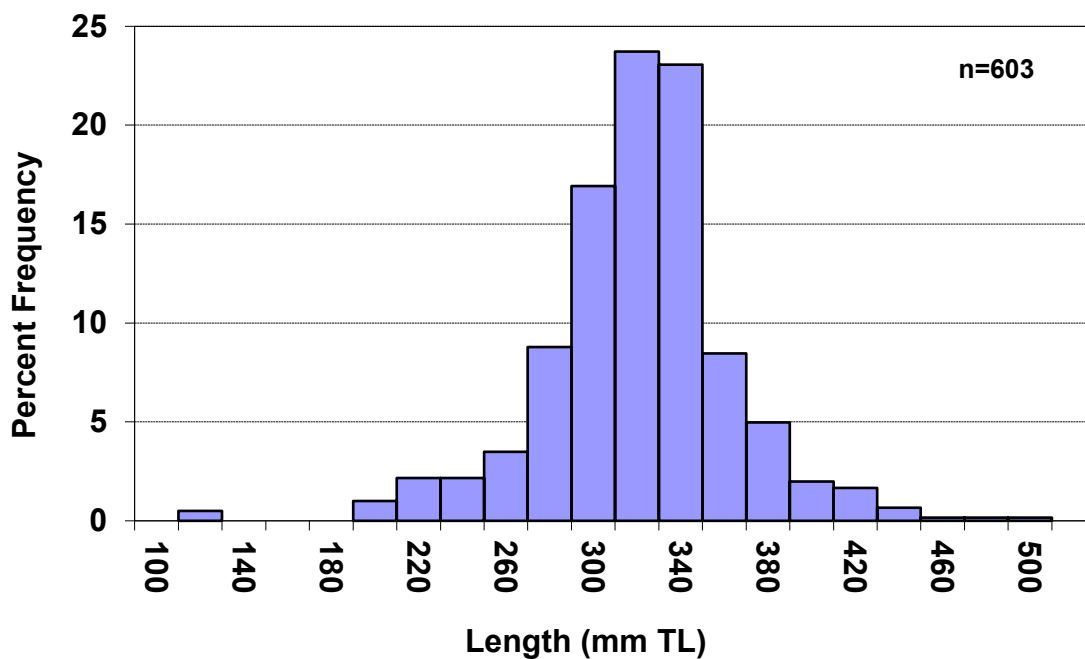


Figure 2. Bluefish juvenile index from Maryland's portion of the Chesapeake Bay.

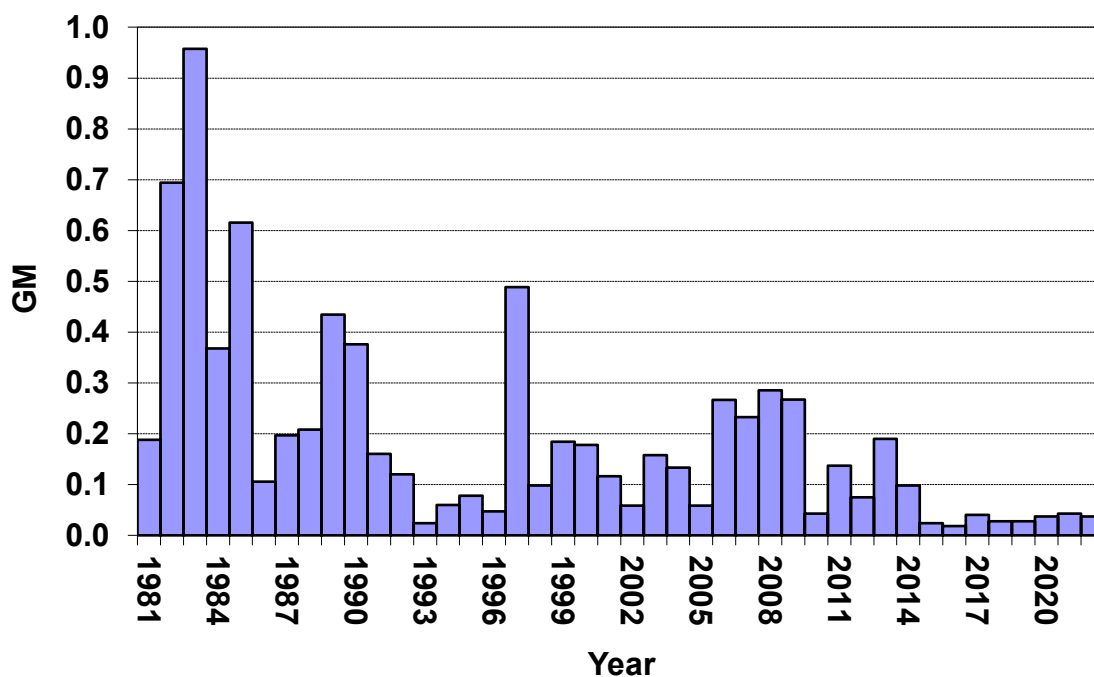


Figure 3. Bluefish juvenile index from Maryland's Coastal Bays seine survey.

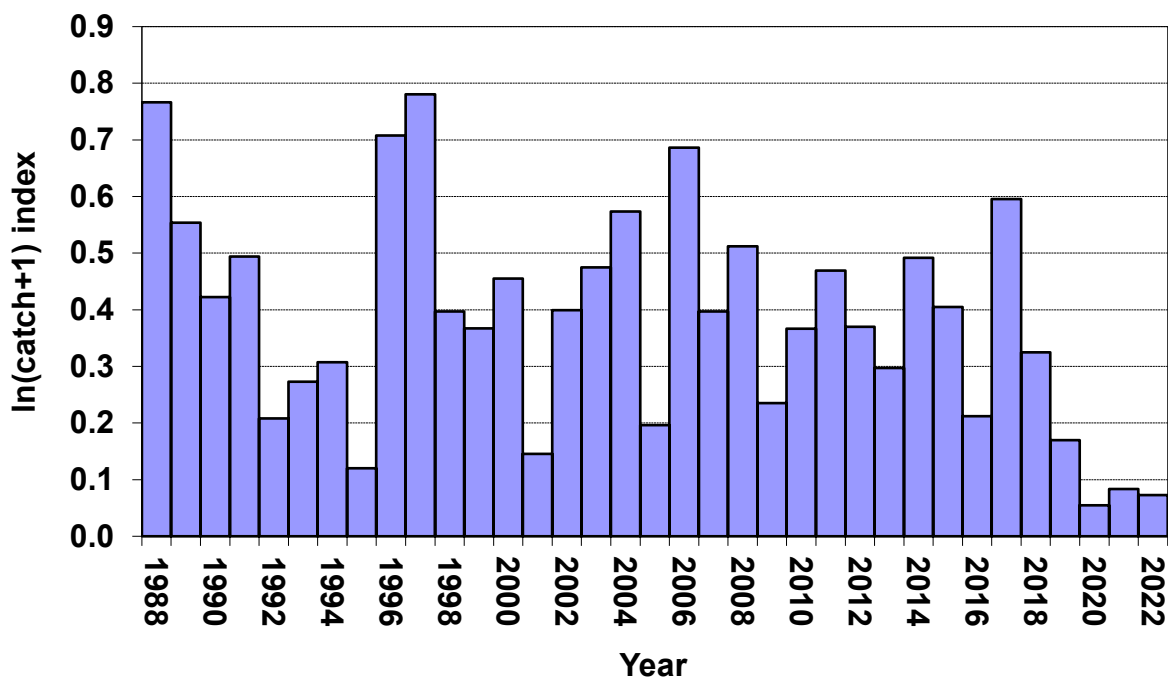


Figure 4. Maryland commercial bluefish landings (Source: Joseph Myers, ACCSP, personal communication).

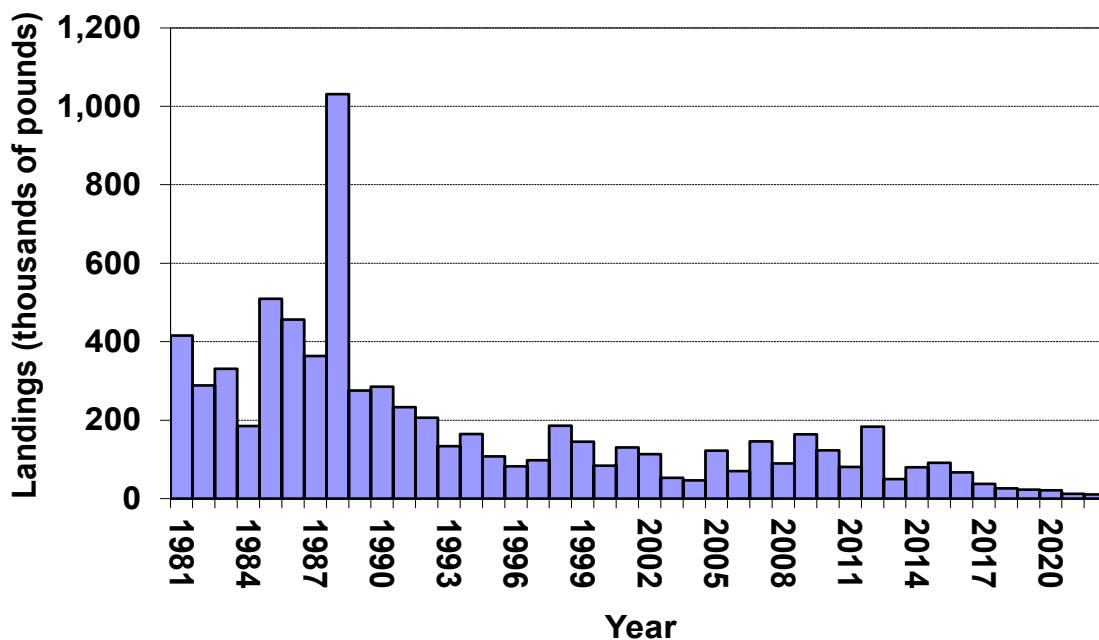


Figure 5. Maryland recreational bluefish harvest, Type A+B1.

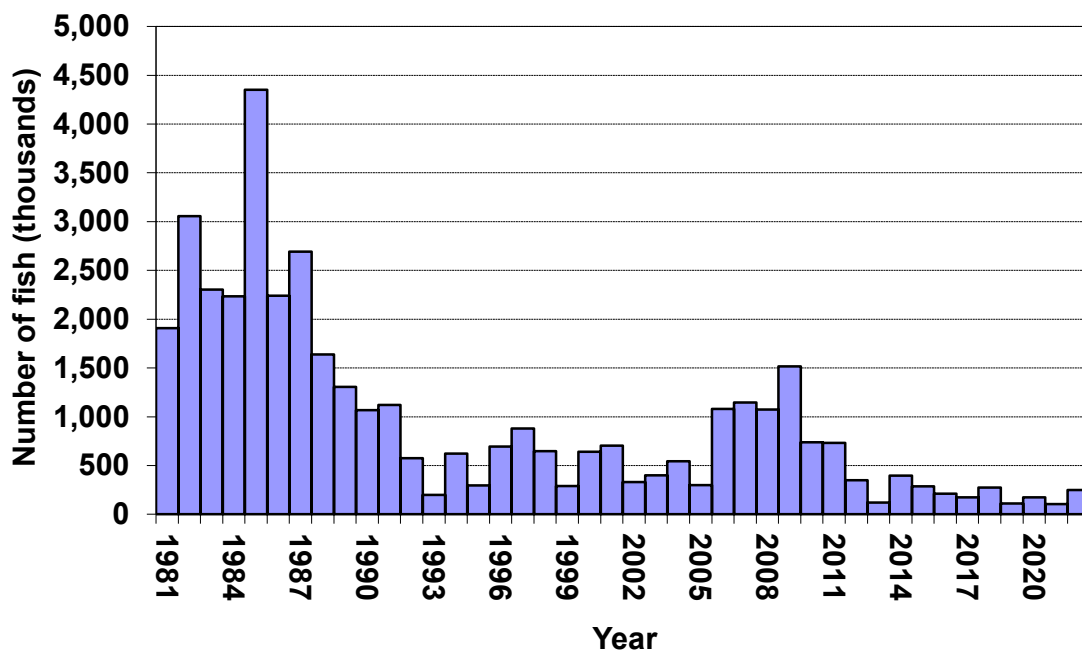
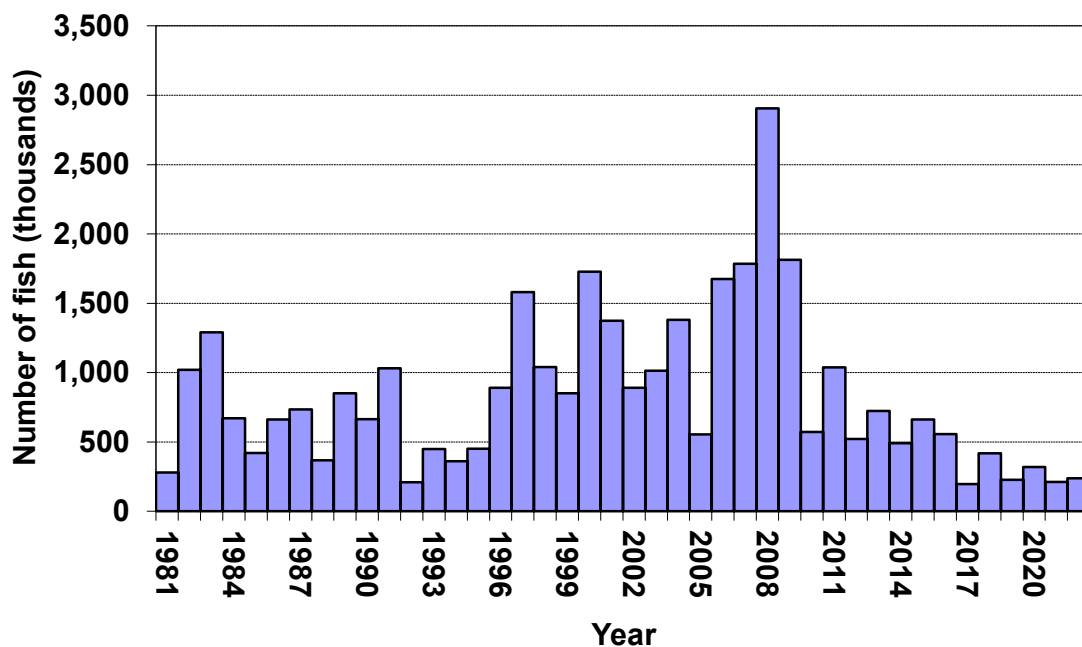


Figure 6. Maryland recreational bluefish live discards, Type B2.



Confidential Information in Red Font



Maryland's 2022 Horseshoe Crab (*Limulus polyphemus*) Compliance Report
to the Atlantic States Marine Fisheries Commission
July 1, 2023

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

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Office of Fair Practice
Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

06/2023

DNR

I. Introduction

The Interstate Fishery Management Plan for Horseshoe Crab was approved and adopted by the Atlantic States Marine Fisheries Commission on October 22, 1998. The goal of the fishery management plan is to conserve and protect the horseshoe crab resource for continued use over time by maintaining sustainable levels of spawning stock biomass to ensure its continued role in the ecology of coastal ecosystems. The Maryland harvest limit of 255,980 male only horseshoe crabs has not changed since 2013.

II. Request for *de minimis* status

Not Applicable.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

No fisheries dependent monitoring in 2022.

B. Fishery Independent Monitoring

The department conducted a monthly trawl survey from April through October 1990 through 2019, 2021, 2022 and May through October 2020 (Figure 1). Horseshoe crabs have demonstrated a stable trend though this time period in the Maryland coastal bays.

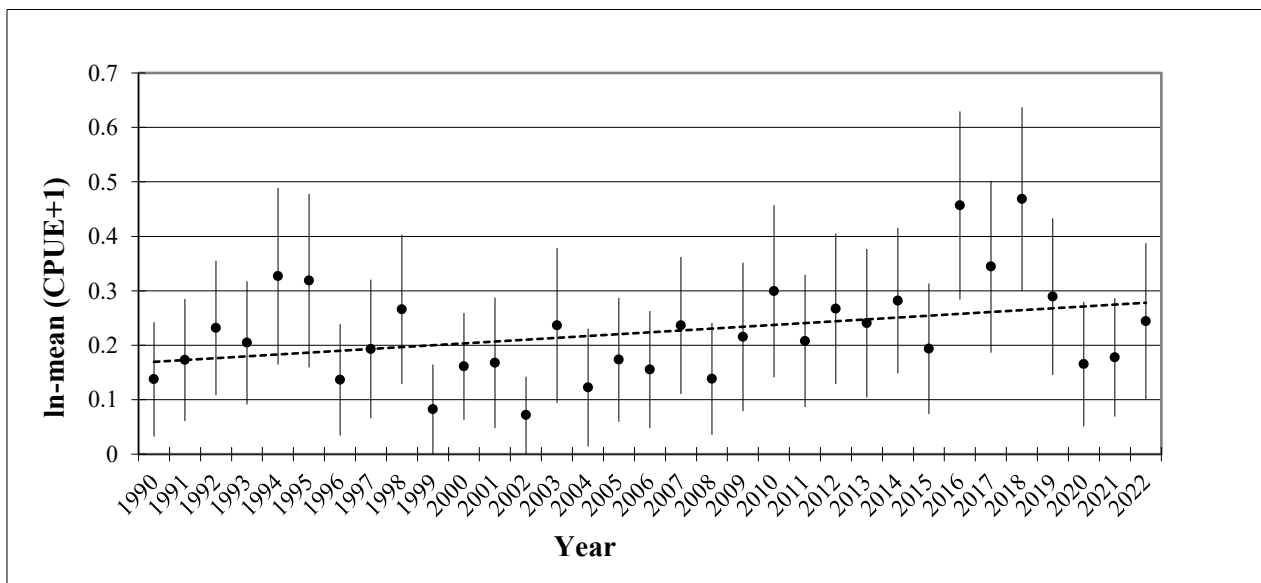


Figure 1. Horseshoe crab trawl index of relative abundance (geometric mean) with 95% confidence intervals (1990 - 2022). Dotted line represents the 1990 - 2022 time series grand mean (1990-2019, 2021, 2022 n = 140/year, 2020 n = 120).

The department, working with the Maryland Coastal Bays Program, completed the annual horseshoe crab spawning survey last spring. Indices of spawning activity were developed and included in the annual spawning report from the [Maryland Coastal Bays Program](#).

C. Previous Year's Fishery and Management Program

Bait Fishery

There are two classes of horseshoe crab harvesters, permitted and non-permitted. Ten Horseshoe crab permits were issued in 2022. All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. Permit holders were required to report weekly numbers landed by sex, area of harvest and gear type. Non-permit holders were restricted to no more than 25 male horseshoe crabs per day during an open season and were required to report this information using the department's monthly commercial logbooks.

Maryland's horseshoe crab fishery was governed by the Code of Maryland Regulations 08.02.10.01 ([Appendix A](#)). A public notice was issued to set the quota, season and catch limits.

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
Commercial Horseshoe Crab Fishery — Effective 5/1/2022

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the quota, season, and catch limits for the 2022 — 2023 commercial horseshoe crab fishery.

QUOTA

The annual total allowable landings of male horseshoe crabs for the commercial fishery is 255,980. There is no female harvest permitted.

SEASON AND CATCH LIMITS

1. An individual may not land more than 25 male horseshoe crabs unless they are in possession of a valid horseshoe crab landing permit.
2. A permittee shall harvest horseshoe crabs according to the tier specified on their horseshoe crab landing permit.

Male Horseshoe Crab Season and Daily Limits by Permit Type						
Date	Area Open to Harvest	Permit Type				
		No Permit	Tier 1	Tier 2	Tier 3	Tier 4
May 1, 2022 through July 10, 2022	Atlantic Ocean between 1 and 3 miles from the coast Maryland's coastal bays and their tidal tributaries	25	150	150	150	150
July 11, 2022 through November 30, 2022	All Maryland waters	25	150	200	1500	2500
December 1, 2022 through April 30, 2023	Closed	No Harvest Allowed				

WHY THIS IS NECESSARY

This is necessary to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crabs.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch horseshoe crabs commercially.

EFFECTIVE TIME AND DATE

This notice is effective at 12:01 a.m. May 1, 2022.

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. In 2022, four companies obtained a scientific collection permit. Only three of those permits were utilized. There were two primary dealers that handled the biomedical horseshoe crabs therefore the biomedical collection data on the state level was confidential.

Scientific and Educational Research

The University of Maryland's Center for Environmental Science Institute of Marine and Environmental Technology (IMET) lab hatched a small number of horseshoe crab eggs and experimented with raising the juvenile horseshoe crabs.

D. Harvest by Gear TypeCommercial Landings

In 2022, Maryland's horseshoe crab bait fishery reported a harvest of 84,627 male horseshoe crabs (Table 1) well below the quota of 225,980 ([Appendix B](#)). A conversion of 2.12 pounds per male crab is used to calculate total pounds. Landings were low due to low bait demand in the whelk fishery. Horseshoe crabs were mostly harvested by bottom trawls, with a small number coming from gill nets. Landings data were compiled from

Maryland commercial finfish logbook data and Maryland horseshoe crab permit data as of April 1, 2023.

Table 1. Summary of Maryland's preliminary 2015 - 2022 Horseshoe Crab Bait Fishery Landings. Source: Maryland Commercial Logbooks and permit cards.

Harvest Category	Year						
	2016	2017	2018	2019	2020	2021	2022
Number Males	157,013	237,146	66,647	145,907	61,165	181,040	84,627
Total Pounds	345,428	502,749	141,291	309,323	129,670	383,814	179,410

Biomedical data

Confidential data from three biomedical companies and two dealers were summarized in Table 2.

Table 2. Confidential Horseshoe Crab Biomedical Collection Reporting Worksheet Summary, Fishing Year 2022.

Biomedical Company/ies: Maryland combined collections				
	Male	Female	Sex Unidentifiable	Total
Number of horseshoe crabs rejected onboard vessel due to mortality	C	C	C	C
Number of horseshoe crabs transported to bleeding facility	C	C	C	C
Number horseshoe crabs rejected at bleeding facility due to mortality	C	C	C	C
Number of horseshoe crabs bled	C	C	C	C
Number of horseshoe crabs found dead at time of release	C	C	C	C
Number of bled horseshoe crabs that entered the bait fishery after bleeding	C	C	C	C

Recreational Landings

There were no recreational landings of horseshoe crabs.

Progress in Implementing Habitat Recommendations

There were no habitat recommendations for the plan. Department staff, collaborating with the Maryland Coastal Bays Program and Worcester County, continues to work on cooperative projects that display how shore stabilization can be achieved with soft shorelines, creating, or protecting horseshoe crabs spawning habitat.

IV. A. Planned management programs for the current calendar year.

The current harvest limit is 255,980 male horseshoe crabs with no female harvest. Regulations and monitoring comply with Addendum III and are detailed in the plan specific monitoring program requirements.

Monthly reporting of all harvest (including, but not limited to: bait fisheries, bycatch, biomedical industry, and scientific and educational research).

Bait Fisheries

All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. In 1998, the department established a horseshoe crab landing permit and issued permits to individuals who landed horseshoe crabs in Maryland during 1996 ([Appendix C](#)). This monitoring will continue in 2023.

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. Maryland requires a reporting form to follow each batch of horseshoe crabs collected for biomedical use, from the time of capture through the time of release. This form is returned to the department and reviewed by a staff biologist. A biologist will periodically examine the biomedical horseshoe crabs and bleeding facilities. The reporting forms are examined for completeness and for information on horseshoe crabs rejected at all stages of the bleeding process. This monitoring will continue in 2023.

Scientific and Educational Research

Maryland DNR is going to restart a classroom program where newly hatched horseshoe crabs are supplied to the classrooms of elementary school children to raise and learn about the ecological role and needs of horseshoe crabs. IMET will continue with research of raising horseshoe crabs in captivity, and Anne Arundel community college will hold a small number of horseshoe crabs to look at DNA as a marker for horseshoe crab fidelity to spawning areas.

Identify horseshoe crab mortality associated with the biomedical industry up to the point of release.

Biomedical companies will keep track of mortality at each stage of the collection bleeding and return to sea process and report the number bled by month and sex to Maryland DNR at the end of each year.

Certify that horseshoe crabs collected for biomedical use are not used for other purposes.

The Maryland scientific collection permit required all horseshoe crabs collected for limulus amoebocyte lysate production, to be returned alive to the waters from which they were collected within 48 hours of collection. In 2004, regulation changes allowed the use of bait crabs for blood collection and the return of these crabs to the bait fishery. In 2022, no horseshoe crabs were bled and then returned to the bait fishery in Maryland.

Continue existing benthic sampling programs. States with juvenile trawl surveys should include these data in annual monitoring reports.

The department will continue to collect horseshoe crab data from Maryland's Trawl and Beach Seine surveys. Data will be collected monthly from April to October with a 16-foot otter trawl and in June and September with a 100 foot beach seine.

Implement a pilot program to survey horseshoe crab eggs in New Jersey and Delaware by the 1999 spawning season.

This component was not mandatory for Maryland.

A coordinated tagging program should be implemented by the Tagging Subcommittee. Two laboratories participated in the U.S Fish and Wildlife Service coast-wide tagging program using horseshoe crabs collected and released in Maryland waters.

Implement a pilot program to survey horseshoe crab spawning in New Jersey, Delaware, and Maryland by the 1999 horseshoe crab spawning season.

Please reference the next section.

Identify potential horseshoe crab spawning and nursery habitat.

Since 2002, the Maryland Coastal Bays Program, part of the National Estuary Program, has coordinated a volunteer horseshoe crab spawning survey in the Maryland coastal bays. The department assisted the Maryland Coastal Bays Program with conducting the survey, which is a continuation of preliminary work done by the state beginning in 1998. The survey results show variation in areas where the horseshoe crabs spawn and the timing. Volunteers collect temperatures during the surveys to better understand the horseshoe crab spawning behavior in Maryland's coastal bays. This survey will be continued in 2023.

V. Law Enforcement Requirements

Not Applicable

APPENDIX A

Maryland's 2022 Horseshoe Crab Regulations

COMAR [08.02.10.01](https://dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx) (<https://dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx>)

A. Quota.

(1) The annual total allowable landings of horseshoe crabs for the commercial fishery shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

(2) Any annual overages in the fishery will be deducted from the total fishery allotment for the following year.

B. Seasons. The season for harvesting horseshoe crabs shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

C. Time Restrictions. A person may not catch or land horseshoe crabs on Saturday or Sunday.

D. Catch Limits.

(1) A person that does not possess a valid Maryland horseshoe crab landing permit may not catch, possess, or land more than 25 horseshoe crabs per day.

(2) An individual may not catch or possess female horseshoe crabs.

(3) The catch limit for individuals in possession of a valid horseshoe crab landing permit shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

E. Horseshoe Crab Landing Permit.

(1) No more than ten horseshoe crab landing permits may be issued by the Department. The number of horseshoe crab landing permits is based on the reported catch and landing records of horseshoe crabs in Maryland during 1996.

(2) The Department may issue a permit to catch and land horseshoe crabs in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, and:

(a) Declared or was eligible to declare, in the previous year, an intent to fish for horseshoe crabs in accordance with this section and has not transferred the permit; or

(b) Received a horseshoe crab landing permit through a permanent business transfer in accordance with §E(6) of this regulation.

(3) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for horseshoe crabs by May 1 of each year.

(b) A tidal fish licensee who has not declared by May 1 of the current year, and who has not declared by the May 1 deadline in any of the 3 preceding years, may apply until May 14 of the current year, or the next business day if May 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the May 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the registration time period established in this subsection.

(4) The daily catch limits shall be printed on the horseshoe crab landing permit.

(5) A permittee shall possess the horseshoe crab landing permit when engaged in permitted activities.

(6) Transfer of a Landing Permit.

(a) The Department may approve the permanent or temporary transfer of a landing permit to a person who applies to the Department requesting the transfer on forms provided by the Department.

(b) At the end of the specified temporary transfer time period the permit automatically returns to the original permittee.

(7) A horseshoe crab landing permit may only be transferred to a person who:

(a) Is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland; and

(b) Is not currently a permit holder.

(8) Regardless of the number of authorized individuals with Maryland horseshoe crab permits on board any one vessel, no more than two horseshoe crab quotas may be harvested from one vessel per trip.

F. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a horseshoe crab landing permit shall record the harvest of horseshoe crabs on the permit daily and submit the completed permit to the Department in the time frame specified on the form.

(2) The Department may deny an application for a horseshoe crab landing permit for failing to comply with §F(1) of this regulation during the previous season.

G. General.

(1) A person authorized to catch and release horseshoe crabs for purposes of scientific research:

(a) Shall return within 48 hours the live horseshoe crabs to the waters from which the horseshoe crabs were taken; and

- (b) Is exempt from §§A—E of this regulation.
- (2) A person who purchases horseshoe crabs for purposes of scientific research may:
 - (a) Return the horseshoe crabs to the harvester for use or sale as bait;
 - (b) Return or sell the horseshoe crabs to a bait dealer; or
 - (c) Return the horseshoe crabs live to tidal waters.
- (3) The Secretary may establish or modify catch limits, quotas, and seasons for horseshoe crabs in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crab by issuing a public notice on the Fisheries Service website.
- (4) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.
- (5) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected individual has a reasonable opportunity to be informed.
- (6) A violation of the restrictions set by the Secretary in accordance with §G of this regulation is a violation of this regulation.

APPENDIX B

Summary of Maryland's 2022 Horseshoe Crab Bait Fishery

1. 2022 QUOTA

- 255,980 Horseshoe Crabs

2. 2022 HARVEST

- Total: 84,627 HSCs/179,410 pounds (2.12 lbs. per male horseshoe crab)
- Percent of MD quota: 33%

3. NUMBER OF FISHERMEN

- Permittees: 10
- Trawl (7), Gill net (3)

4. SEX RATIO OF HARVEST

- Female: 0%
- Male: 100%

5. AREA OF HARVEST

- Chesapeake Bay: 0
- Atlantic Ocean: 100%

6. METHOD OF HARVEST

- Trawl Net 99%
- Gill Net 1%

7. MONTHLY HARVEST

Month	Number of Males
April	
May	827
June	2,928
July	20,597
August	30,916
September	18,995
October	6,711
November	4,654
Total	85,628

APPENDIX C
Example of a 2022 Horseshoe Crab Landing Permit

MAY I. <u>WEEK 1</u> II. <u>(5/1/22 TO 5/7/22)</u> III. <u>MARYLAND DEPARTMENT OF NATURAL RESOURCES</u> IV. <u>FISHING AND BOATING SERVICES</u>						
2022 HORSESHOE CRAB LANDING PERMIT MAXIMUM DAILY ALLOWABLE LANDING LIMIT: 150 HORSESHOE CRABS						
NAME STREET CITY, STATE ZIP		LICENSE # 99999				
AREAS OF HARVEST		VI. <u>GEAR USED</u>				
A = Chesapeake Bay B = Coastal Bays C = Ocean, < 1 Mile		D = Ocean, 1 – 3 Miles E = Ocean, 3 – 12 Miles F = Ocean, 12+ Miles				
1 = Trawl 2 = Gill Net, Drift 3 = Gill Net, Anchor		4 = Pound/Fyke Net 5 = Hand 6 = Other, Specify				
DATE	# OF FEMALES	# OF MALES	# NOT SEXED	AREA OF HARVEST	GEAR USED	SEAFOOD DEALER #
5/1/2022						
5/2/2022						
5/3/2022						
5/4/2022						
5/5/2022						
5/6/2022						

RETURN WITHIN 3 DAYS AFTER THE WEEK IS OVER TO:

Maryland Department of Natural Resources
Fishing and Boating Services B-2
Attn: Horseshoe Crab Monitoring
580 Taylor Avenue
Annapolis, MD 21401
Fax #: 410.260.8279
Attn: Chris Jones, Horseshoe Crab Monitoring

INSTRUCTIONS TO PERMITTEE

- 1) Your name, address, license number, permit number, and daily maximum allowable landing limit appears in the top section of this permit.
- 2) Write the number of female and male horseshoe crabs in the **NUMBER OF FEMALE** and **NUMBER OF MALE** space.
- 3) Write the number of horseshoe crabs, which were not sexed in the **NUMBER NOT SEXED** space.
- 4) Write the area of harvest using the letter codes on top of the permit in the **AREA OF HARVEST** space.
- 5) Write the gear used to harvest the horseshoe crabs using the numeric codes on the top of the permit in the **GEAR USED** space.
- 6) If horseshoe crabs are sold to a seafood dealer, write the dealer's ID number in the **SEAFOOD DEALER'S ID NUMBER** space.
- 7) You are responsible for the accuracy of any and all information recorded on this permit.
- 8) You must return this permit to the Department of Natural Resources (address and fax number below) within 3 days after the week is over. Failure to do so, **even if "0" horseshoe crabs are landed**, could result in the revoking of your permit.

VII. HORSESHOE CRAB TAG RECAPTURES

Tag Number	Date Recovered	HSC Kept/Released	Tag Kept/Mailed/Disposed

If you need additional information or have questions please call:
Chris Jones 410.260.8343 or 800.620.8DNR x.8343



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Red Drum (*Sciaenops ocellatus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2022

Prepared by

Matthew B. Jargowsky

Maryland Department of Natural Resources
Fishing and Boating Services

June 20, 2023

Red Drum Compliance Report Template
Due Date: July 1
States/Jurisdictions: New Jersey – Florida

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Maryland's commercial fishery landed C pounds of red drum in 2022 (Figure 1).

Recreational Fishery

Maryland landed 0 lbs. of red drum in their recreational fishery in 2022.

Maryland landed 0 red drum in their recreational fishery in 2022 (Figure 2).

Maryland released 18,010 red drum in their recreational fishery in 2022 (PSE = 73.5; Figure 3).

All of the preceding recreational estimates were downloaded from the MRIP website. (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division).

Licensed charter boat captains in Maryland are required to keep log books of their clients' catch. Log books from 2022 indicate 50 red drum were caught, 7 of which were harvested (Figure 4). Charter boat red drum catches were reported every year from 1993-2022, except for 1996.

III. Fishery Monitoring Program

- a. Summarize fishery dependent monitoring programs including bycatch monitoring programs.

Maryland conducted weekly monitoring of commercial pound nets in Maryland's portion of the Chesapeake Bay from May 25, 2022, through September 14, 2022, and then sporadic monitoring through November 29, 2022. Fifteen red drum were measured in 2022, averaging 710 millimeters TL and ranging from 350 to 1250 millimeters TL (Figure 5).

- b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland did not conduct fishery independent monitoring for red drum in 2022.

IV. Management Programs

- a. Summarize any regulatory changes from the previous year or planned changes for the current year. States with a commercial landings cap, please report any overages and the payback schedule.

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

08.02.05.16

.16 Red Drum.

Commercial

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a commercial licensee may not catch or possess red drum less than 18 inches in total length or greater than 25 inches in total length.
- A commercial licensee may not catch or possess more than five red drum per day.

Recreational

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a person may not catch or possess red drum less than 18 inches in total length or greater than 27 inches in total length.
- A person may not catch or possess more than one red drum per day.

V. Law Enforcement Reporting Requirements

Please include in this section any major law enforcement issues related to red drum that occurred in the previous calendar year.

N/A

Figure 1. Commercial red drum landings reported to Maryland DNR, 1981-2022.

Redacted due to confidential data.

Figure 2. MRIP harvest estimates for red drum in Maryland, 1981-2022.

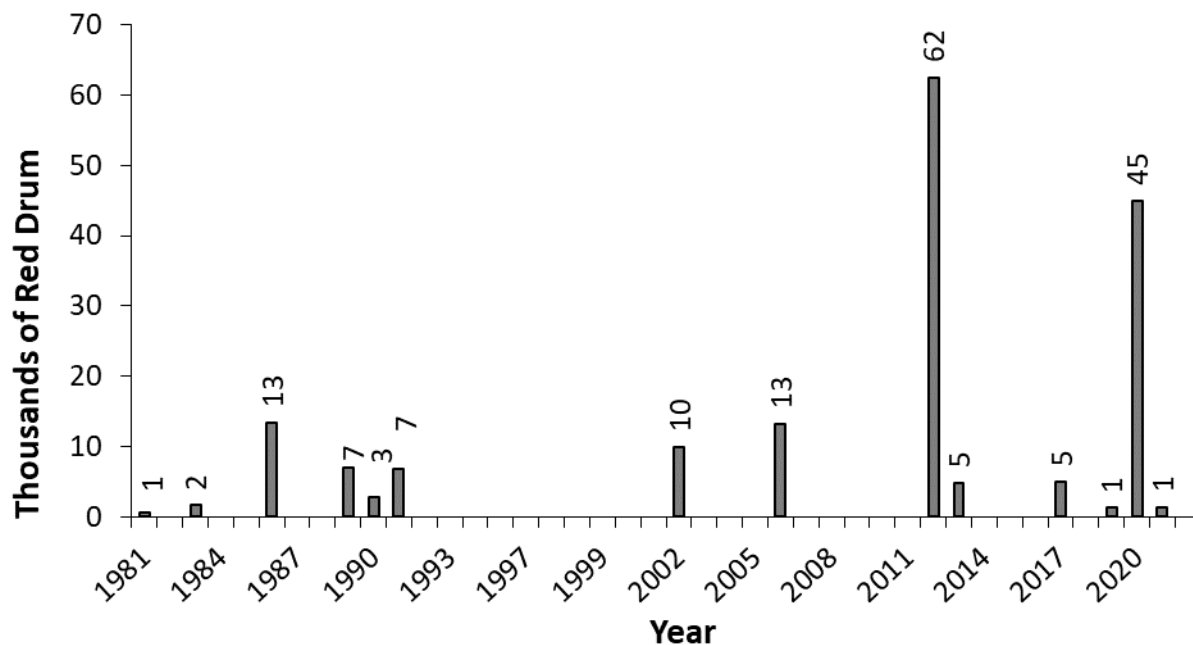


Figure 3. MRIP release estimates for red drum in Maryland, 1981-2022.

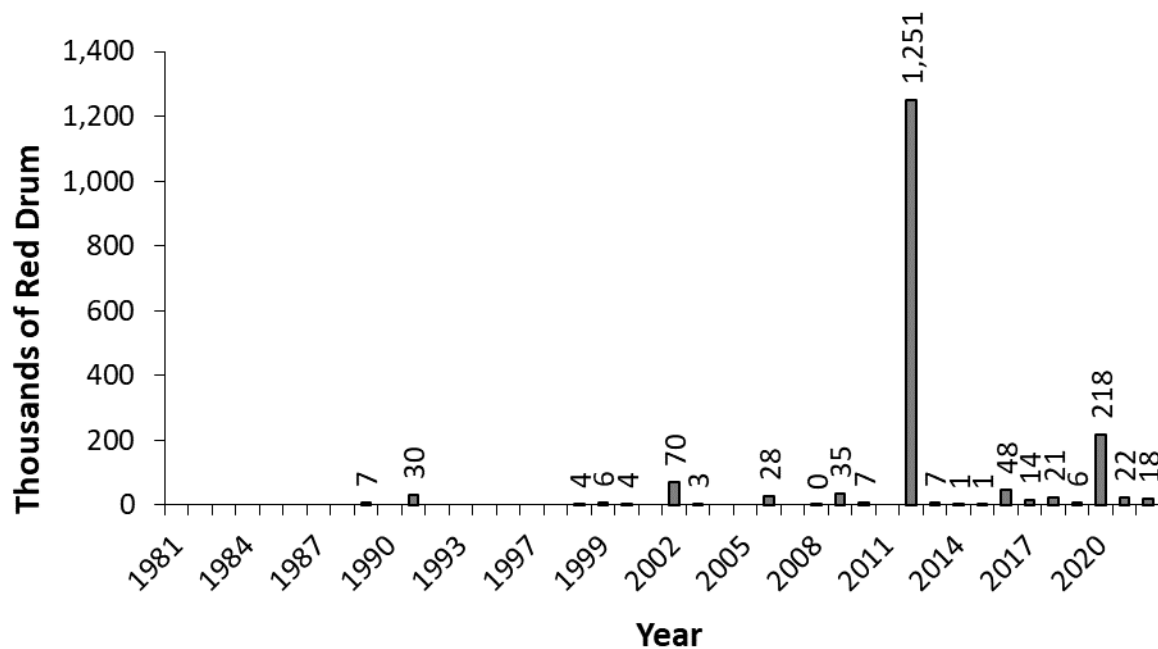


Figure 4. Red drum harvest and releases reported from Maryland's charter boat fishery in numbers, 1993-2022.

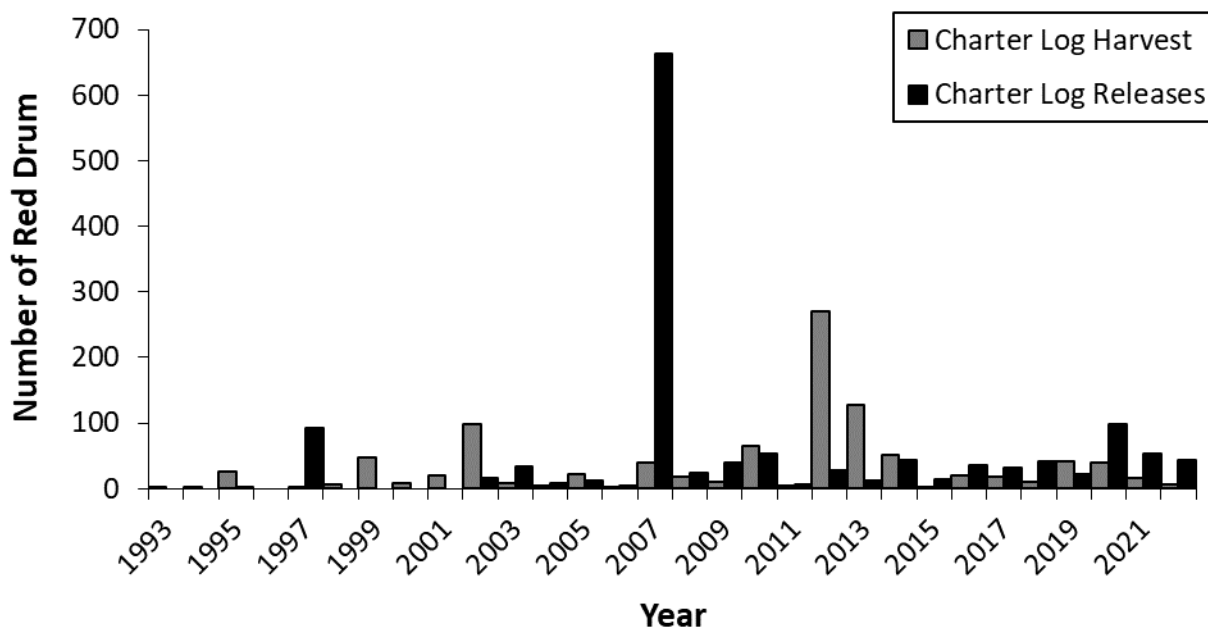
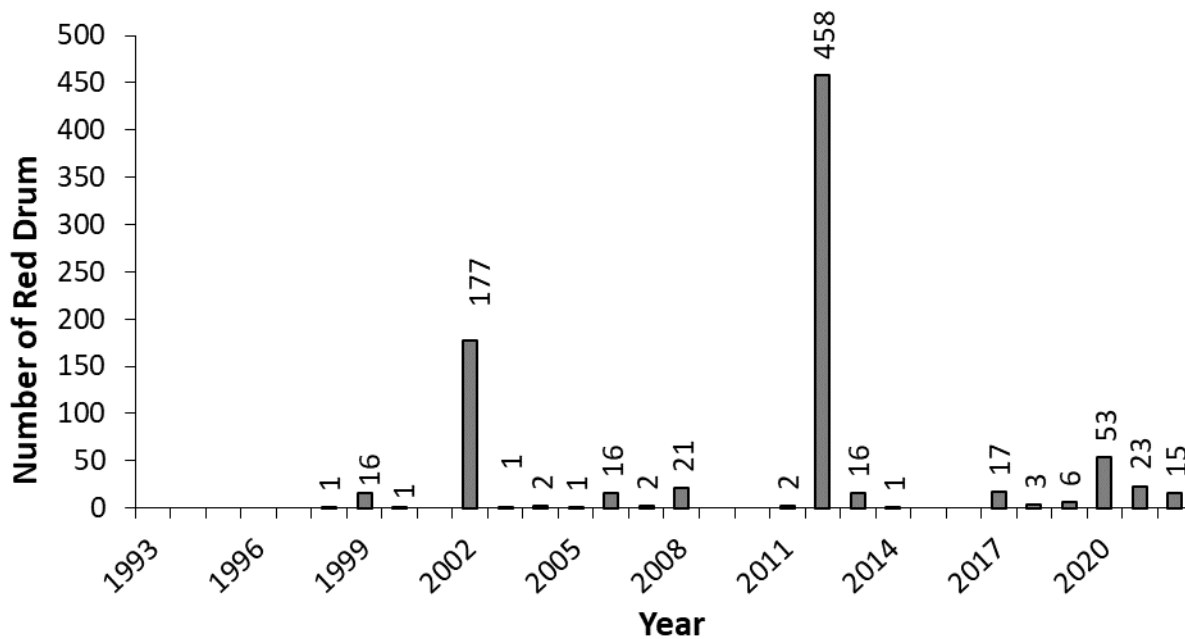


Figure 5. Red drum caught in commercial pound nets monitored by Maryland DNR biologists, 1993-2022.





Maryland's 2022 Scup (*Stenotomus chrysops*) Compliance Report to the
Atlantic States Marine Fisheries Commission
June 2023

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

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If you believe that you have been discriminated against in any program, activity, or facility, or if you need more information, please write to:

Office of Fair Practice
Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2023

DNR

I. Introduction

The recreational (35 percent) and commercial (65 percent) scup allocations were updated with

the approval of Amendment 22 (September 2022). These changes were effective January 2023. The most recent management track stock assessment update was completed in 2021. It indicated that the stock was not overfished and not experiencing overfishing. Spawning stock biomass was estimated at 176,404 metric tons, which is about two times the spawning stock biomass target of 90,019 metric tons. The 2021 management track assessment update suggests the 2017–2019-year classes are below average and spawning stock biomass is projected to decrease toward the target unless more above average year classes recruit to the stock.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

Monitoring Programs

Maryland has conducted the juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. A total of 140 trawls and 38 beach seine hauls were conducted annually. In 2022, four scup were collected by trawl and zero were collected by beach seine.

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2022 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by the Maryland Fishing and Boating Services via weekly reports of dealer transactions to the National Oceanic and Atmospheric Administration.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating Services has managed the Access Point Angler Intercept Survey which collects the information for MRIP since March of 2016.

Regulations

PUBLIC NOTICE

The Maryland Department of Natural Resources

Fishing and Boating Services

2023 Recreational Scup Size Limit — Effective 1/1/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces a modification to the recreational minimum size limit for scup.

2023 SCUP RECREATIONAL SIZE LIMIT

The recreational size limit for scup for the 2023 season is nine inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch scup recreationally.

EFFECTIVE TIME AND DATE

This change is effective at 12:01 a.m. January 1, 2023. The National Marine Fisheries Service anticipates modifications to the scup fishery for 2023. If changes are made, the Atlantic States

Marine Fisheries Commission will follow with modifications for state waters. A new public notice will be issued if modifications are made.

AUTHORITY

Code of Maryland Regulations 08.02.05.22

Jeannie Haddaway-Riccio

Secretary of Natural Resources

Code of Maryland Regulations <https://www.law.cornell.edu/regulations/maryland/COMAR-08-02-05-22>

A. Minimum Size.

- (1) Recreational. A recreational angler may not catch or possess a scup less than 8 inches in total length. (Minimum size was increased to 9 inches for 2022 by public notice)
- (2) Commercial. A commercial tidal fish licensee may not catch or possess scup less than 9 inches in total length.

B. Commercial Gear Restrictions.

(1) Trawls.

- (a) Except for a person landing less than a total of 500 pounds of scup from November 1 through April 30 or 100 pounds of scup from May 1 through October 31, a person may not use a trawl with:
 - (i) Mesh less than 5 inch stretched mesh size;
 - (ii) More than 25 meshes in the codend with more than 100 continuous meshes of 5 inch mesh forward of the codend; or
 - (iii) Mesh size less than 5 inches throughout the trawl net for trawl nets with codends less than 125 meshes.
- (b) A person may not use a roller rig trawl with a roller diameter in excess of 18 inches to catch scup.

(2) Pots and Traps. A pot or trap used to catch scup shall have:

- (a) An escape vent of at least a:
 - (i) 3.1 inch diameter round opening, or
 - (ii) 2.25 inch square opening; and
- (b) Hinges or fasteners on one panel or door made of one of the following degradable materials:
 - (i) Untreated hemp or jute string of 3/16 inch in diameter or smaller,
 - (ii) Magnesium alloy fasteners, or
 - (iii) Ungalvanized or uncoated iron wire of 0.062 inch in diameter or smaller.

C. Catch Limits.

- (1) Commercial Catch Limits. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.
- (2) A commercial tidal fish licensee may not catch, possess, or land more pounds of scup daily than as set forth in §C(1) of this regulation.
- (3) Recreational Catch Limits. An individual may not catch or possess more than 50 scup per day.

D. General.

- (1) The Secretary may modify or set a season or catch limit by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.

- (2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Table. 1. State compliance with the required commercial measures as mandated in the FMP

Has the state implemented the required measure?	
9" minimum size	Yes
5.0" minimum diamond mesh	Yes
Threshold to trigger minimum mesh requirements: (1,000 lbs 10/1 – 4/14, 2,000 lbs from 4/15-6/15, 200 lbs from 6/16 to 9/30)	More restrictive
3.1" circular escape vents, 2.25" square escape vent, or rectangular escape vent of equivalent size.	Yes

Harvest

Commercial Fishery

Maryland's 2022 preliminary commercial scup harvest was 48,058 pounds harvested by otter trawl and pot (Table 2; Source: Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

Recreational Fishery

Maryland's 2022 recreational scup harvest was estimated at 1,671 fish (PSE 83) with a combined weight of 2,211 pounds (PSE 83; National Marine Fisheries Service, Fisheries Statistics and Economics Division, Personal communication, May 3, 2023).

IV. Planned Management for 2023

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as in 2022. The recreational minimum size will remain at 9 inches and the catch limit will decrease to 40 fish in 2023.

B. Summary of Monitoring Programs that will be in Effect

Same as 2022, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Fisheries Statistical Survey. Accessed on May 3, 2023.
<https://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Northeast Fisheries Science Center. 2021. Scup Management Track Assessment for 2021 (Lead:

Mark Terceiro).

https://asmfc.org/uploads/file/63ed4e522021_scup_MTA_report.pdf



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland's 2022 Compliance Report:

American Shad (*Alosa sapidissima*)

Hickory Shad (*Alosa mediocris*)

Alewife Herring (*Alosa pseudoharengus*)

Blueback Herring (*Alosa aestivalis*)

Submitted to
Atlantic States Marine Fisheries Commission

Prepared by

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Fishing and Boating Services

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6/20/2023

American Shad

I. Introduction

Fishery independent surveys for the Susquehanna River and Potomac River spawning stocks were conducted as usual and juvenile abundance surveys were completed in all locations. Fishery dependent monitoring of the recreational catch and release fishery in the upper Chesapeake Bay was assessed using statewide voluntary angler logbooks and a roving creel survey. The Nanticoke River spawning stock survey was not conducted in 2022 due to the watermen not fishing.

II. Request for *de minimis*, where applicable.

NA

III. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	American Shad Losses		
	Number of fish	Weight (lbs) ³	Mean Weight (lbs)
Commercial TOTAL	C	C	NA
Directed landings	C	C	
Estuarine/State waters bycatch ¹	4,200	8,400	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Non-harvest TOTAL	651	1,302	NA
Fish passage mortality ²	651	1,302	
Brood stock capture	0	0	
Research losses	0	0	
TOTAL LOSSES	C	C	NA

¹ Extrapolated from American shad observed mortalities from pound nets in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

² Includes turbine mortality, lift mortality, trap and transport mortality, holding mortality and those sacrificed for otoliths at Conowingo Dam.

³ Reported weights were calculated by multiplying the number of fish by an estimated 2 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational harvest, catch and release only
Landings	NA	
Harvest Composition	NA	
Effort	Y	Monitored via voluntary catch and release angler logbooks and a roving creel survey
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (Susquehanna River/upper Chesapeake Bay)	Y	
Spawning stock survey (Nanticoke River)	N	Survey not conducted
Spawning stock survey (Potomac River)	Y	
Calculation of mortality and/or survival estimates (Susquehanna River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (Nanticoke River)	N	Survey not conducted. Mortality estimates were not calculated in 2021 due to an insufficient sample size
Calculation of mortality and/or survival estimates (Potomac River)	Y	
Juvenile abundance survey(s)	Y	
Hatchery evaluation	Y	

C. Sustainability Evaluation

NA

IV. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

The Nanticoke River pound and fyke net spawning stock survey was not conducted again in 2023 due to the watermen traditionally used for the survey not fishing. It is unlikely that these watermen will fish again in the future, so Maryland is exploring options for alternative surveys. The Nanticoke River is monitored jointly by Maryland and Delaware, who monitor the American shad spawning stock through and electrofishing survey, so all monitoring requirements under Amendment 3 will still be satisfied. The alternative survey will likely be a fishery-independent survey for river herring. This is because the pound and fyke net survey was always a more useful source of river herring spawning stock data than American shad data, and Maryland already has two other American shad spawning stock surveys, but only one river herring spawning stock survey.

V. Progress in implementing habitat recommendations

The Maryland Department of Natural Resources' (DNR) Fish Passage Program (FPP) continues to prioritize the removal of stream barriers that inhibit aquatic organism migrations. To date, most of the blockages to American Shad in Maryland have fish ladders or have been removed. The removal of Bloede Dam in 2019 was deemed a huge success. There have yet to be quantifiable benefits to American shad, though river herring have been detected upstream of the dam removal site, but the removal is an important milestone in the program as they continue to push for more dam removals in Maryland. The FPP is also in discussions with Maryland Department of the Environment (MDE) Dam Safety about how to increase coordination between DNR/MDE to further dam removals with anticipation of infrastructure grants. The FPP is also seeking opportunities for more dam removals through a Mitigation Banking Tool that is being developed by the United States Army Corps of Engineers. Lastly, the FPP has several smaller dam removals in the works now to benefit river herring, which may also tangentially benefit American shad. Plans to improve fish passage at Conowingo Dam were also initiated as part of the 2021 FERC license, but these plans are currently on hold after the U.S. Court of Appeals vacated the license due to issues surrounding a water quality certification.

A. Habitat protection and restoration

The Maryland DNR completed an update to the ASMFC American shad habitat plan, which was approved by the board at the February 2021 meeting. Spawning and rearing habitat estimates were updated with input from the Maryland DNR Fisheries Habitat and Ecosystem Program. The plan identified that the major impediments to American shad recovery in Maryland are hydroelectric dams on the Susquehanna River and habitat degradation associated with watershed development. New information pertaining to the impacts of water withdrawals, channelization, dredging, competition and predation were also added to the habitat plan.

B. Land Use

Maryland DNR Land Acquisition and Planning works to conserve land resources and ecosystems that serve vital ecological, economical and recreational needs for Maryland citizens through a number of programs. As of December 31, 2022, approximately 1.84 million acres of land in Maryland have been protected through the purchase and donation of conservation easements and fee-simple acquisitions.

Hickory Shad

VI. Introduction

Hickory shad spawning stock data was collected by the Maryland DNR Fish Health and Hatcheries Program (FHHP), who use electrofishing gear to sample hickory shad near Lapidum on the lower Susquehanna River. An index of abundance for hickory shad in the upper Chesapeake Bay was also calculated using data from fishery-independent gill nets targeting striped bass. Fishery dependent monitoring of the recreational catch and release fishery in the upper Chesapeake Bay was assessed using statewide voluntary angler logbooks and a roving creel survey.

VII. Request for *de minimis*, where applicable.

NA

VIII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Hickory Shad Losses		
	Number of fish	Weight (lbs) ¹	Mean Weight (lbs)
Commercial TOTAL	0	0	NA
Directed landings	0	0	
Estuarine/State waters bycatch	Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Other TOTAL	259	259	NA
Fish passage mortality	0	0	
Brood stock capture	259	259	
Research losses	0	0	
TOTAL LOSSES	259	259	NA

¹ Reported weights were calculated by multiplying the number of fish by an estimated 1 pound per fish.

B. Completion of Monitoring

Required Monitoring Components	Additional comments
<i>Fishery-Dependent Monitoring</i>	
Commercial Fishery	No commercial fishery.
Landings	NA
Harvest Composition	NA
Effort	NA
Recreational Fishery	No recreational fishery. Catch and release only
Landings	NA
Harvest Composition	NA
Effort	Monitored via voluntary catch and release angler logbooks and a roving creel survey (not required)
<i>Fishery-Independent Monitoring</i>	
Spawning stock survey (upper Chesapeake Bay)	CPUE was examined from this survey (not required)
Calculation of mortality and/or survival estimates (lower Susquehanna River)	Length, age, sex composition, repeat spawning and mortality of hickory shad was examined from this survey (not required)

IX. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

River Herring

X. Introduction

Fishery independent monitoring of the alewife and blueback herring spawning stocks in the North East River (upper Chesapeake Bay tributary) and the juvenile abundance survey were completed as usual. The Nanticoke River spawning stock survey was not conducted in 2022 due to the watermen not fishing.

XI. Request for *de minimis*, where applicable.

NA

XII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Alewife Losses			Blueback Herring Losses		
	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)
Commercial TOTAL¹	C	C	NA	C	C	NA
Directed landings	C	C		C	C	
Estuarine/State waters bycatch ²	Unknown	Unknown		Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown		Unknown	Unknown	
Recreational TOTAL	0	0	NA	0	0	NA
Directed harvest	0	0		0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown		Unknown	Unknown	
Other TOTAL	82	41	NA	50	25	NA
Fish passage mortality ³	Unknown	Unknown		Unknown	Unknown	
Brood stock capture	0	0		0	0	
Research losses	82	41		50	25	
TOTAL LOSSES	C	C	NA	C	C	NA

¹ Commercial landings are collectively reported as river herring. Landings were split between species.

² There is no mechanism for commercial fishermen to report river herring bycatch mortality under the current reporting system.

³ No turbine mortality estimates are available for river herring.

⁴ Reported weights were calculated by multiplying the number of fish by an estimated 0.5 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (North East River/upper Chesapeake Bay)	Y	
Spawning stock survey (Nanticoke River)	N	Survey not conducted (not required for river herring)
Calculation of mortality and/or survival estimates (North East River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (Nanticoke River)	N	Survey not conducted (not required for river herring)
Juvenile abundance survey	Y	
Hatchery evaluation	NA	

C. Sustainability Evaluation

NA

XIII. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

APPENDICES TO COMPLIANCE REPORT

Appendix A. Fishery Information

I. American Shad

A. Commercial Fishery

i. Characterization of Fishery

The American shad commercial fishery closed in 1980, and the ocean intercept fishery closed in 2005.

ii. Characterization of Directed Harvest

No commercial data have been collected from commercial fisheries since the closure of the ocean intercept fishery in 2005.

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

American shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries. Commercial fishermen are permitted a 2 fish per day allowance of dead American shad for personal use (no sale is permitted). Release mortality of American shad from this fishery can be high.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report American shad as bycatch under the current reporting system; funding and staffing constraints are also factors. Bycatch mortality reported in the harvest and losses table was extrapolated from American shad observed pound net mortalities in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

2. Estimate of composition (length and/or age)

Limited length and age samples are collected from American shad encountered as bycatch in Nanticoke River commercial fisheries. These data should not be considered representative of statewide bycatch composition.

B. Recreational Fishery

i. Characterization of the Fishery

Maryland has permitted a catch and release sport fishery since the closure of the recreational American shad fishery in 1980. American shad anglers are interviewed during the spawning run through a roving creel survey below the Conowingo Dam on the Susquehanna River which provides catch in numbers and hours spent fishing. Shad fisheries throughout Maryland are also characterized through a volunteer logbook survey in which anglers report daily effort and catches.

ii. Characterization of Directed Harvest

Directed recreational harvest of American shad has not been permitted in state waters since 1980.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Total recreational release mortality remains unknown, but the impact of the recreational fishery appears negligible on the recovery of the upper Chesapeake Bay stock.

1. Estimate and method of estimation

A catch and release study was conducted at the Conowingo Dam in 1997 (Lukacovic 1998), and mortality of American shad in the study was 0.97% ($n = 309$). The total catch of American shad from a creel survey in the lower Susquehanna River (Normandeau Associates, Inc. 2011) was 14,831 fish. Using these studies, total recreational release mortality in the lower Susquehanna River can be estimated as 144 American shad per year.

C. Other losses

i. Characterization of Other Losses

1. Research Losses

NA

2. Turbine Mortality

There are two fish lifts operating at the Conowingo Dam, the most downstream dam on the Susquehanna River. All mortality associated with the Conowingo Dam and its fish lifts are included in the fish passage mortality section of the harvest and losses table (III.A). From 1982 to 1996, fish lifted at Conowingo Dam were transported upstream of the four downstream hydroelectric dams on the Susquehanna River. In 1997, the transportation of fish upstream began to be phased out in favor of volitional passage. With volitional passage, fish were emptied from the fish lift into a raceway, which directed fish past a viewing window and into the pool above the dam. In 2001, with all four downstream hydroelectric dams now having fish passage, volitional passage became the only method of upstream passage. In 2021, to prevent the upstream passage of invasive species, American shad and river herring collected in the fish lifts were sorted out for the purposes of upstream transportation. In 2022, 3,174 American shad were successfully transported upstream of the York Haven Dam and 783 were successfully transported upstream of the Safe Harbor Dam. Of the 3,957 American shad that were transported upstream, it was estimated that 1,630 fish would attempt to emigrate back through the turbines at the Conowingo Dam (based on turbine mortality estimates for the York Haven Dam, Safe Harbor Dam and Holtwood Dam). From that approximation of American shad, the total Conowingo Dam turbine mortality was estimated to be 407. An additional 179 American shad were sacrificed for life history information and an additional 65 fish were either lift, holding or transport mortalities.

3. Hatchery Propagation

No American shad were removed from waters under the jurisdiction of Maryland for Maryland DNR American shad propagation in 2022.

II. Hickory Shad

A. Commercial Fishery

i. Characterization of Fishery

Maryland's hickory shad commercial fishery closed in 1981.

ii. Characterization of Directed Harvest

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

Hickory shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report hickory shad as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. Estimate of composition (length and/or age)

There are no data available to estimate composition.

B. Recreational Fishery

i. Characterization of the Fishery

Hickory shad are targeted for recreational catch and release fishing in several tributaries of the Chesapeake Bay. Specifically, there is a significant catch and release fishery for hickory shad in the lower Susquehanna River and its tributaries. A roving creel survey below Conowingo dam provides catch in numbers and hours spent fishing for hickory shad for each participating angler. Similar information is collected statewide through a voluntary logbook survey.

ii. Characterization of Directed Harvest

Recreational harvest of hickory shad has not been permitted from Maryland waters since 1981.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Based on limited catch and release mortality rate estimates, recreational fishing mortality appears to be minimal (Lukacovic and Pieper 1998).

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of hickory shad due to practices such as poaching or hook and release.

C. Other losses

- i. **Characterization of Other Losses**

1. **Research Losses**

Hickory shad from the Choptank and Patapsco Rivers are subsampled for otolith examination by the Maryland DNR FHHP.

2. **Turbine Mortality**

Turbine mortality is not a significant source of hickory shad mortality. Since 1991, only 41 hickory shad have been passed upstream of the Conowingo Dam.

3. **Hatchery Propagation**

Adult hickory shad collected by the FHHP with electrofishing gear near Lapidum on the Lower Susquehanna River are sacrificed as broodstock for stocking the Patapsco River and to a lesser extent, the Patuxent River.

III. River Herring

A. Commercial Fishery

- i. **Characterization of Fishery**

The river herring commercial fishery closed on 26 December 2011.

- ii. **Characterization of Directed Harvest**

Commercial harvest of river herring is not permitted in Maryland.

1. **Landings**

NA

2. **Catch Composition**

NA

3. **Estimation of Effort**

NA

iii. **Characterization of Other Losses**

River herring are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the Chesapeake Bay and various Maryland tributaries. Maryland was monitoring this fishery in the Nanticoke River prior to the moratorium on river herring, and following the moratorium has continued to sample river herring from this fishery.

1. **Estimate and method of estimation**

No data are available to estimate statewide bycatch of river herring in commercial fisheries. There is no mechanism for fishermen to report river herring as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. **Estimate of composition (length and/or age)**

River herring encountered as bycatch in Nanticoke River commercial fisheries are subsampled for length, sex and age.

B. **Recreational Fishery**

i. **Characterization of the Fishery**

A recreational catch and release fishery for river herring is permitted in Maryland, though targeting of river herring is not a common practice. Therefore, mortality due to these catches is considered insignificant.

ii. **Characterization of Directed Harvest**

Directed recreational harvest of river herring is not permitted in Maryland.

1. **Landings and method of estimation**

NA

2. **Estimation of effort or annual CPUE from a subsample**

NA

iii. **Characterization of Other Losses**

The Maryland DNR conducts a roving creel survey in the Susquehanna River. This survey indicates that river herring are not specifically targeted by recreational anglers in the upper Chesapeake Bay. Therefore, hook and line release mortality is considered to be negligible.

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of river herring due to practices such as poaching or hook and release.

C. **Other losses**

i. **Characterization of Other Losses**

1. Research Losses

Beginning in 2016, Maryland DNR staff began sacrificing a subsample of river herring from each monitored system to collect otolith samples. Otoliths were recommended as the preferred ageing structure by the most recent river herring stock assessment. These samples will be aged when time allows for training and processing of the structures.

2. Turbine Mortality

Turbine mortality rates for river herring at the Conowingo Dam are unknown, but are likely not a significant source of mortality. Since 2004, a yearly average of just 156 river herring are passed upstream of the Conowingo dam, so very few fish are exposed to turbines during downstream migration.

3. Hatchery Propagation

River herring are not currently removed from waters under the jurisdiction of Maryland for hatchery propagation.

IV. Protected Species (Atlantic sturgeon) bycatch estimates

Atlantic sturgeon bycatch has been zero since the closure of American shad (1980 Chesapeake Bay, 2005 ocean intercept), hickory shad (1981) and river herring (2011) fisheries.

I. Copy of Fishery Regulations for Previous Fishing Year

08.02.05.05

.05 American Shad.

A. Prohibition of Catching, Possession, or Sale of American Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any American shad or any parts of American shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch American shad in cooperation with a scientific investigation of the Department and cooperating persons having a valid scientific collecting permit, including permitted shad egg hatching in approved devices. This person may sell live American shad to the scientific investigation.

(b) The incidental catching of American shad by fishing gear set for other species of fish will not be deemed a violation of this section if the American shad is returned to the water.

(c) Not more than two American shad may be possessed for personal consumption if the shad were found dead when fishing gear operated for other species was retrieved from the water.

B. Possession or Sale of American Shad Lawfully Taken in Another Jurisdiction.

(1) The provisions of §A, of this regulation, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer for sale, or shipment of American shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity demonstrates by substantial evidence that the American shad were lawfully taken and lawfully removed from another jurisdiction.

(2) The requirements of "substantial evidence" as used in §B(1), of this regulation, shall be satisfied by a bill of sale which identifies the American shad as originating from waters not under Maryland jurisdiction.

C. Effective Period of These Sections. On the basis of study findings and interpretations, the Secretary shall annually determine whether the provisions of §A, of this regulation, shall remain in force. At the same time, if those provisions are to remain in force, he shall determine what, if any, changes are necessary.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.05.htm>)

08.02.05.06

.06 Hickory Shad.

A. Prohibition of Catching, Possession, or Sale of Hickory Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any hickory shad or any parts of hickory shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch hickory shad in cooperation with a scientific investigation of the Department.

(b) The incidental catching of hickory shad by fishing gear set for other species will not be considered a violation of this section if the hickory shad is returned to the water.

B. Possession or Sale of Hickory Shad Lawfully Taken in Another Jurisdiction. The provisions of §A, above, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of hickory shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity possesses a bill of sale which identifies the hickory shad as originating from waters not under Maryland jurisdiction.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.06.htm>)

08.02.05.09

.09 River Herring.

A. Definition.

(1) In this regulation, the following term has the meaning indicated.

(2) Term Defined. "River herring" means both alewife herring (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*).

B. An individual may not possess river herring within the jurisdiction of Maryland.

C. Exceptions. The provisions of §B of this regulation do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of river herring which were legally caught in

waters not under jurisdiction of Maryland, if the person engaging in the activity possesses a bill of sale which identifies the river herring as originating from waters not under jurisdiction of Maryland.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.09.htm>)

In 2015, Maryland Department of Natural Resources Regulations and Policy staff noticed statewide general non-tidal regulations that addressed river herring had been overlooked when the fishery was closed in 2011. These regulations have been updated to state that there is no open season for river herring in non-tidal waters and a daily creel limit of zero. This regulation was proposed in 2015 and became effective in 2016.

08.02.11.04

.04 Statewide General Regulations.

A. Open Seasons, Creel, Possession, and Size Limits on Game and Fresh Water Fish in Nontidal Waters. Except as otherwise provided in this chapter for specific areas, the following apply Statewide:

(1) Open Seasons.

<i>Species</i>	<i>Open Season</i>
(i) Herring	No open season

(2) Creel and Possession Limits.

	<i>Daily Creel</i>	<i>Possession</i>
(j) Herring (Blueback and Alewife)	closed season — none permitted	

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.11.04.htm>)

II. Copy of Fishery Regulations for Current Fishing Year

NA

III. Law Enforcement Reporting Requirements

NA

Appendix B. Required Fishery-Independent Monitoring

I. American Shad

A. Description of Requirements

Under Amendment 3, Maryland is required to have the following sampling programs in the Susquehanna River/upper Chesapeake Bay, Nanticoke River (cooperative effort among Maryland and Delaware) and Potomac River (cooperative effort among Maryland, District of Columbia, Potomac River Fisheries Commission and Virginia):

1. Annual spawning stock survey to include passage counts, CPUE or some other abundance index and representative subsamples that describe size, age and sex composition of spawning stock.
2. Calculation of mortality and/or survival estimates where possible
3. JAI: Juvenile abundance survey
4. Hatchery Evaluation (Susquehanna River/upper Chesapeake Bay and Potomac River)

B. Description of Work Performed

i. Juvenile Abundance Survey

American shad juvenile indices were derived from the Maryland DNR Estuarine Juvenile Finfish Survey (EJFS) conducted at fixed stations within the upper Chesapeake Bay and the Nanticoke and Potomac Rivers. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore and the other was fully stretched perpendicular from the beach and swept with the current. Ideally, the area swept was equivalent to a 729 m² quadrant. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two stations from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

American shad spawning stock was sampled by hook and line in the Conowingo Dam tailrace (Susquehanna River/upper Chesapeake Bay). Biological information was collected (fork length, sex and scales for aging) and fish were tagged as part of a mark-recapture population estimate. Observations in the Conowingo Dam fish lifts were used as recaptures. Population size was determined using chapman's modification of the Petersen method, adjusted to incorporate fallback rate and days between tagging and the end of the fish passage season. Relative abundance was calculated as the number of fish caught per hour.

The Potomac River American shad spawning stock survey was conducted as usual. American shad were captured in fishery-independent gill nets

targeting striped bass from early April through mid-May. All American shad were measured and sexed, and scales were removed from a subsample of fish (10 fish/20mm length group/sex) for aging. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.75-, 4.5- and 5.25-inch mesh panels were used as those panels account for 84% of the total American shad catch. Each panel was treated as an individual sampling event.

The Nanticoke River was not sampled in 2022. Geometric mean (GM) was defined as catch of American shad per number of days the net was fished. From 1988-1995, catches from all pound nets sampled on the Nanticoke River were factored into a measure of relative abundance (GM CPUE). Beginning in 1996, methods were revised to only include data from one pound net (Mill Creek) because it was consistently sampled over the time series; harvest from other pound nets was sporadic. Fyke nets were not included in the calculation because anecdotal evidence from the Nanticoke River suggests that they have a poor success rate in the capture of American shad relative to pound nets, rendering the efforts between the two methods incomparable.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960) were used to estimate total instantaneous mortalities (Z) of adult American shad sampled by the Susquehanna River/upper Chesapeake Bay spawning stock survey and Potomac River spawning stock survey. Age composition data was used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Maryland DNR FHHP personnel strip spawned American shad from the Potomac River. The resulting offspring were OTC marked and stocked to various rivers. From 1994 to 2022 Maryland DNR has stocked over 61.1 million American shad in the Choptank River, Patuxent River, Patapsco River, Nanticoke River and Potomac River. Ten to fifteen percent of all the eggs and fry resulting from the use of Potomac River broodstock were restocked as close to the capture site as was feasible. As of 2022, the Patapsco and Choptank Rivers were the primary stocking locations. The percentage of hatchery fish present in these populations was determined annually via juvenile seine surveys.

The Pennsylvania Fish and Boat Commission and the Delaware Division of Fish and Wildlife determine the proportion of hatchery reared juveniles that return as adults to the Susquehanna and Nanticoke Rivers, respectively.

C. Results

i. Juvenile Indices

1. Index of Abundance

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment

1. Length-Frequency

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

Results provided. Maryland does not conduct a hatchery evaluation on the Potomac River. This was a cooperative task between the Potomac River Fisheries Commission, Maryland, Virginia and the District of Columbia. Another agency besides Maryland may provide this information.

II. Hickory Shad

A. Description of Work Performed

Amendment 1 recommends the monitoring of juvenile hickory shad in the Chesapeake Bay tributaries.

i. Juvenile Abundance Survey

The Maryland DNR EJFS does not collect juvenile hickory shad in significant numbers and therefore juvenile indices are not calculated.

ii. Annual Spawning Stock Surveys

Hickory shad spawning stock data were collected by the Maryland DNR FHHP, who used electrofishing gear to sample hickory shad near Lapidum on the lower Susquehanna River. Maryland DNR staff removed scales, determined sex and measured fork and total length of captured hickory shad. Scales were later read for age and spawning history. Hickory shad were also captured in fishery-independent gill nets targeting striped bass from early April through mid-May in the upper Chesapeake Bay. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.0-, 3.75- and 4.5-inch mesh panels were used as those panels account for 95% of the total hickory shad catch. Each panel was treated as an individual sampling event.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960) were used to estimate total instantaneous mortality (Z) of hickory shad from the lower Susquehanna River. Age composition data were used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those fish was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Recent hickory shad stocking efforts have focused primarily on the Patapsco River and to a lesser extent, the Patuxent River. Both adult and juvenile hickory shad may be sacrificed for hatchery evaluation when they are encountered by FHHP surveys.

III. River Herring

A. Description of Requirements

Under Amendment 2, Maryland is required to have the following sampling programs in the upper Chesapeake Bay:

1. Annual spawning stock survey and representative sampling for biological data
2. Calculation of mortality and/or survival estimates
3. JAI: Juvenile abundance survey (GM).

B. Description of Work Performed

i. Juvenile Abundance Survey

Juvenile river herring indices were derived from the Maryland DNR EJFS at fixed stations within the upper Chesapeake Bay and various Chesapeake Bay tributaries. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore and the other was fully stretched perpendicular from the beach and swept

with the current. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two sites from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

Alewife and blueback herring spawning stocks were assessed with a gill net survey in the North East River, an upper Chesapeake Bay tributary. The gill net was fished at four randomly chosen sites once a week from mid-March through mid-May. The gill net consisted of three different size monofilament mesh panels (2.25-, 2.5- and 2.75-inch stretch mesh) each 100ft wide and 6ft deep. The 2.25-inch mesh panel replaced a 3-inch mesh panel in 2015 because few blueback herring were caught in the 3-inch mesh panel, and there was some indication the smallest blueback size group was not represented in the sample. River herring were measured (fork and total length), scales were removed below the insertion of the dorsal fin and sex was determined (by expression of gonadal products). Scales were read for age and spawning marks. Catch-per-unit-effort (CPUE) was estimated separately for alewife and blueback herring. For alewife, CPUE was calculated for all years using catch from only the 2.25- and 2.75-inch mesh panels (2013 – 2022). For blueback herring, CPUE was calculated from 2015 – 2022 on, using catch from all three mesh panels. Each sampling site was treated as an individual sampling event, rather than each panel at a site being treated as a sampling event.

The Nanticoke River was not fished in 2022. GM CPUE in the Nanticoke River was defined as catch of river herring per number of days the net was fished. Pound nets were not included in the calculation.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960) were used to estimate total instantaneous mortality (Z) of adult river herring sampled by the North East River/upper Chesapeake Bay gill net survey. Age composition data were used in the analysis, where the first age-at-full recruitment was the age with the highest frequency. Estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age). Since strong year-class patterns were observed in the data, both cross-sectional and longitudinal catch curve analyses were performed.

iv. Hatchery Evaluation

NA

C. Results

i. Juvenile Indices

1. Index of Abundance

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment**1. Length-Frequency**

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

NA

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- Heisey, P. G., D. Mathur, J. L. Fulmer, and E. Kotkas. 2008. Turbine passage survival of late running adult American shad and its potential effect on population restoration. American Fisheries Society Symposium 61:141-152, Amer. Fish. Soc., Bethesda, MD.
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- Normandeau Associates, Inc., and Gomez and Sullivan Engineers, P.C. 2011. Conowingo Pond Creel Survey RSP 3.25A. Prepared for Exelon Corporation, June 2011. 397p.
- Normandeau Associates, Inc., and Gomez and Sullivan Engineers, P.C. 2012. Estimation of Survival of Adult American Shad Passed Through Francis and Kaplan Turbines. Prepared for Exelon Corporation, August 2012. 107p.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spanish Mackerel (*Scomberomorus maculatus*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2022

Prepared by

Katherine M. Messer

**Maryland Department of Natural Resources
Fishing and Boating Services**

September 2023

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

**Katherine M. Messer, Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
(410) 643 – 6785 extension 2121 • www.dnr.maryland.gov • TTY users call via Maryland Relay**

I. Introduction

Spanish mackerel had minimal changes to monitoring or harvest in 2022 in Maryland but did have a temporary change in regulations. Maryland's fishery dependent monitoring program in 2022 measured 246 Spanish mackerel, 445 less than 2021. Maryland reduced the 2022 commercial catch limit on July 9th, 2022 to 500 lbs. per day or trip, per vessel, and closed all commercial Spanish mackerel fisheries from November 16, 2022 to December 31, 2022 through a public notice. All regulations reverted to those listed in III-c below on January 1, 2023.

II. Request for *de minimis*, where applicable

Maryland does not request *de minimis* status.

III. Previous calendar year's fishery and management programs

a. *Fishery dependent monitoring*

MD DNR does not have a specific monitoring program for Spanish mackerel; however, they typically are encountered in the onboard commercial pound net survey, which was conducted from May 25, 2022 to September 14th, 2022. Two hundred forty-six Spanish mackerel were measured from the onboard pound net survey in 2022 with fork lengths ranging between 200 – 640 mm and a mean fork length of 405 mm.

b. *Fishery independent monitoring*

MD DNR does not conduct independent monitoring specifically targeting, or routinely encountering, Spanish mackerel.

c. *Copy of regulations (2022)*

08.02.05.14 .14 Spanish mackerel

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. An individual may not catch or possess more than 15 Spanish mackerel per day.
- (3) Season. The recreational season for catching Spanish mackerel is January 1 through December 31.
- (4) All Spanish mackerel harvested by a recreational angler shall be landed with the heads and fins attached naturally.

B. Commercial Fishery.

- (1) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. No more than 3,500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.

(3) Season. The commercial season for catching Spanish mackerel is March 1 through the last day of February.

C. General.

(1) The Secretary may modify catch limits or size limits or open or close a season as required by the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Spanish Mackerel by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Public notice effective 7/9/2022

WHAT THIS NOTICE DOES

The Secretary of the [Maryland Department of Natural Resources](#) announces:

1. A change to the commercial catch limit for Spanish mackerel; and
2. A change to the commercial season for Spanish mackerel.

NEW CATCH LIMIT

Not more than 500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.

COMMERCIAL SEASON

The commercial season for Spanish mackerel will close at 12:01 a.m. November 16, 2022. The season will reopen at 12:01 a.m. January 1, 2023, with no additional restrictions.

WHY THIS IS NECESSARY

Commercial landings have reached the commercial quota for the Atlantic migratory group Spanish mackerel northern zone. This step must be taken to prevent the quota from being further exceeded, while allowing a minimal bycatch amount of Spanish mackerel to be landed to avoid dead discards.

WHO THIS NOTICE AFFECTS

This closure applies to all individuals who catch Spanish mackerel commercially.

EFFECTIVE DATE

The catch limit is effective at 12:01 a.m. July 9, 2022, and will remain in effect through and including December 31, 2022.

AUTHORITY

Code of Maryland Regulations [08.02.05.14C](#)

d. ***Harvest***

Commercial Fishery

Maryland's directed fishery landed 6,367 pounds of Spanish mackerel in 2022 (landings considered preliminary).

Recreational Fishery

Maryland landed an estimated 70,582 Spanish mackerel weighing 150,029 pounds in the 2022 recreational fishery (MRIP personal communication 8/11/2023). Maryland recreational anglers released 2,894 Spanish mackerel in their recreational fishery in 2022 (MRIP personal communication 8/11/2023).

IV. Planned management programs for the current calendar year

a. ***Regulations and public notice for 2023***

No planned regulations changes for 2023

b. ***Regulatory changes from the previous year***

N/A

Reference

MRIP 2023. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division August 11, 2023



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spot (*Leiostomus xanthurus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2022

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

October 4, 2023

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**Harry Rickabaugh Jr. Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
(410) 643 – 6776 extension 2109 • www.dnr.maryland.gov • TTY users call via Maryland Relay**

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2022.**

Maryland's directed fishery landed 30,912 pounds of spot in 2022.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2022.**

Maryland recreational anglers landed an estimated 1,638,380 spot (PSE = 16.5; MRIP 2023) weighing an estimated 427,557 pounds (PSE = 16.8; MRIP 2023) in 2022. Maryland recreational anglers released an estimated 3,671,723 spot (PSE = 15.7; MRIP 2023) in 2022.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs**

Maryland conducted an onboard commercial pound net survey on the Potomac River and the Chesapeake Bay, sampling each area once every other week from May 25, 2022, through September 25, 2022. The 2022 spot mean length from the onboard sampling of 192 millimeters TL was a slight increase compared to the 2021 value of 188 millimeters TL, and was the eleventh lowest value of the 30 year time series. Eighty-five percent of spot encountered in the onboard pound net survey in 2022 were between 170 and 209 millimeters TL, indicating a truncated length frequency distribution. In 2022, 95% of spot sampled from the onboard pound net survey were age one, 3% were age zero, and 2% were age two (173 ages and 1,769 lengths).

b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland conducted a fisheries independent gill net survey on the Choptank River once per week from June 2, 2022, to September 2, 2022. Experimental monofilament gill nets with stretched mesh sizes of 63.5, 76.2, 88.9 and 101.6 millimeters were set at four randomly selected locations within the sampling area each sampling day. Panels for each mesh size were 30.5 m long by 1.8 m deep, and were rigged to sink. Spot geometric mean (GM) catch per hour in the Choptank River gill net survey was highest in 2020 - 2022, moderate in 2013, 2014, 2017 and 2019, and lowest in 2015, 2016 and 2018. Total annual catch ranged from a low of 109 fish in 2016 to a high of 812 in 2020. Annual length frequency distributions have been variable throughout the survey, with similar distributions in 2013, 2014, 2020 and 2022 centered on the 200 and 210 millimeter length groups. Bimodal distributions were apparent in 2015 and 2017, and singular peak distributions were centered on the 190 millimeter TL group in 2016, 2018, 2019 and 2021.

Four juvenile indices (JI) were calculated, two from the Maryland portion of Chesapeake Bay and two from the Maryland coastal bays. Finfish collected by Maryland's Chesapeake Bay Blue Crab Trawl Survey have been enumerated since 1980. However, since some data entry inconsistencies made electronic data files prior to 1989 incomplete for finfish species, only data from 1989 through 2022 were used to generate a Chesapeake Bay spot juvenile index. Fixed sites were sampled once a month from May thru October in six tributaries of the Chesapeake Bay. A 4.9 meter semi-balloon otter trawl was towed for 6 minutes at 4.0-4.8 km/h. A Chesapeake Bay juvenile trawl index was calculated as the geometric mean catch per tow. Spot juvenile trawl index values from 1989-2022 were quite variable. The 2010 GM value of 104.5 spot per tow was the highest value of the time series, the 2011 value declined to the second lowest value of the 34-year

time series, and the 2012 value increased to approximately the time series mean. The index values were low from 2013 to 2018, but increased from 2019 through 2021 and remained high in 2022, with 2021 and 2022 having the sixth and seventh highest index values of the time series, respectively.

The second JI was derived from the Striped Bass Juvenile Seine Survey (JSS). This survey used a 30.5 meter long by 1.2 meter deep beach seine at fixed stations in five areas of Maryland's Chesapeake Bay. The JSS index was calculated as a geometric mean catch per haul. The JSS has permanent and auxiliary sites, only permanent sites were used in index calculations for this report. The survey began in 1954, but sampling frequency was standardized in 1967, so that was the first year used to calculate the JI time series. The 2022 GM catch per haul of 1.92 was the highest value since 2010, and was the third consecutive year above the time series mean of 1.30 fish per haul.

A 4.9-meter semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972. Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably, therefore, index values were calculated for 1989-2022. The geometric mean catch per hectare (GM) of juvenile spot was used as a standardized index of abundance. The 2022 GM of 47.5 spot per hectare increased to the second highest value of the 34-year time series, and was well above the time series mean of 8.2 spot per hectare.

The final juvenile index was derived from the coastal bays seine survey, which utilized a 1.8 meter by 30.5 meter seine with a single central bag. Nineteen fixed stations were sampled once a month in June and September, and the corresponding Coastal Seine Index was calculated using all sites to derive an annual geometric mean catch per haul. Sites and sampling frequency were not standardized until 1989, therefore, only 1989-2022 data was used for index calculation. The 2022 coastal bays seine survey index value increased to 36.3 spot per haul, well above the 34-year time series mean of 9.1 spot per haul. The 2022 value was the seventh highest value of the time series.

IV. Planned management programs for the current calendar year

a. Summarize any regulatory changes from the previous year and provide an update on any planned
N/A

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.
N/A

References

MRIP. 2023. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division October 04, 2023.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spotted Seatrout (*Cynoscion nebulosus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2022

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

August 29, 2023

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2022:**

Maryland's directed fishery landed 72 pounds of spotted seatrout in 2022.

Recreational Fishery**Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2022:**

MRIP estimated that Maryland landed 8,739 (PSE = 67.1) spotted seatrout weighing 12,902 pounds (PSE = 59.2) in the 2022 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/7/2023). Maryland recreational anglers released an estimated 97,241 (PSE = 40.9) spotted seatrout in the 2022 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/7/2023).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2022 charter boat captains reported harvesting 141 spotted seatrout with an estimated weight of 373 pounds. They reported releasing 29 spotted seatrout with an estimated weight of 92 pounds in 2022.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Spotted seatrout are sporadically encountered in low numbers, but are enumerated and measured to the nearest millimeter total length (TL) when encountered. Nine spotted seatrout were measured in 2022, with a mean length of 507 mm TL.

b. Summarize fishery independent monitoring and provide a brief review of the results:

Maryland conducted no fishery independent monitoring directed at spotted seatrout in 2022. A low number of juvenile spotted seatrout are encountered in the coastal bays seine survey and the Chesapeake Bay blue crab trawl survey as bycatch, indicating the species utilizes these areas as nursery habitat. Annual spotted seatrout catch for the coastal bays survey ranged from 0-39 fish; with zero catch in eight of the 34 years surveyed, and four being caught in 2022. The Chesapeake Bay blue crab trawl survey caught no spotted seatrout in seven of 34 years but did have six years of higher catch (2000 = 71, 2001 = 90, 2009 = 139, 2013 = 139, 2014 = 98 and 2020 = 71), potentially indicating stronger years of recruitment. Seven spotted seatrout were caught in 2022.

IV. Planned management programs for the current calendar year**a. Summarize any regulatory changes from the previous year:**

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

Commercial**12" TL minimum size limit****Recreational****12" TL minimum size limit**

Maryland's spotted seatrout and weakfish regulations are combined in state regulation, hence the inclusion of weakfish in the following text. Language pertaining to spotted seatrout is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year:

There were no law enforcement issues in 2022.



Wes Moore
Governor

Josh Kurtz
Secretary

**Maryland Striped Bass (*Morone saxatilis*) Compliance Report
On the 2022 Fishing Year
to the
Atlantic States Marine Fisheries Commission**

UPDATED

COMMERCIAL LANDINGS UPDATED WITH BEST AVAILABLE DATA
This report supersedes previous version

Prepared by

Eric Q. Durell

Fishing and Boating Services
Maryland Department of Natural Resources
December 14, 2023

This program receives Federal financial assistance from the Department of the Interior - US FWS Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, or disability.

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Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

2023 Atlantic Striped Bass Compliance Report for Maryland

Throughout this report, please indicate **confidential data with red font**. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

I. Request for *de minimis*.

Maryland does not request *de minimis* status.

II. Report 2022 fishery regulations (complete respective tab in the Compliance Workbook).

2022 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 28
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31
Susquehanna Flats	N/A	N/A	Closed	Apr 1-May 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-Apr 30
Chesapeake Bay	35" TL min	1/person/day	Geographic restrictions apply	May 1-May 15
Chesapeake Bay	19" TL min	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Susquehanna Flats	19-26" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19" TL min	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	

2023 Atlantic Striped Bass Compliance Report for Maryland

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31
Chesapeake Bay and tributaries	19" TL min	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-35" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-Dec 31

2022 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,445,394 pounds	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 28, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31; Common pool select days only
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 28, Dec 1-31; common pool select days only
Atlantic Ocean: gill net and trawl	24" TL min	none	89,094 pounds	Jan 1-May 31, Oct 1-Dec 31

III. Report 2023 fishery regulations (complete respective tab in the Compliance Workbook).

2023 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 28
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31

2023 Atlantic Striped Bass Compliance Report for Maryland

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Susquehanna Flats	N/A	N/A	Closed	Apr 1-May 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-Apr 30
Chesapeake Bay	35" TL min	1/person/day	Geographic restrictions apply	May 1-May 15
Chesapeake Bay	19-31" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining; or bait fishing and targeting striped bass	May 16-May 31
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Susquehanna Flats	19-26" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19-31" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31
Chesapeake Bay and tributaries	19-31" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-35" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-May 15
Atlantic Ocean, Coastal Bays, and tributaries	28-31" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	May 16-Dec 31

2023 Atlantic Striped Bass Compliance Report for Maryland

2023 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,445,394 pounds	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 28, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31; common pool select days only
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 28, Dec 1-31; common pool select days only
Atlantic Ocean: gill net and trawl	24" TL min	none	89,094 pounds	Jan 1-May 31, Oct 1-Dec 31

IV. Previous calendar year's fishery (2022)

A. Commercial Fishery (complete all applicable tabs in Compliance Workbook)

COMMERCIAL LANDINGS UPDATED WITH BEST AVAILABLE DATA

Coastal Commercial Landings:

In 2022, Maryland's Atlantic coast fishery landed 3,395 fish weighing 88,914 pounds. Coastal commercial landings did not exceed the state's quota of 89,094 pounds. The major gear type was gill net. Mean fish weight was 26.2 pounds; mean fish length was 41.1 inches (1044 mm) TL; mean fish scale age was 12.

Chesapeake Bay Commercial Landings:

In 2022, the Chesapeake Bay commercial fishery landed 295,296 fish weighing 1,363,671 pounds. Commercial landings did not exceed the state's quota of 1,445,394 pounds. Major gear types were pound nets (54%), gill nets (41%), and hook and line (5%). Mean fish weight was 4.6 pounds; mean fish length was 22.2 inches (564 mm) TL; mean fish scale age was 5.

Estimate of commercial effort and CPUE:

In 2022, total commercial effort by striped bass permit holders was estimated at 2,612 days, which was less than 2021 (2,699 days). Commercial CPUE in 2022 was 114 fish per day, similar to the 2021 CPUE of 116 fish per day. Commercial CPUE in 2022 was 556 pounds per day, compared to 534 pounds per day in 2021.

Estimate other commercial fish loss (e.g., bycatch, poaching, personal consumption):

N/A

2023 Atlantic Striped Bass Compliance Report for Maryland

Summarize results of commercial harvest tagging program in 2022:

Commercial harvest tags are affixed at point of harvest. In 2022, 442,850 commercial tags were issued to 612 participants, and 298,691 tags were reported used. Commercial licensees are required to return unused tags to the Department each year to allow a thorough audit of tag use. This audit has been delayed by staffing issues.

B. Recreational Fishery (complete all applicable tabs in Compliance Workbook)

Indicate MRIP query date: 04/28/2023

Coastal recreational harvest (A+B1) and live releases (B2):

The estimate of total recreational landings (A+B1) on Maryland's Atlantic coast in 2022 was effectively zero, although no estimate was available. This is identical to 2021.

Total recreational releases (B2) on Maryland's Atlantic coast in 2022 were estimated at 123,594 fish. This is a 389% increase compared to 2021.

Chesapeake Bay recreational harvest (A+B1) and live releases (B2):

Total recreational landings (A+B1) in Maryland's Chesapeake Bay in 2022 were estimated at 642,194 fish weighing 3,083,003 pounds. This is a 10% increase in numbers of fish and a 15% increase by weight compared to 2021. Mean harvested fish weight was 4.8 pounds (based on MRIP); mean fish length was 22.5 inches (572 mm) TL; mean fish scale age was 5.

Total recreational releases (B2) in Maryland's Chesapeake Bay in 2022 were estimated at 3,289,526 fish. This is a 16% decrease compared to 2021.

Chesapeake Bay Spring migrant harvest estimate:

In 2022, the Maryland portion of the Chesapeake Bay spring migrant harvest was 2,815 fish (937 fish by charter boats; 1,877 fish by private anglers). This is a 53% decrease compared to 2021. The estimated total weight of the migrant harvest was 48,654 pounds. Mean fish weight was 17.3 pounds and mean fish length was 33.8 inches (857 mm) TL.

V. Mandatory Monitoring Programs (complete applicable tabs in Compliance

Workbook) Juvenile Abundance Index (JAI) Surveys:

Maryland's 2022 JAI is GM=1.78, which is similar to 2021.

2023 Atlantic Striped Bass Compliance Report for Maryland

Spawning Stock Biomass (SSB) Index Surveys:

Maryland's 2022 SSB index is 271, which is a slight increase compared to 2021.

Striped Bass Tagging Program results:

In 2022, Maryland tagged and released 369 striped bass; 13 striped bass recaptures were reported.

Summarize any survey/monitoring programs changes for current year (2023):

N/A

VI. Identify common striped bass violations that occurred in 2022. Quantitative information is optional. Identify any new or emerging enforcement issues:

The most common striped bass violations in 2022 were recreational size limit, catch limit, season, and closed area violations. Recreational violations far outnumbered commercial violations (source: Jacob Holtz, Program Manager, Regulatory and Legislative Review Division, personal communication).



Maryland's 2022 Compliance Report for Summer Flounder (*Paralichthys dentatus*) to the Atlantic States Marine Fisheries Commission

June 2023

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2023

DNR

I. Introduction

Summer flounder were managed as one stock extending from North Carolina to Maine. In Maryland, summer flounder occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge.

The commercial fishery operated under Addendum 21 (December 2021) for the first time, which established quota allocation of summer flounder between the states. Under the new allocation system, when the coastwide commercial summer flounder quota is 9.55 million pounds or less, the quota will be distributed according to the existing (Amendment 4) allocations. In years when the coastwide quota exceeds 9.55 million pounds, the first 9.55 million pounds will be distributed based on the existing allocations. The additional quota, above 9.55 million pounds, will be distributed in equal shares to all states, except Maine, Delaware, and New Hampshire, which would split one percent of the additional quota. The total percentage allocated annually to each state will depend on how much additional quota beyond 9.55 million pounds, if any, is available in any given year.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2022 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to NOAA.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the APAIS survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Maryland has conducted the juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. Summer flounder, a species of interest to recreational anglers, were collected in 31 of 140 trawls (22.1%) and 29 of 38 beach seines (76.3%). A total of 243 summer flounder were collected in trawl (111 fish) and beach seine (132 fish). Summer flounder ranked sixth out of 66 species in overall finfish abundance. The trawl and beach seine CPUE was 6.3 fish/ha and 3.5 fish/haul, respectively. The 2022 trawl relative abundance index was below the grand mean while the beach seine index was equal to the grand mean (Figures 1 and 2).

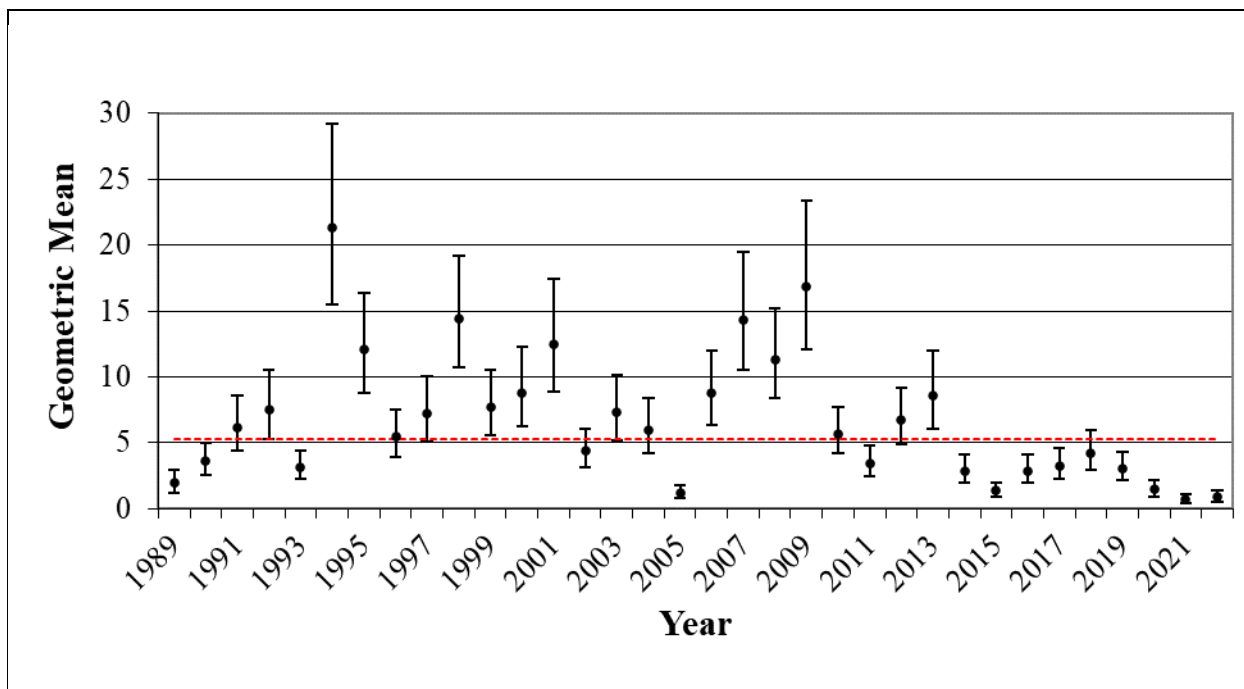


Figure 1. Summer flounder (*Paralichthys dentatus*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 – 2022). Dotted line represents the 1989 - 2022 time series grand mean ($n_{1989-2019, 2021} = 140/\text{year}$, $n_{2020} = 120$).

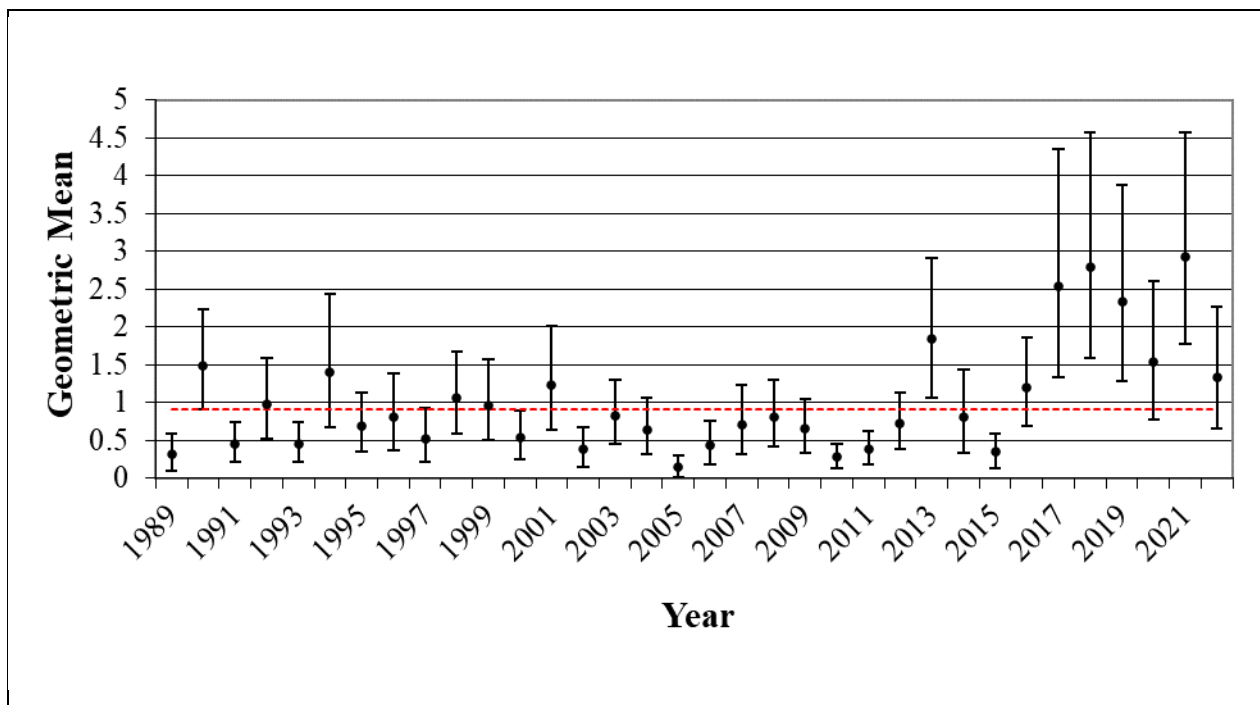


Figure 2. Summer flounder (*Paralichthys dentatus*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2022). Dotted line represents the 1989 - 2022 time series grand mean ($n = 38/\text{year}$).

B. Regulations

PUBLIC NOTICE

The Maryland Department of Natural Resources

Fishing and Boating Services

2022 Summer Flounder Fishery — Effective 4/18/2022

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the season, catch limit, and minimum size for the 2022 summer flounder fishery. This notice supersedes all notices effective prior to April 18, 2022 affecting the 2022 summer flounder fishery.

SEASON

The season is open January 1, 2022 through December 31, 2022.

RECREATIONAL MINIMUM SIZE AND CATCH LIMIT

- 16 inches
- 4 fish/person/day

COMMERCIAL MINIMUM SIZE

- Hook and Line: 16 inches
- Gear other than Hook and Line: 14 inches

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch summer flounder recreationally or commercially.

EFFECTIVE TIME AND DATE

This notice is effective at 12:01 a.m. April 18, 2022.

AUTHORITY

Code of Maryland Regulations 08.02.05.12

JEANNIE HADDAWAY-RICCIO

Secretary of Natural Resources

Code of Maryland Regulations, dsd.state.md.us/comar/comarhtml/08/08.02.05.12.htm

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess summer flounder less than:
 - (a) 16.5 inches total length in the Atlantic Ocean, its coastal bays, and their tributaries; and in the Chesapeake Bay and its tidal tributaries.
- (2) Catch Limits. An individual may not catch or possess more than four summer flounder per day in the Atlantic Ocean and coastal bays, and in the Chesapeake Bay and its tidal tributaries.
- (3) The recreational season was open from January 1 through December 31 in 2022.

B. Commercial Fishery.

- (1) Quotas.
 - (a) The annual commercial quota for Maryland is established by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.
 - (b) The annual commercial quota is divided into an allocation for:
 - (i) The Atlantic Ocean, its coastal bays, and their tributaries;

- (ii) The Chesapeake Bay and its tidal tributaries;
- (iii) The Potomac River; and
- (iv) The harvest of summer flounder provided for in §B(3)(a) and

(4) of this regulation.

(c) The annual commercial quota and allocations are subject to downward adjustment action if there are overages in the previous year's landings.

(d) Equal individual allocations shall be established for the portion of the annual commercial quota provided for in §B(1)(b)(i) of this regulation and allocated by permit to an individual that meets the requirements set forth in §C(5) of this regulation.

(e) An individual who possesses a Maryland summer flounder landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any quota transfers, shall have the overage deducted from the permit allocation for the following year.

(f) A Maryland summer flounder permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an individual may not hold more than 29 percent of the allocation for the total fishery.

(2) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a summer flounder less than:

- (a) The size limit set forth in §A(1) of this regulation if caught by hook and line; or
- (b) 14 inches total length if caught by gear other than hook and line.

(3) Daily Catch Limits. An individual licensed to catch fish for commercial purposes may not catch, possess, or land more than:

- (a) 100 pounds of summer flounder per day from the Atlantic Ocean, its coastal bays, and their tributaries unless in possession of a Maryland summer flounder landing permit; and
- (b) 50 pounds of summer flounder per day from the Chesapeake Bay and its tidal tributaries.

(4) An individual licensed to catch fish for commercial purposes may not:

- (a) Transfer summer flounder from one vessel to another vessel; or
- (b) Land more than 5 percent by:
 - (i) Number of summer flounder under 14 inches as part of the daily limit for flounder caught by gear other than hook and line; or
 - (ii) Weight of summer flounder in excess of the daily catch limits established in §B(3) of this regulation.

(5) Summer flounder harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a dealer with a federal permit.

C. Licenses and Permits.

(1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land summer flounder.

(2) A vessel which is used to catch, possess, or land summer flounder for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.

(3) A permittee may catch, possess, or land summer flounder for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for summer flounder by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared by the August 31 deadline in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland summer flounder landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Summer Flounder Landing Permit.

(a) No more than seven summer flounder landing permits may be issued by the Department. The number of summer flounder landing permits is based on the reported catch and landing records of summer flounder in Maryland during 1998—2003.

(b) The Department may issue a permit to catch and land summer flounder in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

(i) Declared or was eligible to declare, in the previous year, an intent to fish for summer flounder in accordance with §C(4) of this regulation in the previous year and has not transferred the permit; or

(ii) Received a summer flounder landing permit through a permanent business transfer in accordance with §C(7) of this regulation.

(6) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland summer flounder landing permit.

(c) An operator may catch, possess, or land summer flounder for commercial purposes on a vessel owned by a permittee if they are in possession of that permittee's permit.

(7) Permanent Transfer of a Landing Permit. The Department may approve the permanent transfer of a Maryland Summer Flounder landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(8) Temporary transfers of summer flounder landing permits are not permitted.

(9) Regardless of the number of authorized individuals with Maryland summer flounder landing permits on board any one federally permitted vessel, no more than two summer flounder quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) A person who catches summer flounder for commercial purposes may not use a trawl net with stretched mesh size of less than 6 inches square or 5-1/2 inches diamond applied throughout the net, including the body, extensions, and cod end.

(2) For the purposes of measuring the required mesh sizes, at least 20 meshes shall be measured, of which:

- (a) At least 12 meshes shall measure the minimum size or larger; and
- (b) The remaining meshes may not measure more than 1/4 inch less than the minimum mesh size.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland summer flounder landing permit shall record the harvest of summer flounder on the permit daily and submit the completed permit to the Department within 14 days from the end of the summer flounder season.

(2) A dealer shall transmit information weekly, or as requested, on each summer flounder transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may modify catch limits, size limits, quotas, or open or close a season in order to comply with species management through the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for summer flounder, by publishing notice on the Fisheries Service website at least 48 hours in advance, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

(3) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coast-wide quota is harvested and not exceeded.

The Atlantic States Marine Fisheries Commission commercial compliance requirements are included in Table 1.

Table 1. State implemented commercial measures as mandated in the ASMFC Summer Flounder FMP

14" minimum size	Yes
5.5" diamond or 6" square minimum mesh	Yes
5.5" mesh beyond the cod end, for the entire net	Yes
Threshold to trigger minimum mesh size requirements: (200 lbs 11/1 - 4/30; 100 lbs from 5/1 - 10/31)	More restrictive
Prohibition of transfers at sea	Yes

D. Harvest by Gear Type

1. Commercial Landings

Maryland's commercial quota is allocated to the Atlantic coastal waters, the Chesapeake Bay, and the Potomac River. The Potomac River quota is set aside from both Maryland and Virginia by agreement. Maryland established individual fishing quotas for the Atlantic coastal waters including the coastal bays, and their tributaries. The individual fishing quota system assigns a specific quota per fisherman and allows fishermen to plan and manage the fishing business for best economic yield. In 2022, there were seven permitted summer flounder harvesters

in Maryland. There is additional Maryland quota not allocated to individual fishing quotas to allow for some minimal bycatch on the coast and in the Chesapeake Bay. The preliminary Maryland commercial harvest in 2022 was 354,120 pounds (Table 2; Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

2. Recreational Landings

Maryland's 2022 recreational catch of summer flounder was estimated at 86,031 fish (PSE 45.7) with an estimated total weight of 185,647 pounds (PSE 46.0; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 15, 2023).

IV. Planned Management for 2022

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as in 2022. Recreational measures will include a 16-inch minimum size, a four fish creel, and an open season January 1 to December 31.

B. Summary of Monitoring Programs that will be in Effect

Same as 2022, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics Division. Personal Communication. Marine Recreational Information Program. Accessed on May 15, 2023. st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.



Maryland's 2023 (Fishing Year 2022) Tautog (*Tautoga onitis*) Compliance Report
to the
Atlantic States Marine Fisheries Commission
May 1, 2023

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2023

DNR

I. **Introduction**

Maryland was considered *de minimis* in 2022. There were no changes to the tautog season, size limit and creel regulations from the previous year, which applied to both recreational and commercial fisheries. The requirement to tag commercial fish was implemented July 16, 2020. Regulations for 2023 will remain the same as 2022. Preliminary 2022 commercial harvest reports indicated that [C] pounds of tautog were landed in Maryland. The National Oceanic and Atmospheric Administration preliminary 2022 Marine Recreational Information Program has determined a total recreational harvest estimate for 24,565 (PSE 35.3; numbers of fish; A+B1). There were no significant changes in monitoring in 2022. A total of 211 tautogs were collected and aged by opercula. Ages were determined on 205 fish and ranged from three to 22 years old.

II. **Request for *de minimis*, where applicable.**

Maryland qualifies for *de minimis* status and requests that status at this time.

III. **Previous calendar year's fishery and management program**

a. **Activity and results of fishery dependent monitoring.**

Length, sex, and opercula were collected from 211 tautog from April to December among the Ocean City charter fleet rack project (94%), commercial harvest (1.4%), and by spearfishing (4.6%). Those samples represented the range of fish lengths commonly caught in the recreational fishery in Maryland. Age data was determined on 205 tautog.

b. **Activity and results of fishery independent monitoring.**

Juveniles of many finfish species are annually sampled by the department's Trawl and Beach Seine surveys. In 2022, zero tautog were captured in 140 trawls and one tautog was captured in one of 36 beach seines. Juvenile tautogs prefer submerged aquatic vegetation habitat, which was not adequately sampled during the trawl and beach seine surveys. However, the department's annual Submerged Aquatic Vegetation Habitat Survey was conducted in September 2022 and 212 juvenile tautog ($\bar{x}$ length = 88 mm) were collected resulting in 11.8 fish/haul from 18 beach seine hauls within vegetated habitat (Figure 1).

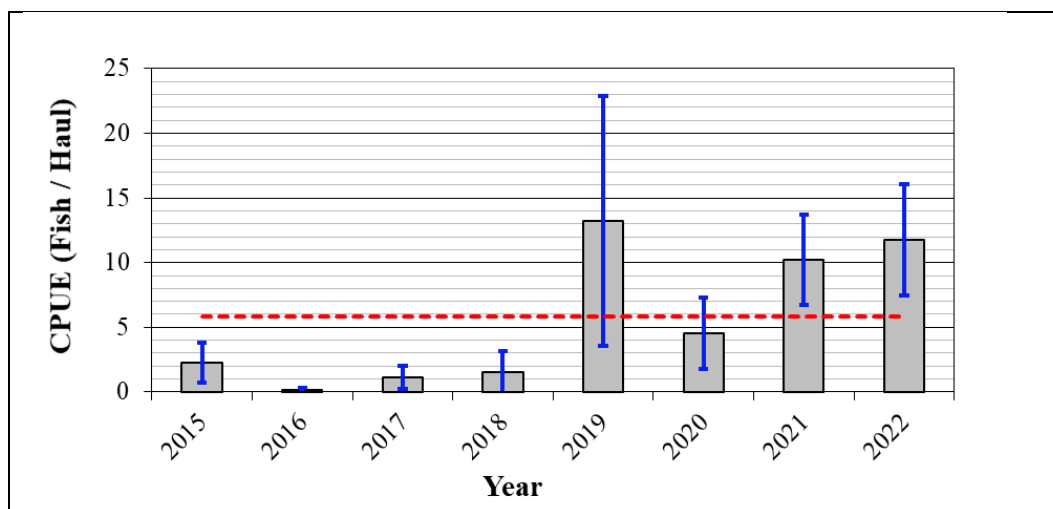


Figure 1. Maryland tautog (*Tautoga onitis*) Submerged Aquatic Vegetation Habitat Survey index of relative abundance with 95% confidence intervals (2015 - 2022). Dotted line represents the 2015 - 2022 time series grand mean (n = 133).

c. **Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.**

The Code of Maryland Regulations pertaining to tautog (section 08.02.05.20) were online at dsd.maryland.gov/regulations/Pages/08.02.05.20.aspx

08.02.05.20

.20 Tautog.

A. An individual may not catch or possess:

- (1) A tautog less than 16 inches total length; and
- (2) A tautog from May 16 through June 30.

B. Season and Creel Limit.

- (1) From July 1 through October 31, an individual may not catch and possess more than two tautog per day.
- (2) From November 1 through May 15 of the following year, an individual may not catch and possess more than four tautog per day.

C. Commercial Gear and Tagging Requirements.

- (1) A pot or trap used to catch tautog shall have hinges or fasteners on one panel or door made of one of the following degradable materials:
 - (a) Untreated hemp or jute string of 3/16 inch in diameter or smaller;
 - (b) Magnesium alloy timed float releases (pop-up devices) or similar magnesium alloy fasteners; or
 - (c) Ungalvanized or uncoated iron wire of 0.094 inch in diameter or smaller.

(2) Before removing any tautog caught for commercial purposes from a boat or removing a boat from the water, a person shall affix a tag supplied by the Department to the cheek bone of the tautog.

(3) Tags:

- (a) Shall be supplied by the Department;
 - (b) Are not transferrable;
 - (c) Expire at the end of each calendar year;
 - (d) May not be reused, defaced, modified, or counterfeited;
 - (e) Shall be securely affixed to a whole tautog or accompany fillets until sale to the final consumer; and
 - (f) Shall only be used by the commercial tidal fish licensee to whom they were assigned.
- (4) A licensee shall return unused tags to the Department not later than February 15 of each year.
- (5) Tautog caught for commercial purposes shall be landed in the state that is identified on the tag.

D. General.

- (1) The Secretary may modify catch limits or size limits or open or close a season in order to implement the Atlantic States Marine Fisheries Commission Fishery Management Plan for Tautog by issuing a public notice on the Department's website.
- (2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.
- (3) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.
- (4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.
- (5) An individual may not sell or purchase a commercially caught tautog, alive or dead, that has not been tagged in accordance with this regulation.

d. Harvest broken down by commercial (by gear type where applicable) and recreational, and non-harvest losses (when available).

1. Commercial Landings:

The Maryland Department of Natural Resources and the Atlantic Coastal Cooperative Statistics Program Data Warehouse indicated that [C] pounds of tautog were landed in Maryland during the 2022 calendar year (Table 1).

Table 1 removed due to confidential data.

2. Recreational Landings:

The National Oceanic and Atmospheric Administration preliminary 2022 Marine Recreational Information Program has determined a total recreational harvest estimate for 24,564 (PSE 35.3; numbers of fish; A+B1) as of April 18, 2023.

e. Review of progress in implementing habitat recommendations.

The Department's annual Submerged Aquatic Vegetation Habitat Survey documented juvenile tautog abundance in Sinepuxent Bay. These results document important habitat that supports sustainable tautog recruitment.

IV. Planned management programs for the current calendar year

- a. Summarize regulations that will be in effect. (Copy of current regulations if different from III c.) Highlight any changes from the previous year.**

The recreational and commercial fishing [regulations](#) for 2023 will remain the same as 2022.

b. Summarize monitoring programs that will be performed.

The Department will continue to monitor tautog juvenile relative abundance with the Trawl, Beach Seine and the Submerged Aquatic Vegetation Habitat surveys.

V. Plan specific requirements

a. States are required to collect and report commercial and recreational catch estimates, a suitable time series of fisheries independent indices of abundance as determined by the Tautog Technical Committee, and 200 aged length samples per state within the range of lengths commonly caught by the fisheries.

Table 2. Summary of Maryland tautog compliance data. Maryland was *de minimis* in 2022 and was not required to conduct commercial market, directed fisheries, or ventless trap survey work.

Source	Lengths	Ages
Commercial Fishery Market Sampling	3	3
Recreational Fishery Sampling	208	208
Directed Pot and Rod & Reel Sampling		
Resource Assessment Trawl Survey	0	0
Ventless Trap Survey		
Other: Coastal Bays Beach Seine Survey	1	0
Other: Submerged Aquatic Vegetation Habitat Survey	212	0

b. Commercial Harvest Tagging Program- States are required to implement the commercial tagging program starting in 2020. States must annually describe the biological metric used to allocate tags, report the number of tag violations (if possible), and complete the table below.

The State of Maryland purchased 100 tautog tags for fishing year 2022. Previously our biological metric was based on Maryland annual tautog landings from 2012 – 2019, divided by four (pounds) resulting in the number of tags required per year based on a 16 inch minimum size. The maximum annual requirement was 400 tags. However, participation and landings have decreased and 100 tags was considered adequate for the 2022 fishing season.

Table 3. Commercial Harvest Tagging Program.

State	Maryland
Quota (if applicable)	NA
Maximum Commercial Harvest	NA
Average Commercial Weight	C pounds
Number of Participants	C
Number of Tags Issued	C
Number of Tags Returned	C

VI. Law Enforcement Reporting Requirements

No plan specific requirement



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Weakfish (*Cynoscion regalis*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2022

Prepared by

Harry W. Rickabaugh Jr.

**Fisheries and Boating Services
Maryland Department of Natural Resources**

August 29, 2023

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

**Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
(410) 643 – 6776 extension 2109 • www.dnr.maryland.gov · TTY users call via
Maryland Relay**

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

a. Report commercial landings, in pounds, for 2022:

Maryland's directed fishery landed 1,044 pounds of weakfish in 2022. Maryland commercial fishermen reported landing weakfish on 91 trips, with no trips equaling 100 pounds of weakfish in 2022. No commercial fishing trips in Maryland exceeded 100 pounds of weakfish in 2022.

Recreational Fishery

a. Report recreational harvest, in both pounds and numbers of fish, and releases in numbers of fish for 2022:

Maryland landed an estimated 1,290 weakfish (PSE = 101) weighing 2,092 pounds (PSE = 101) in the 2022 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/7/2023). Maryland recreational anglers released an estimated 8,796 weakfish (PSE = 87.7) in the 2022 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/7/2023).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2022, charter boat captains reported harvesting 19 weakfish with an estimated weight of 28 pounds. They reported releasing 43 weakfish weighing an estimated 51 pounds in 2022.

III. Fishery Monitoring Programs

a. Fishery Dependent Programs

Addendum I to Amendment 4 requires non *de minimis* states to collect 6 individual fish lengths for each metric ton of weakfish landed commercially and 3 individual fish ages for each metric ton of total weakfish landed. Based on *de minimis* requests in the 2022 FMP Review (and subsequent approval by the Board), the following states must submit this data: RI, CT, NY, NJ, DE, MD, VA, NC, and SC.

Maryland collected six weakfish lengths and six weakfish ages from the commercial pound net fishery in 2022, meeting the three length samples and four age samples required, based on the landings values reported in Section II above.

b. Fishery Independent Programs

Maryland provides a young of the year (YOY) index for weakfish from its Coastal Bays Trawl Survey. The 2022 geometric mean catch per hectare was 0.67 weakfish, similar to the 2021 value of 0.64 fish per tow, both of which were below the 34 year time series mean of 1.68 fish per hectare. Maryland also provides a YOY index for weakfish from the Chesapeake Bay Blue Crab Trawl Survey. The 2022 geometric mean catch per tow was 1.18, which was an increase compared to 2021, but still below the 34-year time series mean of 2.63 fish per tow.

IV. Management Program

a. Summarize any regulatory changes from the previous year:

N/A

b. Law Enforcement

There were no law enforcement issues.

c. Please provide regulatory language that shows you are meeting management measures stipulated in Addendum IV:

- 1-fish creel limit in the recreational fishery
- 100-pound landings limit, per vessel, per day or trip (whichever is the longer period of time) in the directed commercial fishery
- 100-pound bycatch limit per vessel, per day or trip (whichever is the longer period of time) for all non-directed fisheries
- 100-fish allowance in the finfish trawl fishery for undersized fish (less than 12 inches total length)

Maryland's weakfish and spotted sea trout regulations are combined in state regulation, hence the inclusion of spotted sea trout in the following text. Language pertaining to weakfish is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Appendix B. Compliance Reports to the Atlantic States Marine Fisheries Commission for Calendar Year 2023

The Atlantic States Marine Fisheries Commission (ASMFC) requires the states to prepare annual compliance reports to ensure that they are implementing the coastwide management requirements stated in the fishery management plans. Maryland reports on the following species: American eel, Atlantic croaker, Atlantic menhaden, Atlantic striped bass, Atlantic sturgeon, black drum, black sea bass, bluefish, horseshoe crab, Spanish mackerel, red drum, American shad and river herring, scup, spot, spotted seatrout, summer flounder, tautog, and weakfish. Appendix A includes the 2023 calendar year ASMFC compliance reports for these species in the order listed. All confidential data have been redacted by being removed or replaced with a [C].

Additional information on stock status and fishery management measures for these migratory fish species can be found at asmfc.org and mafmc.org. Contact information for ASMFC staff is available at asmfc.org/species/, and the publications library is available at asmfc.org/category/resources/.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

State of Maryland American Eel (*Anguilla rostrata*) Compliance Report to the Atlantic States Marine Fisheries Commission Calendar Year 2023

**Prepared by: Alexis Park and Keith Whiteford
Fishing and Boating Services
Maryland Department of Natural Resources
August 2024**

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410-260-8DNR or toll free in Maryland 877-620-8DNR – dnr.maryland.gov – TTY Users Call via the Maryland
Relay

I. COMMERCIAL FISHERY

a. Synopsis of regulations in place – 2023 season

1. The Secretary of the Department of Natural Resources may establish or modify catch limits, size limits, and seasons for American eel in order to implement the U.S. coastwide cap set by the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for American Eel, by issuing a public notice on the Fisheries Service website. The coastwide cap was 916,473 pounds in 2023.
2. A license is required to catch eels for sale in tidal waters. Commercial fishing is prohibited in non-tidal waters. Limited entry exists for new commercial fishermen.
3. Submittal of monthly commercial catch reports with daily information (lbs. landed, gear type, and amount by area) is required.*
4. Except by spear or baited traps or pots, eels may not be taken between September 1 and December 31.**
5. A person may not catch, possess, land, or sell eels for commercial purposes which are less than 9 inches total length, except as permitted under COMAR 08.02.(appropriate aquaculture permit).**
6. No possession limit.
7. An eel pot must be constructed with a minimum wire mesh size of 1/2" by 1/2" in entirety.**
8. A person may not set buoyed eel pots in those channels designated as crab pot buoy-free channels or other prohibited channels.
9. A commercial crabber licensed to catch crabs may use up to 50 eel pots per day to catch eels for personal use as trotline bait with no harvest limit and must submit eel catch reports (lbs. landed and gear amount by area). Commercial crabbers are subject to the same minimum harvest size and pot mesh requirements of commercial eel harvesters.

b. Estimates of directed harvest, by month, by region as defined by the states—calendar year 2023

1. Pounds landed by life stage and gear type

A distinction is not made between life stages of American eel in Maryland commercial records. Legal commercial gear in Maryland waters does not retain glass and elver stage eels. Approximately 98% of all eels landed were caught with eel pots in 2023, similar to previous years. These are believed to be entirely yellow eels.*

Total reported commercial eel harvest for Maryland in 2023 was 137,684 pounds, the lowest on record since 1988. A total of 135,266 pounds were reported on finfish reporting forms and 2,418 pounds were reported for personal use on the crab reporting forms. Harvest in 2023 decreased 27% from 2022 and remained below the time series mean of 377,480 pounds for five consecutive years (Figure 1).* The fishery, which experienced lower demand and poor market conditions in 2019 was significantly impacted by the Covid-19 pandemic, and the export market has yet to recover. The substantial drop

in recent harvest over the last five years is believed to be market driven.

Monthly eel landings in Maryland have historically indicated a bi-modal fishery with the biggest peak in the spring and another peak in the fall. In 2023, the largest monthly harvests occurred in May (23%) and November (20%). Months from April–December, outside of the 2 peak months, ranged from 4–12% of the total annual harvest.

2. Biological data from representative sub-samples to include sex ratio and age structure (for yellow/silver eels), length and weight if available

A total of 587 and 639 commercially harvested American eels were sampled from the eel pot fishery in the South and Chester rivers, respectively. Sagittal otoliths from 244 sub-sampled eels were extracted for age analysis and 130 eels were sub-sampled for sex determination. The prevalence rate of *Anguillicola crassus* was 30% (N = 82) for South River eels and 63% (N = 100) for Chester River eels. South River eels were 63% female and Chester River eels were 48% female. There was a noticeable difference in size distribution between the South and Chester rivers eels (Figure 2 and Figure 3). Chester River eels demonstrated a heavily skewed size distribution towards eels in the smallest size bins. Mean length of South River eels was 339 mm and 15% of the eels were > 400 mm (considered large by commercial standards). The mean length of Chester River eels was 325 mm and 13% were > 400mm.*

Age structure for each system was determined using an age-at-length key. The maximum age for yellow eels in the South and Chester rivers was determined as 8 and 9 years, respectively. The age structure ranged from 2 to 8 years for South River eels and from 2 to 9 years for Chester River eels. The age at full recruitment (modal age) was age 3 for both Chesapeake Bay tributaries. Age 3 and 4's represented 84% of the catch for both the South River and Chester River. Application of Heincke's method for the South and Chester rivers eels indicated levels of fishing mortality at $F = 0.31$ and $F = 0.31$, respectively (Table 1).

3. Estimated percent of harvest going to food versus bait: Data not available.

c. Estimates of export by season

Dealers are required to report the weight and price paid for American eels purchased, as well as the weight and price of eels sold, but are not required to report the export of eels. Therefore, estimates of exports by season cannot be made with any degree of accuracy.

d. Harvest data provided as catch-per unit-effort (CPUE) by life stage and gear type

Eel pot CPUE was 1.12 pounds per pot in 2023, a slight drop from 2021 and 2022. However, this marked the eleventh consecutive year CPUE was greater than the time series mean of 0.75 pounds per pot (Figure 4). From 1992–2002, CPUE was stable at relatively low levels, then increased sharply from 2002–2006 and remained stable at a relatively high level during 2007–2013 before steadily increasing from 2014 to present day. Overall, CPUE indicated a clear positive trend since 1992. Total eel pot effort in 2023 was the lowest in the time series and steadily declined over the last 10 years. The number of pots fished in 2023 represented 21% of the average effort from 2011–2018.*

e. Permitted catch for personal use, if available.

In 2023, licensed commercial crabbers harvested 2,418 pounds of American eel for use as trotline bait with a CPUE of 0.64 pounds per pot. Commercial crabbers exceeded the eel harvest time series mean of 20,794 pounds only once since 2014. It should be noted that the reporting of eel harvest from crab reporting forms were somewhat sporadic throughout the time series.*

II. RECREATIONAL FISHERY

a. Synopsis of regulations in place – 2023 season

1. Open Season: All year.
2. Minimum Length: 9 inches total length.**
3. Hook and line: tidal and non-tidal possession limit: 25 daily.**
4. A licensee authorized to catch crabs may use up to 10 pots to catch up to 25 eels daily for personal use as crab trotline bait without obtaining an authorization to catch finfish.
5. Recreational fishers who use pots to harvest eels are required to comply with the same pot construction requirements as commercial eel harvesters.

b. Estimate of recreational harvest by season – calendar year 2023 – Data not available.

1. Biological data taken from representative sub-samples to include sex ratio, age structure, length and weight – Data not available.

III. FISHERY-INDEPENDENT MONITORING

a. Results of the annual young-of-year (YOY) abundance survey – Spring 2023

1. Turville Creek Young-of-Year Survey

A young-of-year (YOY) abundance survey was conducted at Turville Creek, a tributary to the Isle of Wight Bay, in Maryland's coastal bay watershed from 2/24/2023 to 4/25/2023. An Irish elver ramp/trap was fished 34 times over the 9-week period. A total of 39,894 glass eels were captured, which resulted in a CPUE of 39.7 eels/hour (Figure 5). The CPUE declined 64% from 2022 levels and remained below the time series mean of 143 eels/hour in three of the last four years. The total number of glass eels captured and CPUE in 2023 ranked fifth lowest and third lowest over the full time series, respectively. The overall index from 2000 to 2023 is variable with no discernable trend in abundance for glass eels in Maryland's coastal bays.*

b. Description of other fishery-independent surveys and results

1. Sassafras River Eel Pot Survey

A Sassafras River fishery independent eel pot survey, previously conducted from 1998 to 2000, was replicated annually since 2006. In 2023, 30 pots were set in fixed locations and fished on 12 separate days from 5/24/2023 to 6/30/2023. A total of 650 American eels were collected over the course of the survey. Sagittal otoliths from 128 sub-sampled eels were extracted for age analysis and 75 were sub-sampled for sex

determination. The prevalence rate of the swim bladder parasite was 62% (N = 99). Females comprised 74% of the catch in 2023. The 2023 daily CPUE in pounds per pot ranged from 0.30–0.99 with a mean of 0.62, a 30% decrease from 2022 CPUE and the lowest CPUE in the last four years (Figure 6). The 2023 CPUE ranked sixth, tied with 2015 CPUE, in survey history and the seventh consecutive year CPUE exceeded the time series average of 0.56 pounds per pot. After CPUE approximately doubled in 2009 relative to the 1998–2000 and 2006–2008 periods, it remained in a tight range (0.48–0.62) in seven of eight years through 2016. Since 2016, the four highest CPUE's occurred in the time series. Overall, the Sassafras River eel population demonstrated a positive trend in abundance since 2006.

Size structure was compared for four separate time periods (1998–2000, 2006–2013, 2014–2018, and 2019–2023; Figure 7). These time periods were chosen to demonstrate the notable changes in length distributions and trends in size structure over the history of the survey. For each successive time-period, the length distributions have become more evenly distributed and there was a shift to larger eels. In 1998–2000 the proportion of eels considered large by commercial standards (≥ 400 mm) was 3%. The proportion of large eels was 12% from 2006–2013, 21% from 2014–2018, and 29% from 2019–2023. In addition, the mean size of Sassafras eels increased from 309 mm to 331 mm to 358 mm to 375 mm over the four successive time periods.

Age structure was determined using an age-at-length key. The age at full recruitment (modal age) for the Sassafras River eels was age 3. The modal age for four of the previous five years was age 5. Higher female composition was observed since 2018 and there was an overall shift to larger eels in the size structure, these factors likely led to a higher modal age during previous years. In 2023, the Sassafras eel population was still dominated by older female eels, but there was a notable increase of eels < 300 mm. Eels < 300 mm comprised 32% of the catch compared to 18% of the catch for the previous two years. Application of Heincke's method for the Sassafras River eels indicated fishing mortality at $F = 0.05$, the lowest F since 2006 and well below the average F (0.37) since 2010 (Table 1). Fishing mortality in the Sassafras River averaged 0.24 since 2019, well below average F of 0.37 since 2010.*

c. Projects planned for the next five years

1. YOY abundance survey in Maryland's coastal bays (Turville Creek).
2. Fishery independent yellow eel pot survey in the Sassafras River.

IV. CHARACTERIZATION OF OTHER LOSSES

a. Impingement/entrainment mortalities of eel at power generation facilities, water intakes, and navigation locks

1. Data is available from Normandeau Associates, Inc.. In a report submitted on December 19th, 2023 (revised on April 11th, 2024), Normandeau Associates discussed the operations and results of the Conowingo West Eel Collection Facility from May 1st to November 27th, 2023. Data is in the following report:

Normandeau Associates, Inc. 2024. Muddy Run Pumped Storage Project and Conowingo Hydroelectric Project Conowingo West Eel Collection Facility, 2023. FERC Project Numbers 2355 and 405. Prepared for Constellation.

b. Bycatch mortalities in commercial and recreational fisheries – Data not available.

c. Confiscated poundage from illegal or undocumented fisheries (i.e., poaching) – Data not available.

d. Scientific losses (i.e., samples collected for contaminants analysis, other studies)

1. Data is available from Normandeau Associates, Inc.. Normandeau Associates collected 60 eels from Stone Run in Cecil County, Maryland during March 2023 and shipped them to USFWS Lamar Fish Health Center for a wild health screening. Results were reviewed by members of the Eel Passage Advisory Group and Maryland Department of the Environment, and they approved stocking of collected eels from the Conowingo West Eel Collection Facility in designated locations. Additional information is in the Normandeau (2024) report.

e. Mass mortalities of eel due to disease, spills or other causes – Data not available.

V. QUANTIFICATION OF ESCAPEMENT AND CHANGES IN PASSAGE (e.g., dam removals, new impediments)

1. No dam removals occurred during the 2023 calendar year.

VI. EEL MANAGEMENT PROGRAM FOR THE CURRENT CALENDAR YEAR, 2024

1. In addition to continuing ongoing fishery independent surveys in 2024, fishery-dependent sampling from the commercial eel pot fishery will be completed for the Choptank and Chester rivers. Samples will be collected from both fishery-independent and dependent surveys to characterize the American eel population in Maryland's portion of the Chesapeake Bay, relative abundance, distribution, size, age, sex determination, and parasite infestation rates will be among information collected by these surveys.

Addendum III Requirements

* Addendum III requirements implemented under **Monitoring Program**

** Addendum III requirements implemented under **Management Program**

Table 1: Estimated age distribution, instantaneous total mortality rate (Z) and fishing mortality rate (F) for South River (2022–2023), Chester River (2023), and Sassafras River (2022–2023) American eels.

River	Year	Z	M	F	Estimated # at age based on age-length key									
					1	2	3	4	5	6	7	8	9	10
South	2022	0.61	0.30	0.31		70	488	472	76	27	7	1		
	2023													
Chester	2023	0.61	0.30	0.31		39	275	259	27	18	15	2	4	
Sassafras	2022	0.30	0.25	0.05		54	410	197	234	264	221	170	64	35
	2023													

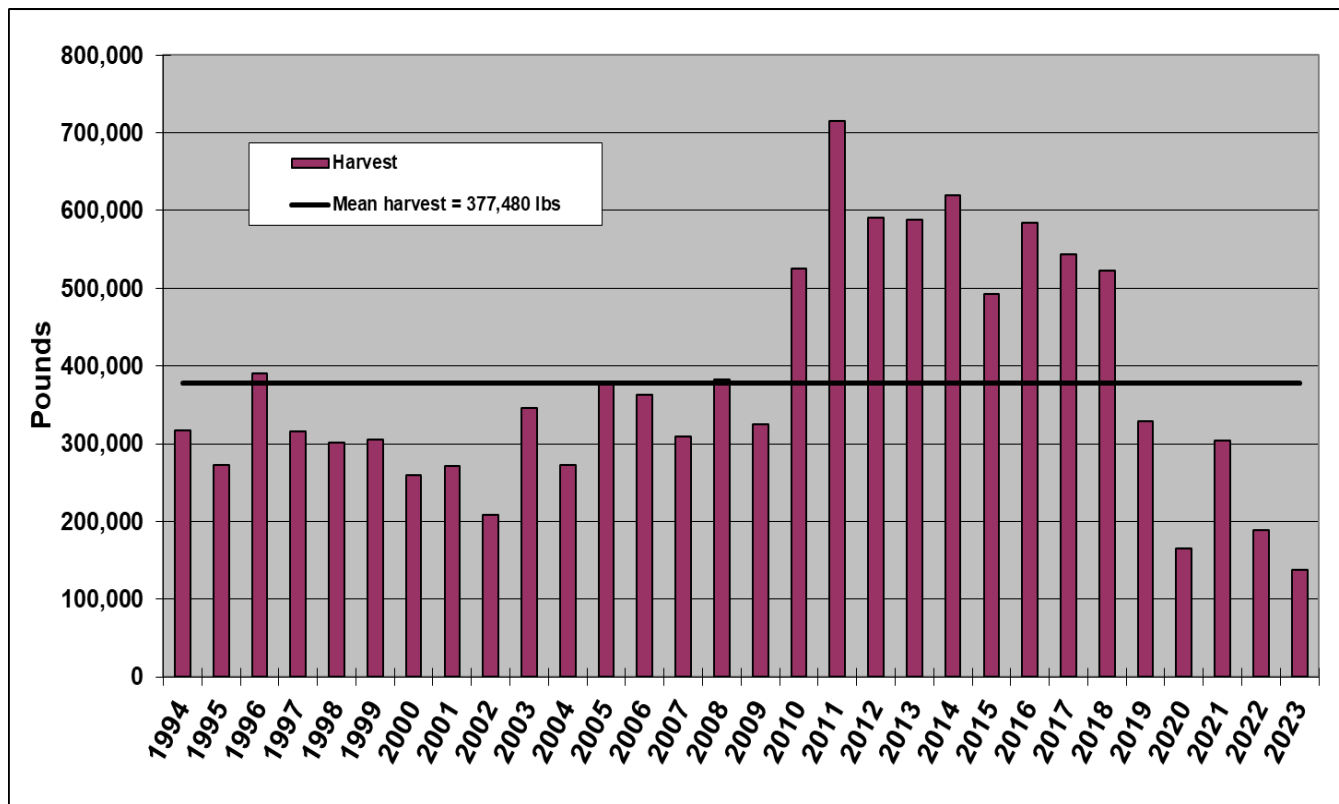
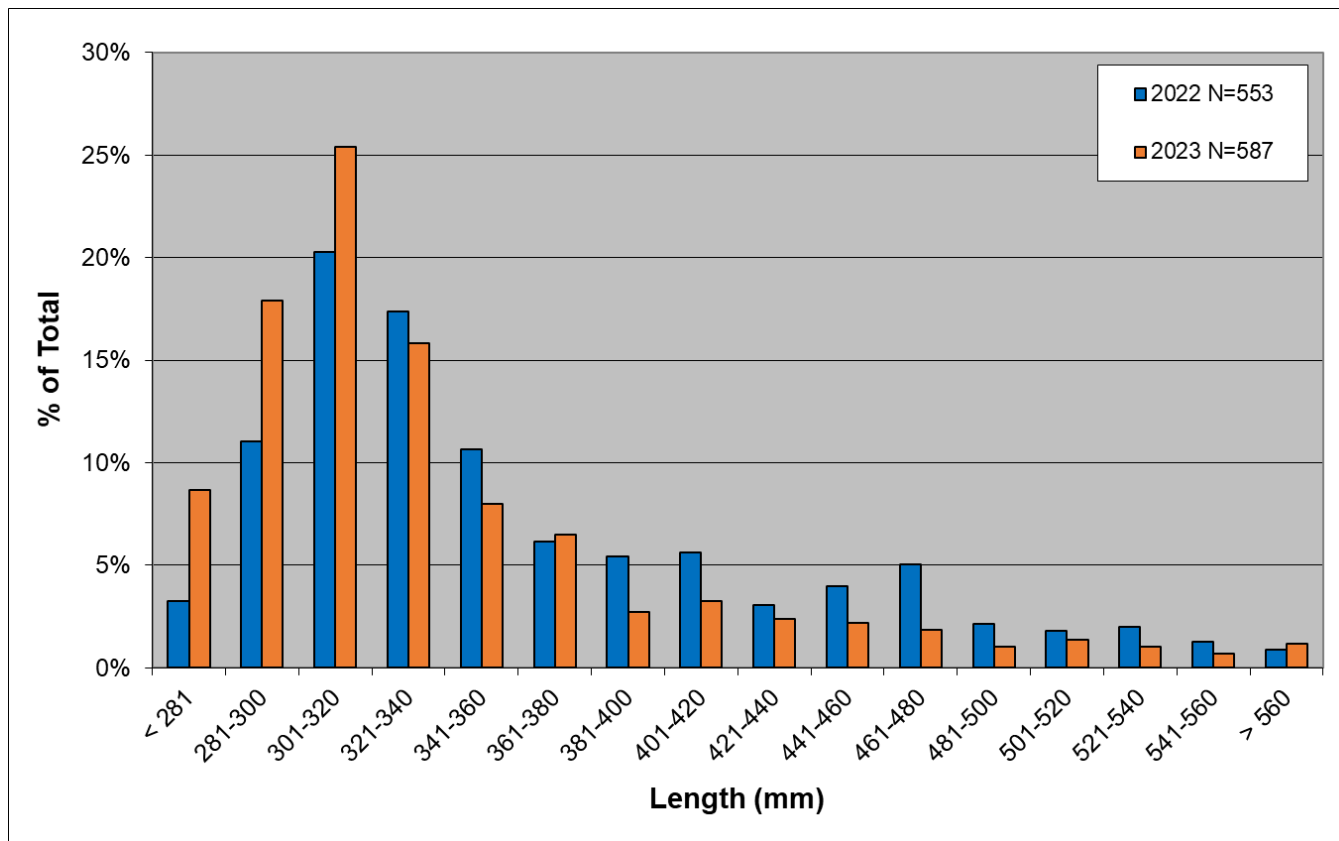
Figure 1. Reported American eel harvest from the Maryland Chesapeake Bay, 1994–2023.**Figure 2. Length distribution of commercially harvested eels from South River, 2022–2023.**

Figure 3. Length distribution of commercially harvested eels from Chester River, 2023.

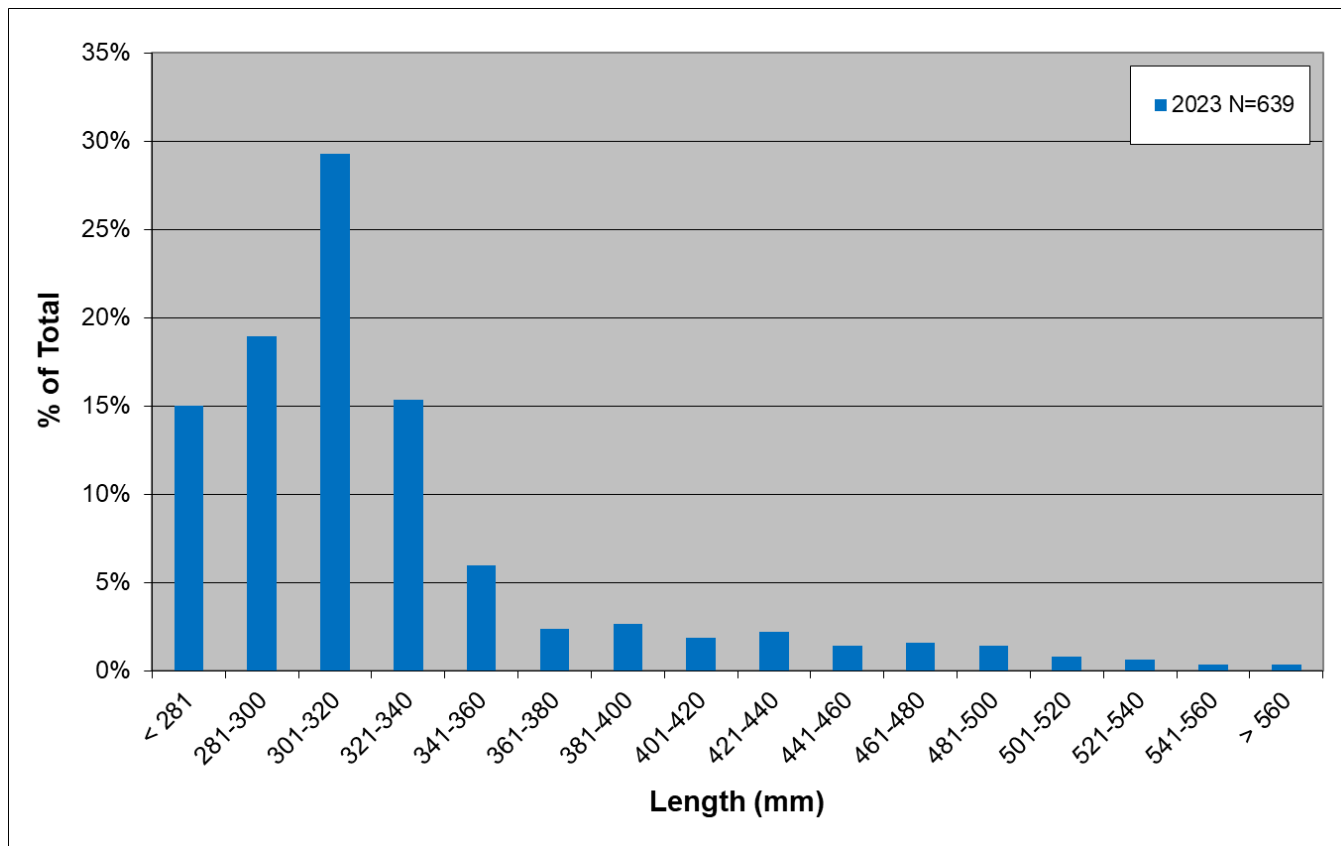


Figure 4. Annual commercial eel pot CPUE (pounds per pot) and effort (eel pots*boat days), 1992–2023.

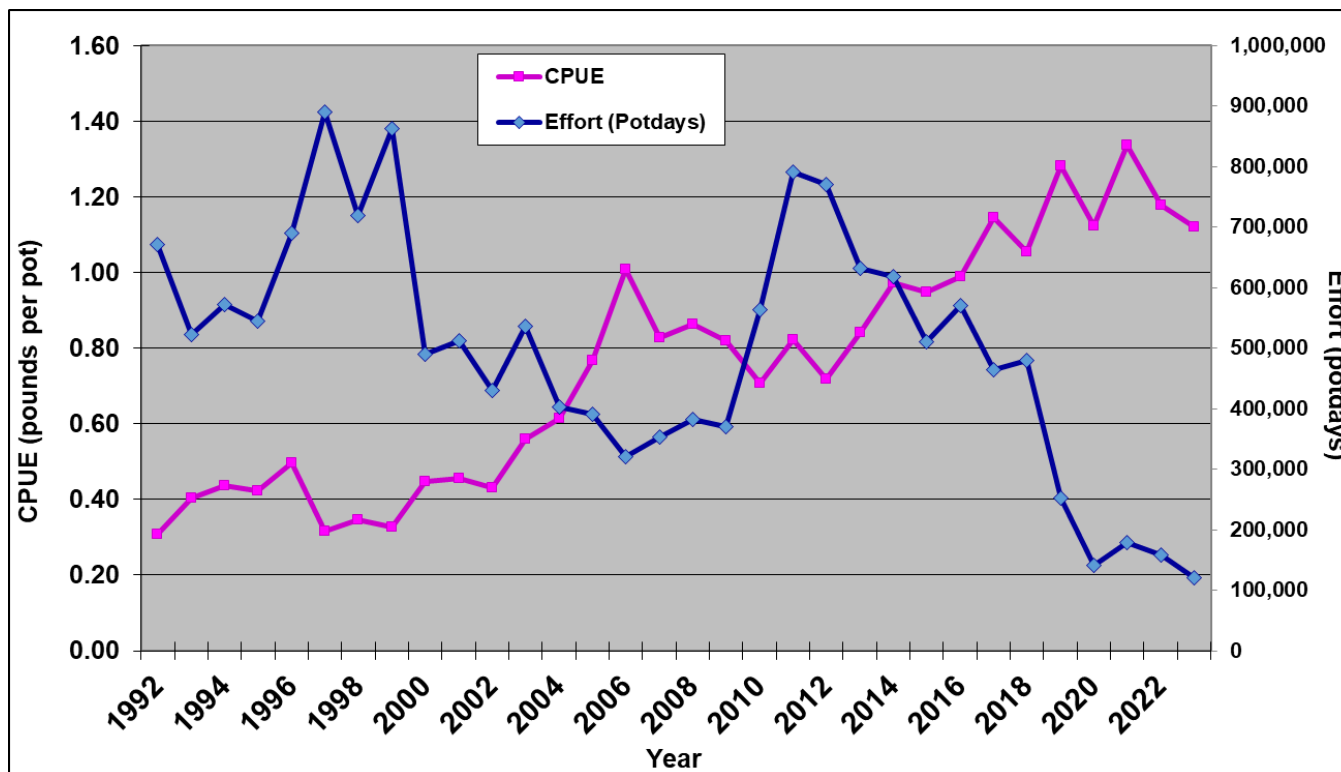


Figure 5. Maryland (Turville Creek) American eel YOY arithmetic mean CPUE index with 95% CI's, 2000–2023.

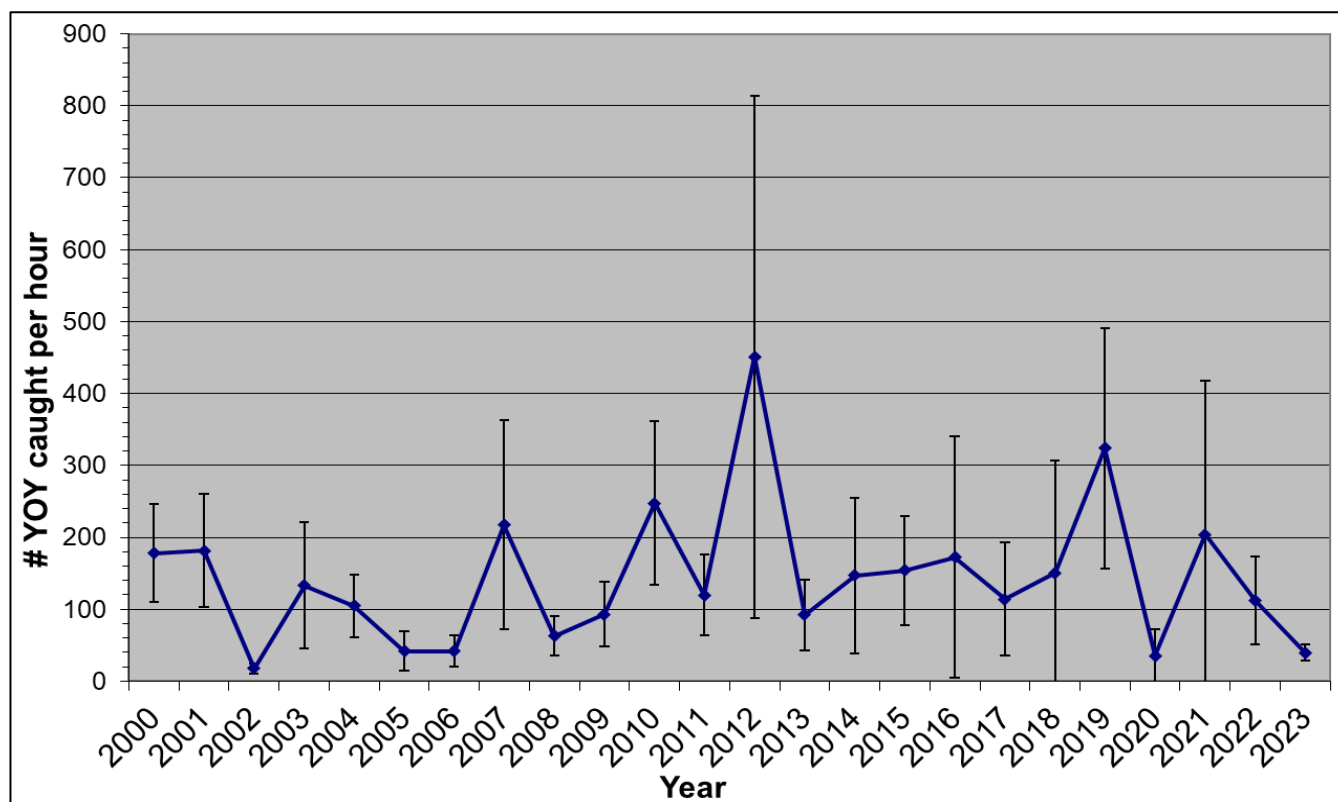


Figure 6. Mean annual CPUE and 95% confidence intervals from the Sassafras River fishery independent eel pot survey, 1998–2000 and 2006–2023.

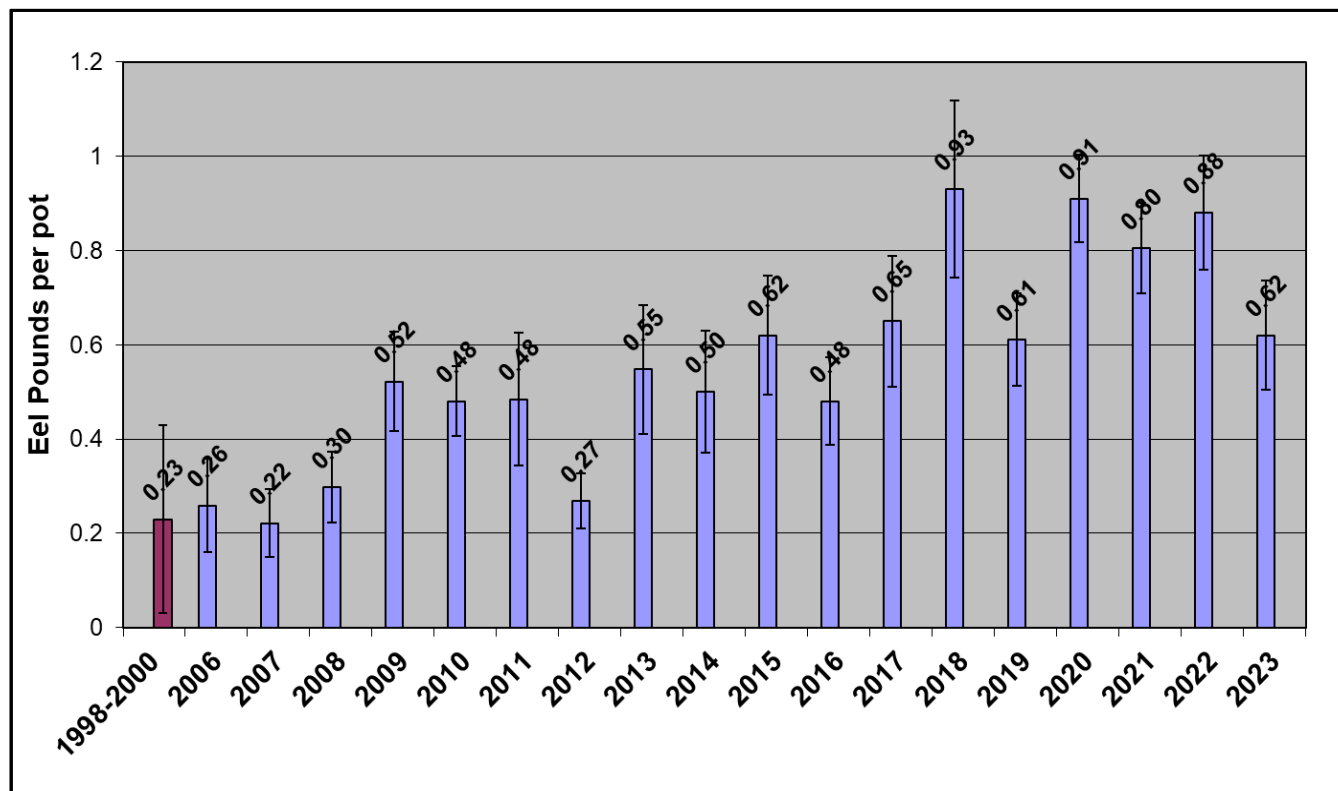
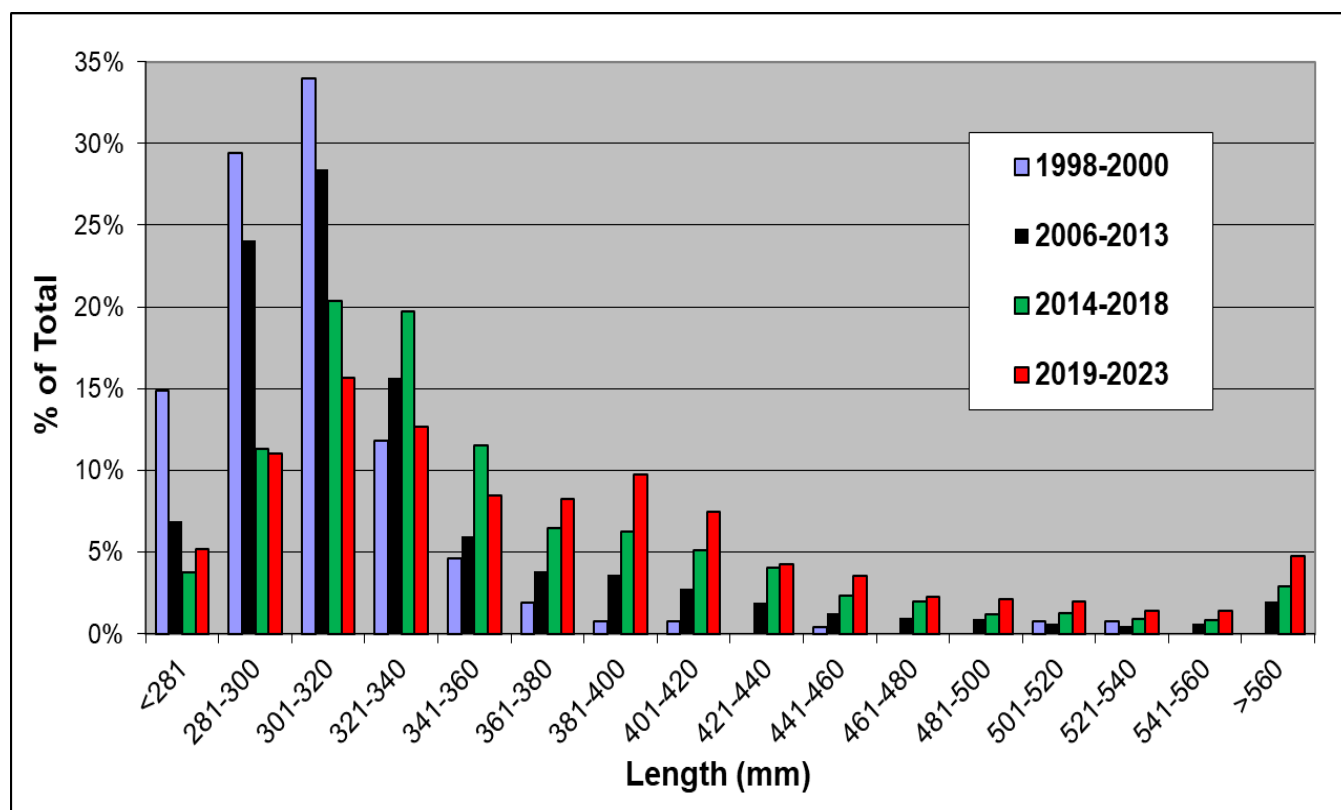


Figure 7. American eel length distributions from the Sassafras River fishery independent eel pot survey, 1998–2000, 2006–2013, 2014–2018, and 2019–2023.





Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Atlantic Croaker (*Micropogonias undulatus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2023

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

June 13, 2024

Table one redacted due to confidential data (6/30/25).

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Report commercial landings, in pounds, for 2023.

Maryland's directed commercial fishery landed 4,242 pounds of Atlantic croaker in 2023 (**Table 1**). 2023 landings are still preliminary, but are not expected to change significantly.

Table 1 removed due to confidential data.

Recreational Fishery

Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2023.

a. Maryland recreational anglers landed an estimated 151,628 (PSE = 55.9, estimate not significantly different than zero) Atlantic croaker in 2023 weighing an estimated 317,757 pounds (PSE = 57.5, estimate not significantly different than zero). Maryland released an estimated 2,939,081 (PSE = 14.7) Atlantic croaker in their recreational fishery in 2023. All of the preceding recreational estimates were downloaded from the MRIP website on May 24, 2024 (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division).

Additional recreational catch information is available through Maryland's Charter Boat Logbook Program, which began in 1993. Maryland charter boat captains are required to maintain daily logs of where they fish, how many fish of each species they harvest, how many they release and how many anglers participated. The 2023 data are preliminary but should not change significantly. Charter captains reported harvesting and releasing 2,115 and 5,613 Atlantic croaker, respectively (Table 2).

Table 2. Charter boat harvest, releases and total catch from Maryland’s Charter Boat Logbook Program in numbers of fish, 2011-2023 (2023 data are preliminary).

Year	Harvest (# of fish)	Releases (# of fish)	Total Catch (# of fish)
2011	132,498	383	132,881
2012	113,470	43	113,513
2013	93,155	142	93,297
2014	81,188	1,199	82,387
2015	36,495	106	36,601
2016	12,210	299	12,509
2017	2,926	31	2,957
2018	689	1	690
2019	995	756	1,751
2020	1,203	3,664	4,867
2021	3,671	233	3,904
2022	1,806	259	2,065
2023	2,115	5,613	7,728

III. Fishery Monitoring Programs

a. *Fishery Dependent Monitoring:* Summarize fishery dependent monitoring programs including bycatch monitoring programs.

Department of Natural Resources biologists sampled commercial pound nets in Maryland’s portion of Chesapeake Bay from May 23, 2023 through September 18, 2023. Sites were located in the western side of Chesapeake Bay just north of the Potomac River to Point No Point, inside the mouth of the Potomac River, and in the eastern side of Chesapeake Bay near Barren Island. Atlantic croaker mean length from the onboard pound net survey was 225 mm total length in 2023, which was identical to the 2021 and 2022 values, and tied for the second lowest value of the 31 year time series. Only 25 Atlantic croaker were encountered during the survey in 2023, the second lowest number sampled (2020 was the lowest). Twenty-four of the 25 Atlantic croaker were aged in 2023, with 38% being age zero, age one accounted for 50% of sampled fish and age two and three accounted for 8% and 4% of sampled fish, respectively. Low sample size may have led to missed ages, and a biased proportion at age for 2023.

***Fishery Independent monitoring:* Summarize fishery independent monitoring and provide a brief review of the results.**

In 2013 Maryland began a summer gill net survey on the main stem of the lower Choptank River from an imaginary line extending from Howell Point to Jenkins Creek to the mouth of the river. The survey uses four 30.5m by 1.8m panels of monofilament gill net with 6.4cm, 7.6cm, 8.9cm and 10.1cm stretch mesh sizes rigged to sink. The section of river sampled was divided into a 457m by 457m block grid. The Choptank River gill net survey was conducted once per week from June 5, 2023 to August 30, 2023, with 50 sets being made over 13 sampling days. Atlantic croaker catches from the Choptank River gill net survey declined through the first three years, 476 fish in 2013, 269 fish in 2014 and 21 fish in 2015. Atlantic croaker catches have remained low since, with 18 fish being captured in 2023, the third lowest catch of the 11 year time series.

A 4.9m semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972. Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably. Consequently, index values for juvenile Atlantic croaker prior to 1989 are not as reliable and, therefore, were not computed. The geometric mean catch per hectare (GM) of juvenile croaker was used as an index of abundance. The 2023 value of 0.47 fish per hectare was below the long term mean and similar to 2020 through 2022 values. In the past ten years only the 2019 index value was above the long-term mean.

A Chesapeake Bay juvenile trawl index was calculated from the Blue Crab Trawl Survey as the annual geometric mean catch per tow from 1989 - 2023. Since juvenile Atlantic croaker have only been consistently caught in Tangier Sound, Pocomoke Sound, and the Patuxent River, only these areas were utilized in this analysis to minimize zeros that likely represent unsuitable habitat. Index values have varied without trend. Values above the 35 year time series mean were more common earlier in the time series. The 2023 value of 4.96 fish per tow was above the time series mean of 3.06 fish per tow.

IV. Management Programs

Summarize any regulatory changes from the previous year or planned regulatory changes for the current year. Please include an update on Addendum III state implementation plans if applicable.

No regulatory changes for Atlantic croaker were made in 2023, or are planned in 2024.

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.

N/A



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Atlantic Menhaden (*Brevoortia Tyrannus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2023

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Service**

July 12, 2024

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

Harry Rickabaugh –301 Marine Academy Drive– Stevensville, Maryland 21666
410-643-6785 ext. 2109 – harry.rickabaugh@maryland.gov – TTY Users Call via the Maryland Relay

I. Request for *de minimis* and relinquishing quota

- a. Maryland does not request *de minimis* status.
- b. Maryland did not relinquish menhaden quota in 2023.

II. Previous calendar year's fishery

Directed Fishery (Complete Worksheet Tab 1)

a. Report commercial landings by year and major gear type in the excel worksheet for the entire landings time series since 1985. Throughout the report, please indicate confidential data with red font. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

Maryland's directed fishery landed 2,000,810 pounds of Atlantic menhaden in 2023. Directed landings did not exceed Maryland's quota of 5,947,968 pounds. Pound net was the major gear type and accounted for 99% of landings.

b. Include the official dated closure notice for directed commercial fisheries if the TAC (or percentage of TAC) was reached. Attach the official notice as an appendix and indicate the date and reason for closure here.

The directed fishery for Atlantic menhaden was not closed in 2023, since reported landings did not reach Maryland's quota.

c. Indicate if your state participated in a quota transfer (include transaction details). If your state participated in multiple quota transfers, please list each individual transfer in chronological order.

Maryland did not participate in any transfers in 2023.

Incidental Catch Fishery (Complete Worksheet Tab 2)

- a. N/A

Episodic Event Set Aside (Complete Worksheet Tab 3)

- a. N/A

III. Mandatory Monitoring Programs (Complete Worksheet Tab 4 and 5)

a. Summarize reporting programs (e.g., frequency, harvester reporting, dealer reporting, data elements reported)

Maryland uses harvester reporting to monitor and track quota. All fishermen were required to report the quantity of fish landed by area fished, day, gear type, and species, as well as, the amount of gear used, duration the gear was in the water, hours fished and number of crew, using forms returned

monthly to Maryland Department of Natural Resources for all of 2023. Fishermen can also use a voluntary daily electronic reporting system in place of the paper forms. The electronic system includes the same data elements, plus a hail in / hail out and point of landing for each day fished. All pound net fishermen were required to report daily for all of 2023 via text message from a cell phone, an online form, or use the electronic daily reporting system. Required information reported included their menhaden bycatch permit number, whether or not more than one permit holder was onboard, total number of nets fished, soak time of each net fished and quantity of menhaden harvested. Fishermen not using the daily electronic reporting system were still required to file their paper forms.

b. Maryland does not allow purse seining in state waters.

c. Age and length data from the commercial bait harvest.

Indicate the number of age and length samples collected from your commercial bait fishery only. Please identify the number of complete 10-fish collections the samples came from as required in the table below. Also, please specify gear types from which the samples were collected.

i. One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, DE

ii. One 10-fish sample (age and length) per 200 metric tons landed for bait purposes for MD, PRFC, VA, NC.

Maryland Department of Natural Resources biologists sampled commercial pound nets once per week in Maryland's portion of Chesapeake Bay from May 23, 2023, through September 18, 2023, as part of the Summer Migratory Species Project. Sites were located on the western side of Chesapeake Bay near Point No Point, on the eastern side of the Chesapeake Bay near Barren Island and inside the mouth of the Potomac River. Ten to 25 age and length samples were taken at each net and additional lengths were taken to reach at least 50 total measurements per day when available. All measurements were to the nearest millimeter fork length. Additional 10 fish age and length samples were taken by the Striped Bass program once a month from June through October from pound nets set in the Chester River and one sample in November from a net set inside the mouth of the Potomac River. In 2023, a total of 26 ten fish samples were collected and one additional nine fish sample and one additional 6 fish sample were taken.

State MD	Total Bait Landings (pounds)	#10-fish samples required	#10-fish samples collected	Age samples collected	Length samples collected	Gear/Comments
2023	2,000,810	5	26	455	1,095	Pound net

d. Indicate that the following mandatory catch and effort data elements are being collected for the pound net fishery.

i. Total pounds (lbs.) landed per day

ii. Number of pound nets fished per day

Note – In order to characterize selectivity of this gear in each state, a goal of collecting five 10-fish samples from pound net landings annually is recommended. Report on any samples collected.

As indicated in section III a. above, Maryland does require pound net fishermen to report catch and effort data daily, including the number of nets fished. All of Maryland's commercial length and age samples were collected from the pound net fishery (see section III c. above for more detail).

e. Indicate if your state is collecting fishery-independent information on Atlantic menhaden through a survey. If so, is the survey collecting age (e.g., scales, otoliths) and length information on samples?

In 2013 Maryland Department of Natural Resources began an independent summer gill net survey, primarily targeting Sciaenid species, on the lower portion of the Choptank River. The survey collected menhaden lengths from 2013 to 2023, and collected and aged scales from 2015 to 2023. Otolith samples were also collected and archived for future analysis from 2017 to 2023. Age samples (paired scales and otoliths) were taken from 122 menhaden in 2023, and 420 were measured to the nearest millimeter fork length. The survey uses four 100 by 6-foot-panels of monofilament gill net rigged to sink. Stretch mesh sizes were 2.5, 3.0, 3.5 and 4.0 inches. Maryland also conducts two juvenile seine surveys, one in the Chesapeake Bay and one in the Coastal Bays, that encounter Atlantic menhaden, but these surveys only target young of year fish, so no ages are collected. The Coastal Bays Seine Survey does collect lengths.

IV. Planned management programs for the current calendar year

a. Summarize any changes from previous years. Only indicate deviations from your Amendment 3 implementation plans if any.

N/A

b. Summarize any significant changes to your monitoring programs.

N/A

V. Law Enforcement Reporting Requirements

Identify any law enforcement issues that occurred.

N/A



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Black Drum (*Pogonias cromis*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2023

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

July 11, 2024

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

Harry Rickabaugh – 301 Marine Academy Drive– Stevensville, Maryland 21666
410-643-6785 ext. 2109 – harry.rickabaugh@maryland.gov

I. Request for *de minimis*

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2023.**

Maryland's directed commercial fishery landed 2,097 pounds of black drum in 2023.

Other Fishery Losses

Maryland did not have any reported fish loss events or reported discard information.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2023.**

Maryland recreational anglers harvested an estimated 1,202 black drum (PSE=74.9; MRIP 2024) weighing an estimated 10,697 pounds (PSE=68.4; MRIP 2024) in 2023. Maryland recreational anglers released an estimated 3,908 black drum (PSE 62.5; MRIP 2024) in 2023. All the preceding estimates are not significantly different than zero (MRIP 2024).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. The majority of charter captains have started using the daily electronic reporting system, with 88% of captains reporting catching black drum in 2023 reporting electronically. In 2023, charter boat captains reported harvesting 18 black drum with an estimated weight of 266 pounds, and releasing 4 black drum with an estimated weight of 151 pounds.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Black drum are generally encountered in low numbers, but are enumerated and measured to the nearest millimeter when encountered. Forty-seven black drum were encountered in 2023, the largest number encountered since the survey began, with total lengths (TL) ranging from 169 to 1,197 mm TL, and a mean length of 424 mm TL.

b. Summarize fishery independent monitoring and provide a brief review of the results:

In addition, in order to update the black drum indicators as established in the 2023 Black Drum Benchmark Stock Assessment, the states in the table below must each supply the listed indices updated with data through 2023. Information on how each of the indices were calculated can be found in the [2023 Black Drum Benchmark Stock Assessment and Peer Review Report](#), starting on page 42.

State	Survey(s)
New Jersey	New Jersey Ocean Trawl
Delaware	16 ft Trawl and 30 ft Trawl Survey
Maryland	Maryland Coastal Bays Seine Survey
North Carolina	P915 Fishery Independent Gill Net Survey
South Carolina	Trammel Net Survey
Georgia	Georgia Marine Sportfish Population Health Survey (MSPHS) - Trammel Survey

The Maryland Department of Natural Resources has conducted the Coastal Bays Fisheries seine survey in Maryland's Coastal Bays since 1972, sampling with a standardized protocol since 1989. Shore beach seine sampling was conducted at 19 fixed sites once per month in June and September. An annual geometric mean (GM) catch per haul in numbers was generated for standardized years (1989 – 2023). The index utilizes September samples only and is for fish with a mean TL less than 231mm. These limitations were used to avoid high proportion of zero catches in June (95% of samples were in September) and to eliminate age one plus fish from the index. This index is used in the annual indicators established following the last Benchmark assessment. The young of the year index indicates no discernable trend and a high level of variation (Figure 1). An excel file with index values will accompany this report.

IV. Planned management programs for the current calendar year

- a. Summarize any regulatory changes from the previous year.

Maryland does not plan any regulation changes in 2024.

- b. Please **provide regulatory language that shows you are meeting required management measures:**

The following regulations were in effect throughout 2023.

From the Code of Maryland Regulations: 08.02.05.15.15 Black Drum.

A. Recreational Fishery.

- (1) The daily catch and possession limit per individual is one black drum.
- (2) The daily catch and possession limit per boat is six black drum.
- (3) A person may not catch or possess black drum less than 16 inches in total length.

B. Commercial Fishery.

- (1) Atlantic Ocean.
 - (a) The annual total allowable landings is 1500 pounds.

(b) A commercial licensee may not catch or possess black drum less than 16 inches in total length.

(2) Coastal Bays of the Atlantic Ocean and Their Tributaries. Except for purposes of scientific investigation approved by the Department, a commercial licensee may not catch, possess, or sell black drum.

(3) Chesapeake Bay and Its Tidal Tributaries.

(a) A commercial licensee may not catch or possess black drum less than 28 inches in total length.

(b) The daily catch and possession limit is ten black drum per vessel per day, regardless of the number of commercial licensees on board the vessel.

D. Public Notice.

(1) The Secretary may establish or modify catch limits, size limits, and seasons for black drum in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Drum, by issuing a public notice on the Department's website.

(2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.

(3) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected person has a reasonable opportunity to be informed.

(4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.

V. Law Enforcement Reporting Requirements

N/A

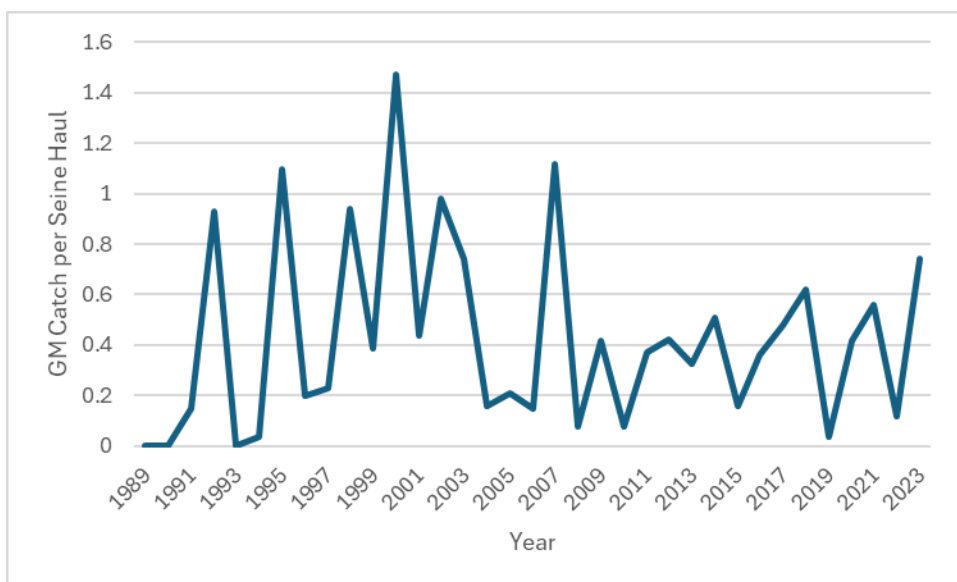


Figure 1. Geometric mean catch of black drum less than 231mm TL per seine haul from Maryland's Coastal Bays Program, utilizing September samples only, 1989-2023.

MRIP 2024, Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division July 11, 2024.



Maryland's 2023 Compliance Report for Black Sea Bass (*Centropristis striata*)
to the Atlantic States Marine Fisheries Commission
June 2024

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
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580 Taylor Ave., C-3
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Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2024

DNR

I. Introduction

Black sea bass were managed as one stock extending from North Carolina to Maine. In Maryland, black sea bass occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge. A Chesapeake Bay and Atlantic coast black sea bass fishery management plan was developed in 1993 by the National Oceanic and Atmospheric Administration (NOAA) Chesapeake Bay Program. Maryland and Virginia have a cooperative management plan for black sea bass within Chesapeake Bay. According to the 2022 operational assessment using data through 2021, the stock was not overfished, and overfishing was not occurring. A complete stock assessment is due in 2024.

Maryland has individual fishing quotas for black sea bass in Atlantic coastal waters including the coastal bays and their tributaries. In 2023, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit.

The recreational fishery is actively pursued in the Atlantic Ocean. Black sea bass recreational management allowed states to set their own regulations using conservation equivalency. Maryland chose to set regulations consistent with a region including Delaware and Virginia. These regulations were consistent with 2023 federal recreational measures.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2023 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to NOAA.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the access point angler intercept survey (APAIS) survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Three independent surveys were conducted in the coastal bays. The Trawl and Beach Seine surveys used a 16 foot (ft) otter trawl and a 100 ft bag seine. The submerged aquatic vegetation habitat study (SAV) used a 50 ft bag seine. Black sea bass were collected in 33 of 140 trawls (23.6%) and 10 of 38 beach seines (26.3%). A total of 138 juvenile black sea bass were collected in trawl (86 fish) and beach seine (52 fish) samples. Black sea bass ranked 10 out of 66 species in overall finfish abundance for those surveys. The trawl and beach seine CPUE was 4.9 fish/ha and 1.4 fish/haul, respectively. In 2023, the trawl and beach seine relative abundance indices were both equal to the grand means (Figures 1 - 2).

The Submerged Aquatic Vegetation (SAV) Habitat Survey has been conducted since 2015 using a 50 ft bag seine in Sinepuxent Bay. Black sea bass has been the six most abundant species collected in this study indicating that juvenile black sea bass use SAV as preferred habitat (Figure 3).

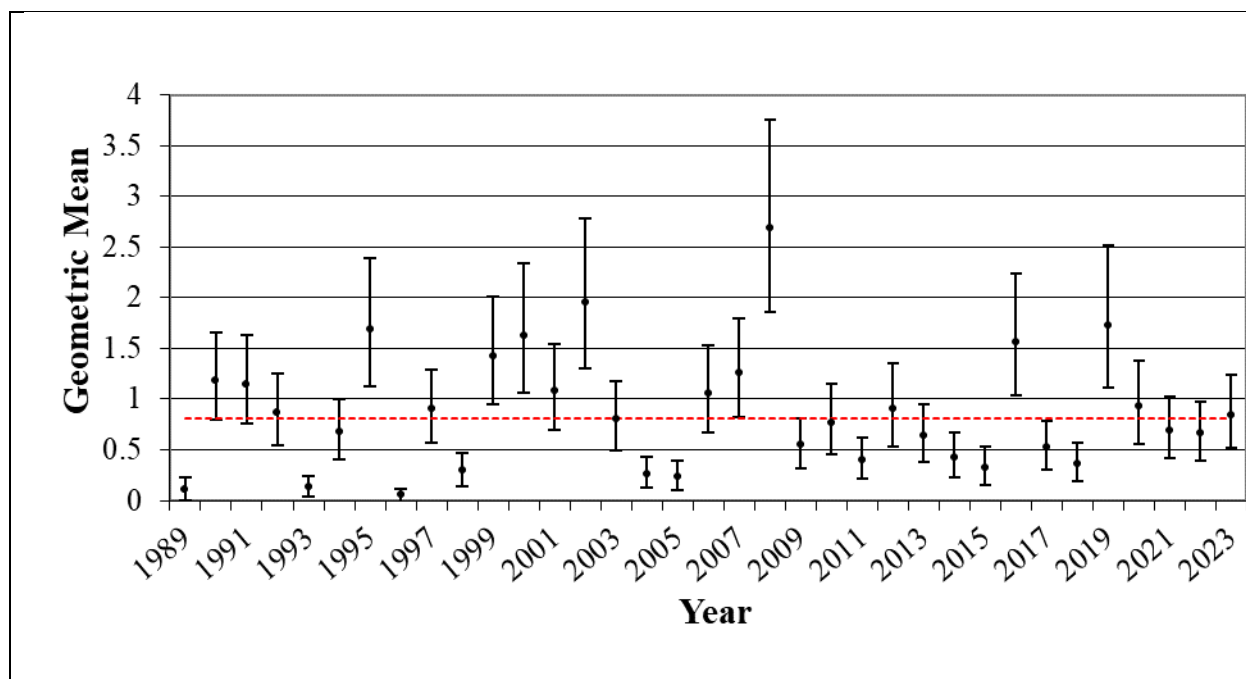


Figure 1. Black sea bass (*Centropristis striata*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2023). Dotted line represents the 1989 - 2023 time series grand mean (n1989 - 2019, 2021 - 2023 = 140/year, n2020 = 120).

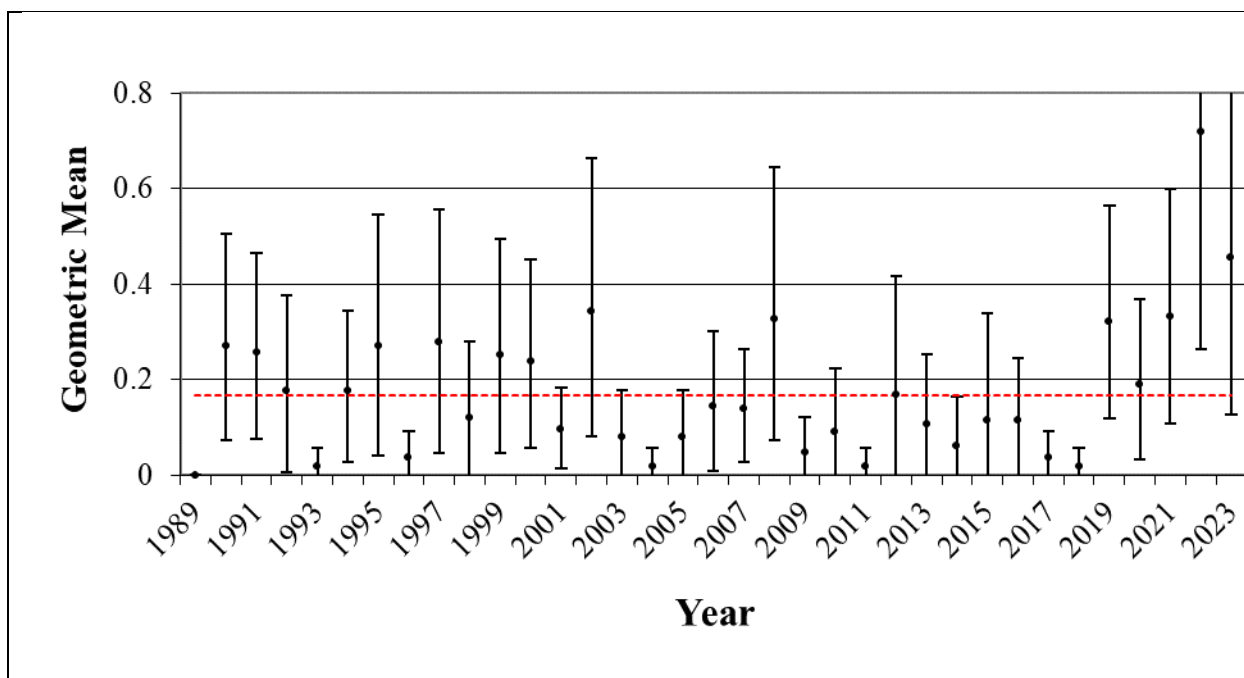


Figure 2. Black sea bass (*Centropristis striata*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2023). Dotted line represents the 1989 - 2023 time series grand mean (n = 38/year).

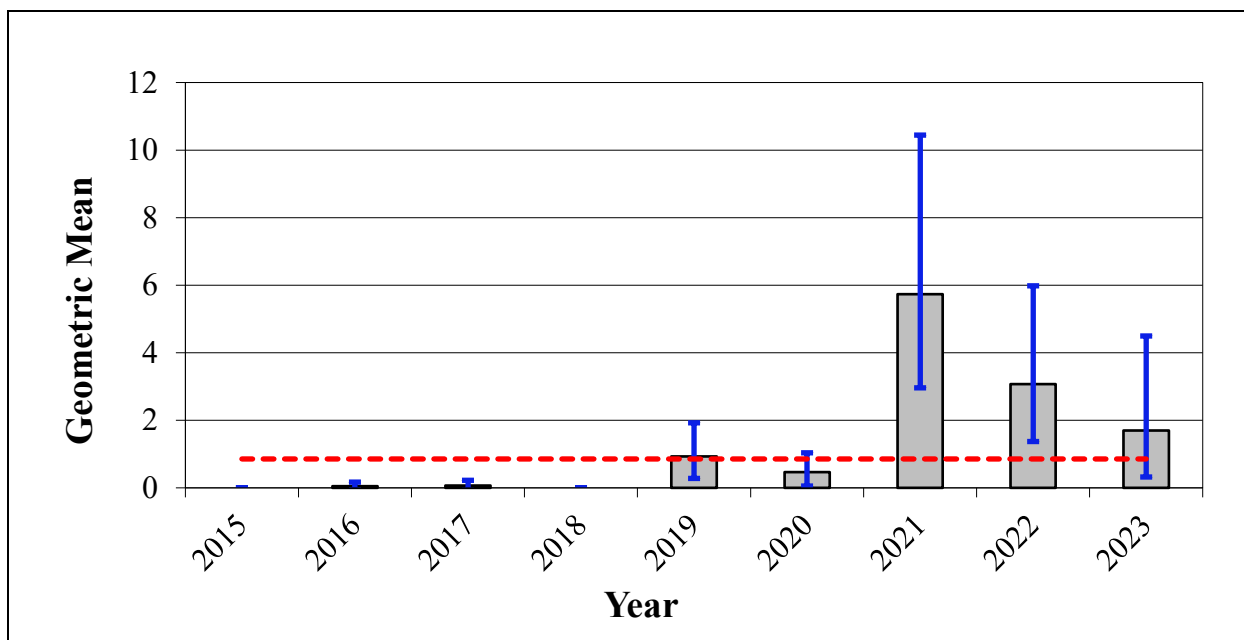


Figure 3. Black sea bass SAV Habitat Survey beach seine index of relative abundance (geometric mean) with 95% confidence intervals (2015 - 2023). Dotted line represents the 2015 - 2023 time series grand mean (n = 149, average 16/year).

C. Copy of Regulations

Two black sea bass public notices were issued for 2023 fisheries. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx.

PUBLIC NOTICE

The Maryland Department of Natural Resources Fishing and Boating Services

2023 Recreational Black Sea Bass Fishery — Effective 5/15/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the recreational season, catch limit, and minimum size for black sea bass. Effective 12:01 a.m. May 15, 2023:

- The season is open May 15, 2023, through September 30, 2023, and then reopens October 10, 2023, through December 31, 2023. It is closed all other dates.
- Anglers may keep up to 15 black sea bass per person per day.
- The minimum size is 13 inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch black sea bass recreationally.

AUTHORITY

Code of Maryland Regulations 08.02.05.21

Josh Kurtz
Secretary of Natural Resources

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2023 Recreational Black Sea Bass Fishery — Effective 1/1/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the recreational season for black sea bass is closed from January 1, 2023, through May 14, 2023. A subsequent notice will establish the rules for the remainder of the season at a later date.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch black sea bass recreationally.

EFFECTIVE DATE

This notice is effective at 12:01 a.m. January 1, 2023.

AUTHORITY

Code of Maryland Regulations 08.02.05.21

Jeannie Haddaway-Riccio
Secretary of Natural Resources

Code of Maryland Regulations [08.02.05.21](#) Black Sea Bass.

A. Recreational. The recreational size limit, catch limit, and season for black sea bass shall be established and may be modified through a public notice issued in accordance with §F of this regulation.

B. Commercial.

(1) Minimum Size. An individual who harvests black sea bass for commercial purposes may not catch or possess a black sea bass less than 11 inches in total length, excluding the tail filament.

(2) Quotas.

(a) Statewide Quota.

(i) The annual total allowable landings of black sea bass for the commercial fishery is set by the Atlantic States Marine Fisheries Commission and shall be published through a public notice issued in accordance with §F of this regulation.

(ii) Any annual overages of the quota will be deducted from the subsequent year's quota.

(b) Quota Allocation.

(i) The total pounds of black sea bass that may be harvested by a black sea bass landing permit holder who applies for a permit for 2011 and subsequent years shall be based on the proportion of the total black sea bass harvest allocated to the permit holder in the previous year.

(ii) In addition to the quota allocation, as described in §B(2)(b)(i) of this regulation, the Department shall reallocate equitably among permit holders the quota of any permit holder who fails to apply for a permit for the following year, or who leaves the fishery without transferring the permit.

(c) A Maryland black sea bass landing permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an individual may not hold more than 20 percent of the total fishery allocation.

(d) An individual who possesses a Maryland black sea bass landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any quota transfers, shall have the overage deducted from the permit allocation for the following year.

(3) Daily Catch Limits. A vessel that does not have an individual on board who possesses a valid Maryland black sea bass landing permit may not catch, possess, or land more than 50 pounds of black sea bass per day.

(4) Black sea bass harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a federally permitted dealer.

C. Licenses and Permits.

(1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land black sea bass.

(2) A vessel which is used to catch, possess, or land black sea bass for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.

(3) A permittee may catch, possess, or land black sea bass for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) A tidal fish licensee shall declare their intent to fish for black sea bass by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared late in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland black sea bass landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Black Sea Bass Landing Permit.

(a) No more than 14 black sea bass landing permits may be issued by the Department. The number of black sea bass landing permits is based on the reported catch and landing records of black sea bass in Maryland during 1996-2001.

(b) The Department may issue a permit to catch and land black sea bass in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

(i) Declared or was eligible to declare, in the previous year, an intent to fish for black sea bass in accordance with §C(4) of this regulation and has not transferred the permit; or

(ii) Received a black sea bass landing permit through a permanent business transfer in accordance with §C(6) of this regulation.

(6) Permanent Transfer of a Landing Permit. The Department may approve a permanent transfer of a Maryland black sea bass landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(7) Temporary transfers of black sea bass landing permits are not permitted.

(8) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland black sea bass landing permit.

(c) An operator may catch, possess, or land black sea bass for commercial purposes on a vessel owned by a permittee and in possession of that permittee's permit.

(9) Regardless of the number of authorized individuals with Maryland black sea bass landing permits on board a federally permitted vessel, no more than two black sea bass quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) Trawls.

(a) Except for an individual landing less than a total of 500 pounds of black sea bass from January 1 through March 31 or 100 pounds of black sea bass from April 1 through December 31, a person may not use a trawl with mesh less than 4-1/2 inch diamond mesh applied throughout the:

- (i) Codend for at least 75 continuous meshes forward of the end of the net; or
- (ii) Entire net for codends with fewer than 75 meshes.

(b) An individual may not use a roller rig trawl with a roller diameter in excess of 18 inches.

(2) Pots and Traps. A pot or trap used to catch black sea bass shall have:

(a) Two unobstructed escape vents located in the parlor portion of the trap that are each at least a:

- (i) 2-1/2 inch diameter circular opening;
- (ii) 2 inch by 2 inch square opening; or
- (iii) 1-3/8 inch by 5-3/4 inch rectangular opening; and

(b) One panel or door that is a minimum of 3 inches by 6 inches that has hinges and fasteners made of one of the following degradable materials:

- (i) Untreated hemp or jute string of 3/16 inch in diameter or less;
- (ii) Magnesium alloy fasteners; or
- (iii) Ungalvanized, uncoated iron wire of 0.094 inch diameter or smaller.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland black sea bass landing permit shall record the harvest of black sea bass on the permit daily and submit the completed permit to the Department within 14 days from the end of the black sea bass season.

(2) A dealer shall transmit information weekly, or as requested, on each black sea bass transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may establish or modify catch limits, size limits, quotas, and seasons for black sea bass in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Sea Bass, by issuing a public notice on the Fisheries Service website.

(2) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.

(3) The Secretary shall make a reasonable effort to disseminate a public notice through various other media so that an affected individual has a reasonable opportunity to be informed.

(4) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coastwide quota is harvested and not exceeded.

(5) A violation of the restrictions set by the Secretary in accordance with §F of this regulation is a violation of this regulation.

Table 1. Maryland implementation of the required commercial black sea bass measures as mandated in the ASMFC FMP.

11" minimum size	Yes
4.5" minimum mesh size for entire net or 4.5" diamond mesh in cod end (for large trawl nets)	Yes
Threshold to trigger minimum mesh requirements: (500 lbs for January - March; 100 lbs from April - December)	Yes
2.5" circular escape vents, 2" square escape vent, or 1.375" X 5.75" rectangular escape vent for pots/traps. Two vents required in parlor portion of pot/trap.	Yes
Pot and trap degradable fastener provisions: a) untreated hemp, jute, or cotton string 3/16" (4.8 mm) or smaller; b) magnesium alloy timed float releases or fasteners; c) ungalvanized, uncoated iron wire of 0.094" (2.4mm) or smaller. The opening covered by a panel affixed with degradable fasteners would be required to be at least 3"x 6".	Yes

D. D. Harvest by Gear Type

1. Commercial Landings

In 2023, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit. Maryland's preliminary 2023 commercial black sea bass harvest was 354,863 pounds (Table 2; Source: Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

2. Recreational Landings

Maryland's 2023 recreational black sea bass catch was estimated at 213,270 fish (PSE 31.8) with a total weight of 293,693 pounds (PSE 33.5; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 6, 2024).

IV. Planned Management for 2024

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as 2023 with added clarification that quota setting will be by public notice. Recreational management measures will include a 13-inch size limit, a 15 fish creel, The season is open May 15, 2024, through September 30, 2024, and then reopens October 10, 2024, through December 31, 2023. It is closed all other dates.

B. Summary of Monitoring Programs that will be in Effect

Same as 2023, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement Requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Information Program. Accessed May 6, 2024.
nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Northeast Fisheries Science Center. 2022. Black Sea bass operational assessment data through 2021. US Dept. Commerce, Northeast Fisheries Center.



Wes Moore
Governor

Josh Kurtz
Secretary

**Maryland 2023 Bluefish (*Pomatomus saltatrix*) Compliance Report
To the
Atlantic States Marine Fisheries Commission**

**CONTAINS CONFIDENTIAL DATA
WHERE INDICATED IN RED**

Prepared by:

Eric Q. Durell

June, 2024

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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

I. Introduction

Bluefish (*Pomatomus saltatrix*) are caught in Maryland's Atlantic Ocean and Chesapeake Bay waters. Maryland's recreational and commercial fisheries are open year-round and subject to an 8-inch minimum size limit. Recreational anglers fishing from for-hire boats had a daily creel limit of 5 fish; all other recreational anglers had a creel limit of 3 fish per person per day. Maryland's original 2023 commercial quota was 115,409 pounds. This was later adjusted to 65,409 pounds after a quota transfer to North Carolina.

II. Request for *de minimis*

N/A

III. Fishery and Management Programs

a.) Per the Biological Monitoring Program implemented through Addendum I, Maryland is exempt from the cooperative otolith collection requirements.

b.) Monitoring

i. Fishery Dependent Monitoring

Fishery dependent sampling for bluefish consists of commercial pound net monitoring by the Chesapeake Bay Finfish Program's Migratory Species Survey. Bluefish encountered in pound nets in 2023 ranged from 197 to 572 mm TL, with an average length of 381 mm TL (n=609). The length frequency distribution was bimodal with 47% of the sample between 320 and 399 mm TL and 12% between 440 and 459 mm TL (Figure 1).

ii. Fishery Independent Monitoring

Fishery independent bluefish monitoring consists of seine surveys in the Chesapeake Bay and Atlantic coastal bays. Direct comparisons between the surveys are not possible because of differing gears and sampling methodologies.

The Striped Bass Program's Estuarine Juvenile Finfish Survey is used to develop an annual index of relative abundance for juvenile bluefish that informs the coastal stock assessment. The index is based on select sample sites where bluefish have historically been encountered, and is the geometric mean of the (catch+1) values. The 2023 Chesapeake Bay juvenile bluefish index of 0.03 was similar to the previous year and less than the time-series average of 0.2 (Figure 2).

The Atlantic Coastal Bays Program's Seine Survey also develops an index of relative abundance for juvenile bluefish using natural log transformed (catch+1) values. The 2023 Coastal Bays index of 0.12 increased compared to the previous year but was less than the average of 0.4 (Figure 3).

c.) Regulations

i. Maryland bluefish regulations for 2023:

FISHERIES SERVICE 08.02.05.10

.10 Bluefish.

A. Minimum Size. A person may not catch or possess bluefish less than 8 inches in total length.

B. Recreational Catch Limit. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than ten bluefish per day.

C. Commercial Catch Limit. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.

D. General. The Secretary:

(1) May modify catch limits or open or close a season in State waters by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

SOURCE: <https://dsd.maryland.gov/regulations/Pages/08.02.05.10.aspx>

- ii. The recreational daily creel limit was modified by public notice, effective January 1, 2023. Recreational anglers aboard for-hire vessels were allowed 5 fish per day; all others were allowed 3 fish per day (https://dnr.maryland.gov/fisheries/Documents/Public_Notices/PubNotBluefish_Effective%201-1-2023.pdf).

iii. FMP Requirements

FMP Requirements Implemented?	YES	NO
Party/Charter Vessels license required*	x	
Commercial Vessels license required*	x	
Commercial Dealers license required*	x	
Recreational Bag Limit of 5 fish for anglers on for-hire boats, 3 fish for all others	x	

*[Maryland Natural Resources Article §4-701](#) establishes licensing requirements

for these activities.

d.) Commercial and Recreational Landings

Maryland's original 2023 commercial bluefish quota of 115,409 pounds was adjusted to 65,409 pounds after transferring 50,000 pounds to North Carolina, pursuant to the Interstate Bluefish Fisheries Management Plan (<https://www.govinfo.gov/content/pkg/FR-2023-11-20/pdf/2023-25579.pdf>).

Maryland's 2023 commercial bluefish harvest was 17,399 pounds (Source: Joseph Myers, ACCSP, personal communication). This was a 69% increase from the previous year (Table 1, Figure 4) and less than the adjusted quota of 65,409 pounds.

Approximately 76% (by weight) of the commercial harvest was caught in Chesapeake Bay and its tributaries, and 24% was caught on Maryland's Atlantic coast. Pound nets are typically responsible for the plurality of the harvest, but records without gear codes complicate gear comparisons between years (Table 1). The majority of the harvest (69%) occurred from June to September (Table 2).

The 2023 Marine Recreational Information Program (MRIP) estimate of Maryland bluefish harvest (Type A+B1) was 210,655 fish, weighing 373,220 pounds (Table 3, Figure 5). This represents a 16% decrease in the number of fish harvested compared to 2022 (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, June 5, 2024 query).

The majority (93%) of the annual recreational harvest occurred between July and October (Table 4). Approximately 46% of the harvest was attributed to anglers on private boats and 45% to shore-based anglers (Table 5). Nearly 94% of the bluefish harvest occurred in inland waters (Table 6).

The 2023 MRIP estimate of Maryland recreational live discards (Type B2) was 462,370 fish, a 95% increase from 2022 (Table 3, Figure 6). Similar to the harvest, most of Type B2 discards occurred in inland waters during July-October. (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, June 5, 2024 query).

IV. Planned Management for 2024

- a.) The National Marine Fisheries Service (NMFS) Final Rule issued Atlantic Bluefish Fishery Specifications for 2024 effective January 1, 2024. The coastal commercial bluefish quota for 2024 is 2.42 million pounds. Maryland's 2.54% share of the coastal quota is 61,471 pounds (Federal Register, Vol. 89, No. 1, pp. 34-36, January 2, 2024).
- b.) Maryland's recreational bluefish possession limit in 2023 was a temporary change to the standing regulation. The regulation was changed again by public notice, effective January 1, 2024, to renew the reduced possession limits. Recreational anglers fishing

from shore or private boats can keep up to 3 bluefish per day. Recreational anglers fishing from for-hire boats can keep up to 5 fish per day (https://dnr.maryland.gov/fisheries/Documents/Public_Notices/PubNotBluefish_Effective%201-1-2024.pdf).

- c.) The Migratory Species Survey, Estuarine Juvenile Finfish Survey, and Coastal Bays Seine Survey will continue in 2024.

V. Law Enforcement Reporting Requirements

None

Table 1. Maryland commercial bluefish landings, in pounds, by gear type.

Year	Gill Net	Pound Net	Hook & Line	Other	Total
2014	[C]	[C]	[C]	[C]	79,691
2015	[C]	[C]	[C]	[C]	91,105
2016	[C]	[C]	[C]	[C]	66,720
2017	[C]	[C]	[C]	[C]	37,035
2018	[C]	[C]	[C]	[C]	25,717
2019	[C]	[C]	[C]	[C]	22,776
2020	[C]	[C]	[C]	[C]	20,786
2021	[C]	[C]	[C]	[C]	12,228
2022	[C]	[C]	[C]	[C]	10,282
2023	[C]	[C]	[C]	[C]	17,399

Table 2. Maryland commercial bluefish landings by month, 2023.

Month	Landings (Pounds)	Percent Landings
January	[C]	[C]
February	[C]	[C]
March	[C]	[C]
April	[C]	[C]
May	[C]	[C]
June	[C]	[C]
July	[C]	[C]
August	[C]	[C]
September	[C]	[C]
October	[C]	[C]
November	[C]	[C]
December	[C]	[C]
Total*	17,399	100.0

* Values may not sum due to rounding

Table 3. MRIP estimates of Maryland recreational bluefish harvest (Type A+B1) and discards (B2).

Year	Harvest (A+B1) numbers of fish	Harvest (A+B1) pounds	Discards (B2) numbers of fish
2014	395,558	484,888	490,971
2015	286,730	453,100	661,676
2016	212,419	304,991	556,307
2017	175,268	332,244	196,418
2018	274,834	493,192	417,810
2019	111,769	154,451	226,968
2020	173,846	214,991	320,368
2021	105,710	117,546	211,239
2022	249,382	223,494	237,374
2023	210,655	373,220	462,370

Table 4. Maryland recreational bluefish harvest (Type A+B1) by MRIP wave, 2023.

Date	Wave	Harvest (numbers of fish)	Percent Harvest
January-February	1	0	0
March-April	2	0	0
May-June	3	13,931	6.6
July-August	4	159,048	75.5
September-October	5	36,766	17.5
November-December	6	909	0.4
Total*		210,655	100.0

* Values may not sum due to rounding

Table 5. Maryland recreational bluefish harvest (Type A+B1) by MRIP mode, 2023.

Mode	Harvest (numbers of fish)	Percent Harvest
Shore	94,825	45.0
Party boats	651	0.3
Charter boats	17,376	8.2
Private/rental boats	97,804	46.4
Total*	210,655	100.0

Table 6. Maryland recreational bluefish harvest (Type A+B1) by MRIP area, 2023.

Area	Harvest (numbers of fish)	Percent Harvest
Ocean (≤ 3 miles offshore)	0	0.0
Ocean (> 3 miles offshore)	12,807	6.1
Inland	197,848	93.9
Total*	210,655	100.0

* Values may not sum due to rounding

Figure 1. Length frequency of bluefish from Maryland's Chesapeake Bay pound net survey, June-September, 2023.

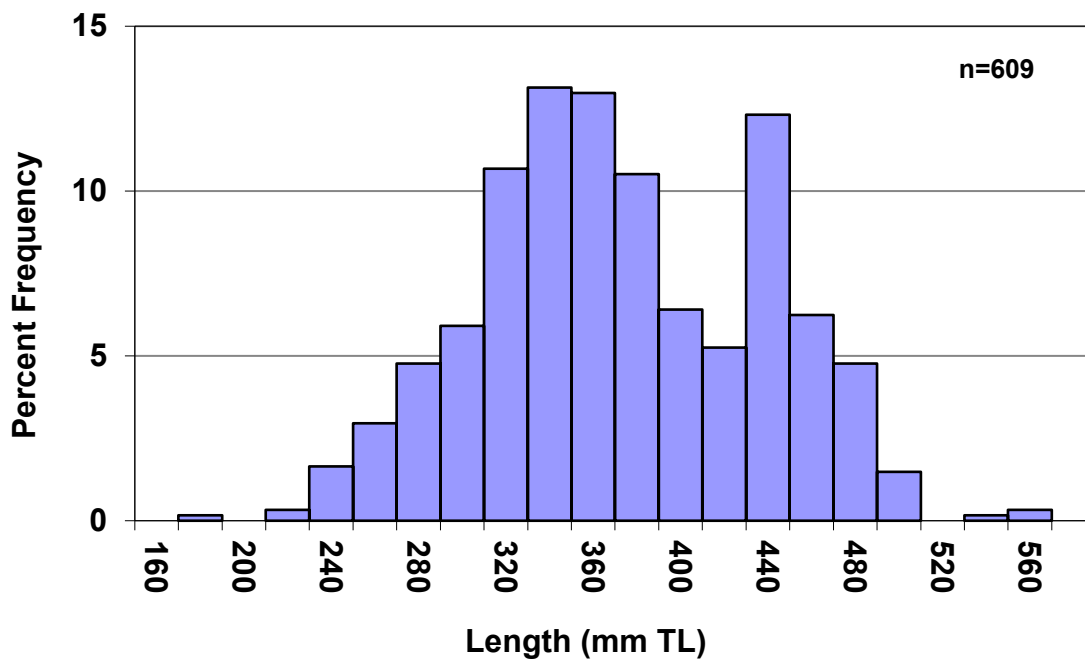


Figure 2. Bluefish juvenile index from Maryland's portion of the Chesapeake Bay.

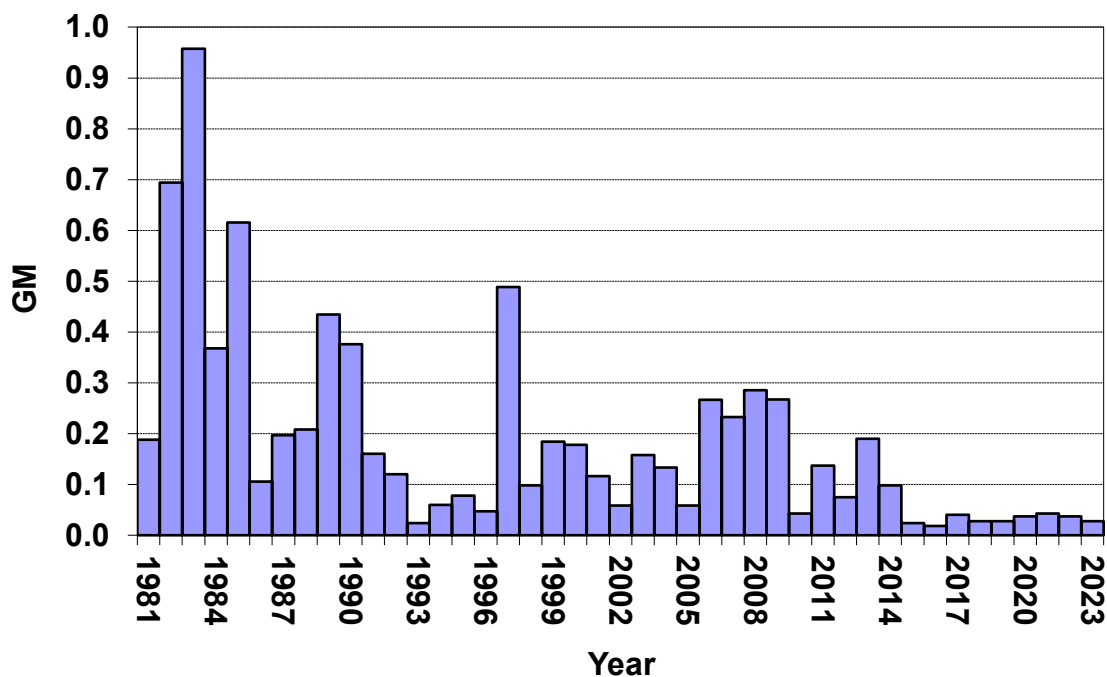


Figure 3. Bluefish juvenile index from Maryland's Coastal Bays seine survey.

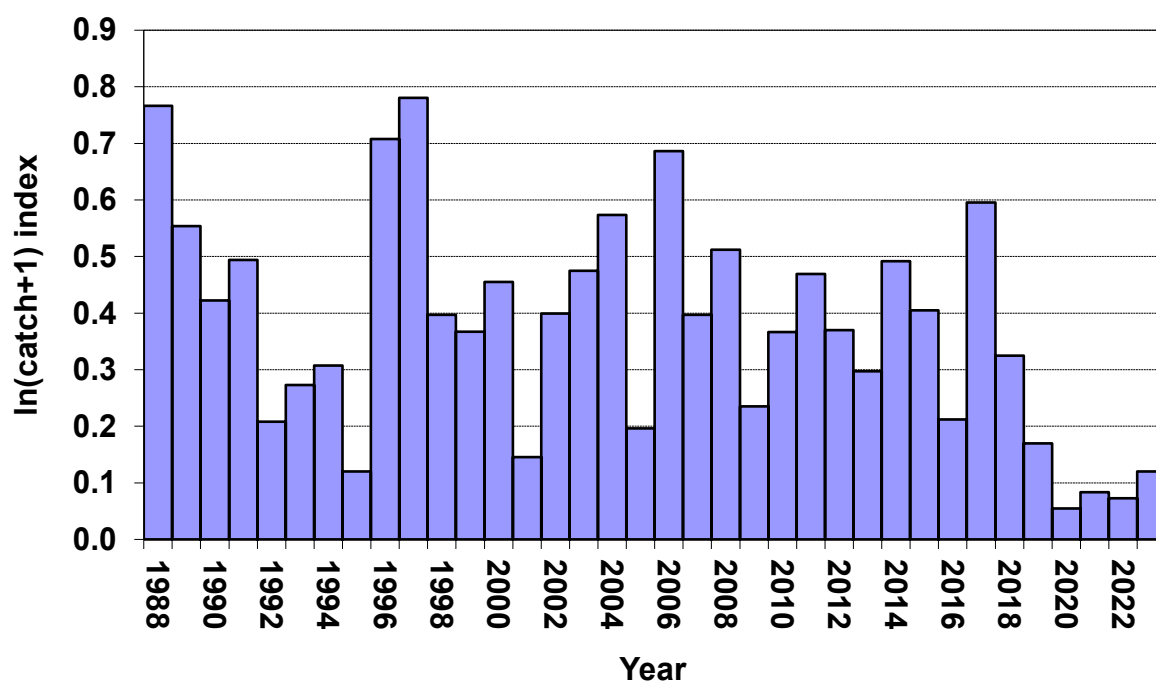


Figure 4. Maryland commercial bluefish landings (Source: Joseph Myers, ACCSP, personal communication).

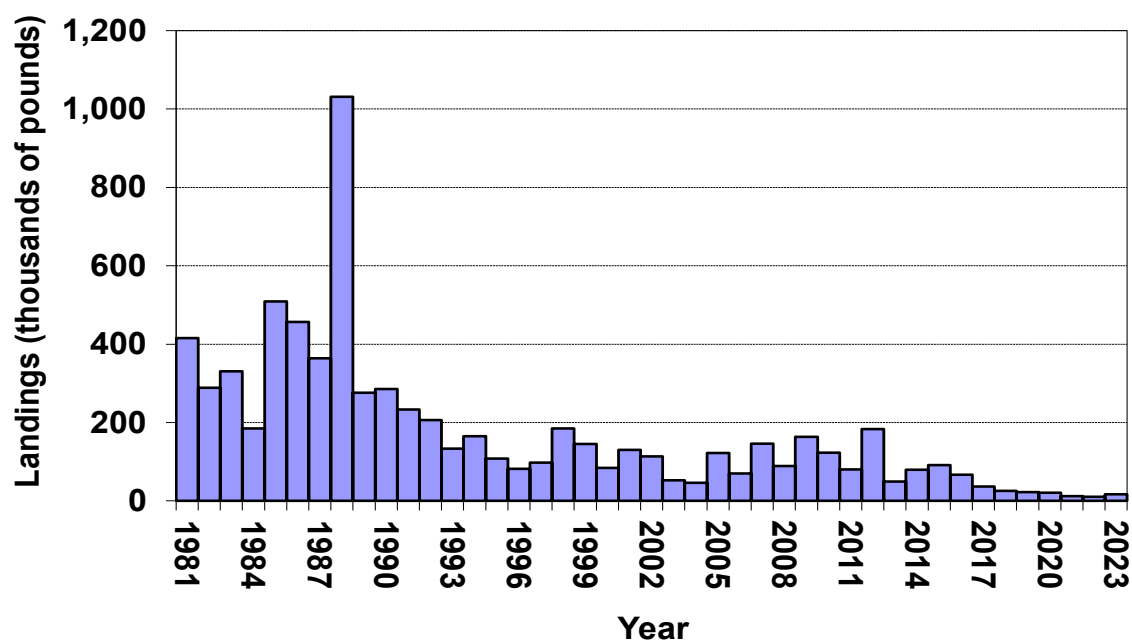


Figure 5. Maryland recreational bluefish harvest, Type A+B1.

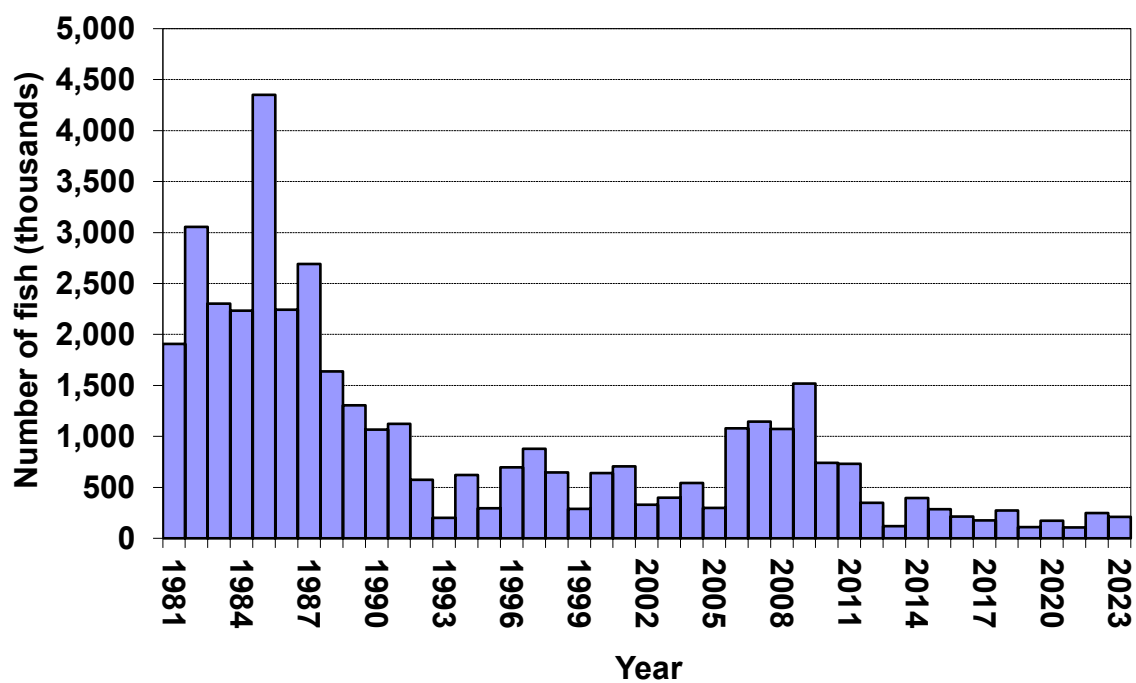
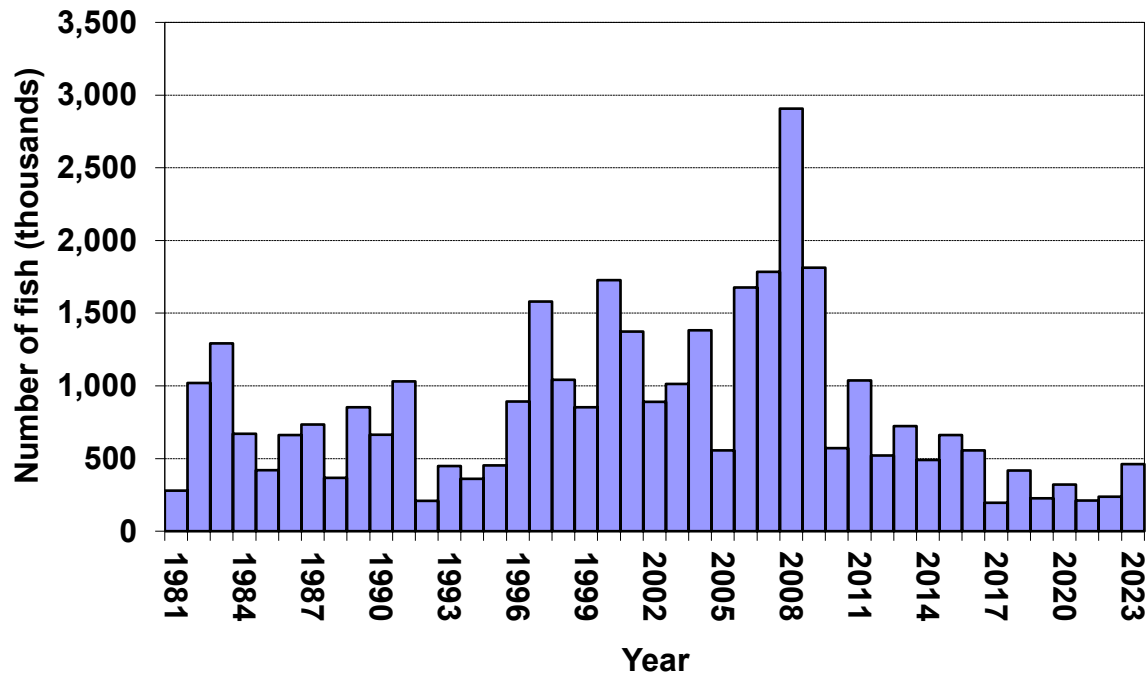


Figure 6. Maryland recreational bluefish live discards, Type B2.



Confidential Information in Red Font



Maryland's 2023 Horseshoe Crab (*Limulus polyphemus*) Compliance Report
to the Atlantic States Marine Fisheries Commission
July 1, 2024

Wes Moore
Governor

Josh Kurtz
Secretary

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Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

06/2024

DNR

I. Introduction

The Interstate Fishery Management Plan for Horseshoe Crab was approved and adopted by the Atlantic States Marine Fisheries Commission on October 22, 1998. The goal of the fishery management plan is to conserve and protect the horseshoe crab resource for continued use over time by maintaining sustainable levels of spawning stock biomass to ensure its continued role in the ecology of coastal ecosystems. The Maryland harvest limit of 255,980 male only horseshoe crabs has not changed since 2013.

II. Request for *de minimis* status

Not Applicable.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

No fisheries dependent monitoring in 2023.

B. Fishery Independent Monitoring

The department conducted a monthly trawl survey from April through October 1990 through 2019, 2021-2023, and May through October 2020 (Figure 1). Horseshoe crabs have demonstrated a stable trend though this period in the Maryland coastal bays.

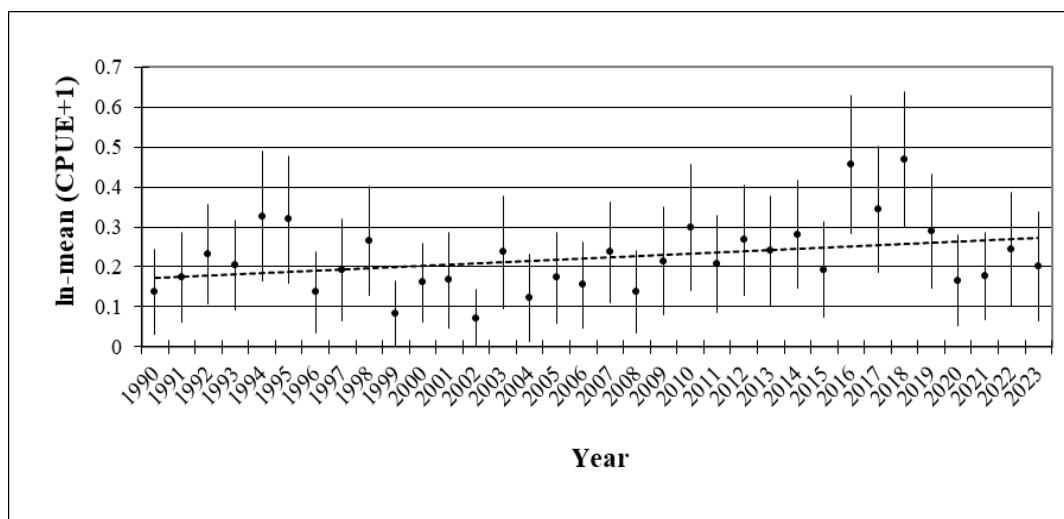


Figure 1. Horseshoe crab trawl index of relative abundance (geometric mean) with 95% confidence intervals (1990 - 2023). Dotted line represents the 1990 - 2023 time series grand mean (1990-2019, 2021-2023 $n = 140/\text{year}$, 2020 $n = 120$).

The department, working with the Maryland Coastal Bays Program, completed the annual horseshoe crab spawning survey last spring. Indices of spawning activity were developed and included in the annual spawning report from the [Maryland Coastal Bays Program](#).

C. Previous Year's Fishery and Management Program

Bait Fishery

There are two classes of horseshoe crab harvesters, permitted and non-permitted. Ten horseshoe crab permits were issued in 2023. All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. Permit holders were required to report weekly numbers landed by sex, area of harvest and gear type. Non-permit holders were restricted to no more than 25 male horseshoe crabs per day during an open season and were required to report this information using the department's monthly commercial logbooks.

Maryland's horseshoe crab fishery was governed by the Code of Maryland Regulations 08.02.10.01 ([Appendix A](#)). A public notice was issued to set the quota, season and catch limits.

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
Commercial Horseshoe Crab Fishery — Effective 5/1/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the quota, season, and catch limits for the 2023 — 2024 commercial horseshoe crab fishery.

QUOTA

The annual total allowable landings of male horseshoe crabs for the commercial fishery is 255,980. There is no female harvest permitted.

SEASON AND CATCH LIMITS

1. An individual may not land more than 25 male horseshoe crabs unless they are in possession of a valid horseshoe crab landing permit.
2. A permittee shall harvest horseshoe crabs according to the tier specified on their horseshoe crab landing permit.

Male Horseshoe Crab Season and Daily Limits by Permit Type						
Date	Area Open to Harvest	Permit Type				
		No Permit	Tier 1	Tier 2	Tier 3	Tier 4
May 1, 2023 through July 9, 2023	Atlantic Ocean between 1 and 3 miles from the coast Maryland's coastal bays and their tidal tributaries	25	150	150	150	150
July 10, 2023 through November 30, 2023	All Maryland waters	25	150	200	1500	2500
December 1, 2023 through April 30, 2024	Closed	No Harvest Allowed				

WHY THIS IS NECESSARY

This is necessary to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crabs.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch horseshoe crabs commercially.

EFFECTIVE TIME AND DATE

This notice is effective at 12:01 a.m. May 1, 2023.

AUTHORITY

Code of Maryland Regulations 08.02.10.01

Josh Kurtz
Secretary of Natural Resources

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. In 2023, four companies obtained a scientific collection permit. Three of those permits were utilized. There were two primary dealers that handled the biomedical horseshoe crabs therefore the biomedical collection data on the state level was confidential.

Scientific and Educational Research

The University of Maryland’s Center for Environmental Science Institute of Marine and Environmental Technology (IMET) lab hatched a small number of horseshoe crab eggs and experimented with raising the juvenile horseshoe crabs.

D. Harvest by Gear Type

Commercial Landings

In 2023, Maryland’s horseshoe crab bait fishery reported a harvest of 186,466 male horseshoe crabs. The quota was 225,980 ([Appendix B](#)). A conversion of 2.12 pounds per male crab is used to calculate total pounds. Horseshoe crabs were mostly harvested by bottom trawls, with a small number coming from gill nets. Landings data were compiled from Maryland commercial finfish logbook data and Maryland horseshoe crab permit data as of April 1, 2024.

Table 1. Summary of Maryland’s preliminary 2015 - 2023 Horseshoe Crab Bait Fishery Landings. Source: Maryland commercial logbooks and permit cards.

Harvest	Year						
Category	2017	2018	2019	2020	2021	2022	2023
Number Males	237,146	66,647	145,907	61,165	181,040	84,627	186,466
Total Pounds	502,749	141,291	309,323	129,670	383,814	179,410	395,308

Biomedical data

Confidential data from three biomedical companies and two dealers were summarized in Table 2.

Table 2. Confidential Horseshoe Crab Biomedical Collection Reporting Worksheet Summary, Fishing Year 2023.

Biomedical Company/ies: Maryland combined collections				
	Male	Female	Sex Unidentifiable	Total
Number of horseshoe crabs rejected onboard vessel due to mortality	C			
Number of horseshoe crabs transported to bleeding facility				
Number horseshoe crabs rejected at bleeding facility due to mortality				
Number of horseshoe crabs bled				
Number of horseshoe crabs found dead at time of release				
Number of bled horseshoe crabs that entered the bait fishery after bleeding				

Recreational Landings

There were no recreational landings of horseshoe crabs.

Progress in Implementing Habitat Recommendations

There were no habitat recommendations for the plan. Department staff, collaborating with the Maryland Coastal Bays Program and Worcester County, continues to work on cooperative projects that display how shore stabilization can be achieved with soft shorelines, creating, or protecting horseshoe crabs spawning habitat.

IV. A. Planned management programs for the current calendar year.

The current harvest limit is 255,980 male horseshoe crabs with no female harvest. Regulations and monitoring comply with Addendum III and are detailed in the plan specific monitoring program requirements.

Monthly reporting of all harvest (including, but not limited to: bait fisheries, bycatch, biomedical industry, and scientific and educational research).

Bait Fisheries

All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. In 1998, the department established a horseshoe crab landing permit and issued permits to individuals who landed horseshoe crabs in Maryland during 1996 ([Appendix C](#)). This monitoring will continue in 2024.

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. Maryland requires a reporting form to follow each batch of horseshoe crabs collected for biomedical use, from the time of capture through the time of release. This form is returned to the department and reviewed by a staff biologist. A biologist will periodically examine the biomedical horseshoe crabs and bleeding facilities. The reporting forms are examined for completeness and for information on horseshoe crabs rejected at all stages of the bleeding process. This monitoring will continue in 2023.

Scientific and Educational Research

Maryland DNR is going to restart a classroom program where newly hatched horseshoe crabs are supplied to the classrooms of elementary school children to raise and learn about the ecological role and needs of horseshoe crabs. IMET will continue with research of raising horseshoe crabs in captivity, and Anne Arundel community college will hold a small number of horseshoe crabs to look at DNA as a marker for horseshoe crab fidelity to spawning areas.

Identify horseshoe crab mortality associated with the biomedical industry up to the point of release.

Biomedical companies will keep track of mortality at each stage of the collection bleeding and return to sea process and report the number bled by month and sex to the Maryland Department of Natural Resources at the end of each year.

Certify that horseshoe crabs collected for biomedical use are not used for other purposes.

The Maryland scientific collection permit required all horseshoe crabs collected for limulus amoebocyte lysate production, to be returned alive to the waters from which they were collected within 48 hours of collection. In 2004, regulation changes allowed the use of bait crabs for blood collection and the return of these crabs to the bait fishery. In 2023, no horseshoe crabs were bled and then returned to the bait fishery in Maryland.

Continue existing benthic sampling programs. States with juvenile trawl surveys should include these data in annual monitoring reports.

The department will continue to collect horseshoe crab data from Maryland's Trawl and Beach Seine surveys. Data will be collected monthly from April to October with a 16-foot otter trawl and in June and September with a 100 foot beach seine.

Implement a pilot program to survey horseshoe crab eggs in New Jersey and Delaware by the 1999 spawning season.

This component was not mandatory for Maryland.

A coordinated tagging program should be implemented by the Tagging Subcommittee. Two laboratories participated in the U.S Fish and Wildlife Service

coast-wide tagging program using horseshoe crabs collected and released in Maryland waters.

Implement a pilot program to survey horseshoe crab spawning in New Jersey, Delaware, and Maryland by the 1999 horseshoe crab spawning season.

Please reference the next section.

Identify potential horseshoe crab spawning and nursery habitat.

Since 2002, the Maryland Coastal Bays Program, part of the National Estuary Program, has coordinated a volunteer horseshoe crab spawning survey in the Maryland coastal bays. The department assisted the Maryland Coastal Bays Program with conducting the survey, which is a continuation of preliminary work done by the state beginning in 1998. The survey results show variation in areas where the horseshoe crabs spawn and the timing. Volunteers collect temperatures during the surveys to better understand the horseshoe crab spawning behavior in Maryland's coastal bays. This survey will be continued in 2024.

V. Law Enforcement Requirements

Not Applicable

APPENDIX A

Maryland's 2023 Horseshoe Crab Regulations

COMAR [08.02.10.01](https://dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx) (<https://dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx>)

A. Quota.

(1) The annual total allowable landings of horseshoe crabs for the commercial fishery shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

(2) Any annual overages in the fishery will be deducted from the total fishery allotment for the following year.

B. Seasons. The season for harvesting horseshoe crabs shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

C. Time Restrictions. A person may not catch or land horseshoe crabs on Saturday or Sunday.

D. Catch Limits.

(1) A person that does not possess a valid Maryland horseshoe crab landing permit may not catch, possess, or land more than 25 horseshoe crabs per day.

(2) An individual may not catch or possess female horseshoe crabs.

(3) The catch limit for individuals in possession of a valid horseshoe crab landing permit shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

E. Horseshoe Crab Landing Permit.

(1) No more than ten horseshoe crab landing permits may be issued by the Department. The number of horseshoe crab landing permits is based on the reported catch and landing records of horseshoe crabs in Maryland during 1996.

(2) The Department may issue a permit to catch and land horseshoe crabs in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, and:

(a) Declared or was eligible to declare, in the previous year, an intent to fish for horseshoe crabs in accordance with this section and has not transferred the permit; or

(b) Received a horseshoe crab landing permit through a permanent business transfer in accordance with §E(6) of this regulation.

(3) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for horseshoe crabs by May 1 of each year.

(b) A tidal fish licensee who has not declared by May 1 of the current year, and who has not declared by the May 1 deadline in any of the 3 preceding years, may apply until May 14 of the current year, or the next business day if May 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the May 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the registration time period established in this subsection.

(4) The daily catch limits shall be printed on the horseshoe crab landing permit.

(5) A permittee shall possess the horseshoe crab landing permit when engaged in permitted activities.

(6) Transfer of a Landing Permit.

(a) The Department may approve the permanent or temporary transfer of a landing permit to a person who applies to the Department requesting the transfer on forms provided by the Department.

(b) At the end of the specified temporary transfer time period the permit automatically returns to the original permittee.

(7) A horseshoe crab landing permit may only be transferred to a person who:

(a) Is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland; and

(b) Is not currently a permit holder.

(8) Regardless of the number of authorized individuals with Maryland horseshoe crab permits on board any one vessel, no more than two horseshoe crab quotas may be harvested from one vessel per trip.

F. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a horseshoe crab landing permit shall record the harvest of horseshoe crabs on the permit daily and submit the completed permit to the Department in the time frame specified on the form.

(2) The Department may deny an application for a horseshoe crab landing permit for failing to comply with §F(1) of this regulation during the previous season.

G. General.

(1) A person authorized to catch and release horseshoe crabs for purposes of scientific research:

(a) Shall return within 48 hours the live horseshoe crabs to the waters from which the horseshoe crabs were taken; and

- (b) Is exempt from §§A—E of this regulation.
- (2) A person who purchases horseshoe crabs for purposes of scientific research may:
 - (a) Return the horseshoe crabs to the harvester for use or sale as bait;
 - (b) Return or sell the horseshoe crabs to a bait dealer; or
 - (c) Return the horseshoe crabs live to tidal waters.
- (3) The Secretary may establish or modify catch limits, quotas, and seasons for horseshoe crabs in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crab by issuing a public notice on the Fisheries Service website.
- (4) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.
- (5) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected individual has a reasonable opportunity to be informed.
- (6) A violation of the restrictions set by the Secretary in accordance with §G of this regulation is a violation of this regulation.

APPENDIX B

Summary of Maryland's 2023 Horseshoe Crab Bait Fishery

1. 2023 QUOTA

- 255,980 Horseshoe Crabs

2. 2023 HARVEST

- Total: 186,466 HSCs/395,308 pounds (2.12 lbs. per male horseshoe crab)
- Percent of MD quota: 73%

3. NUMBER OF FISHERMEN

- Permittees: 10
- Trawl (7), Gill net (3)

4. SEX RATIO OF HARVEST

- Female: 0%
- Male: 100%

5. AREA OF HARVEST

- Chesapeake Bay: <1%
- Atlantic Ocean: 100%

6. METHOD OF HARVEST

- Trawl Net 96.5%
- Gill Net 3.5%
- Clam Dredge <1%

7. MONTHLY HARVEST

Month	Number of Males
April	
May	2,637
June	4,353
July	49,467
August	67,389
September	34,928
October	18,537
November	1,705
Total	186,466

APPENDIX C
Example of a 2023 Horseshoe Crab Landing Permit

MAY			
I.	<u>WEEK 1</u>		
II.	<u>(5/1/23 TO 5/3/23)</u>		
III.	<u>MARYLAND DEPARTMENT OF NATURAL RESOURCES</u>		
IV.	<u>FISHING AND BOATING SERVICES</u>		
2023 HORSESHOE CRAB LANDING PERMIT MAXIMUM DAILY ALLOWABLE LANDING LIMIT: 150 HORSESHOE CRABS			
V.	<u>FISHERIES SERVICES</u>		
NAME STREET CITY, STATE ZIP			
		LICENSE # 99999	
AREAS OF HARVEST		VI. <u>GEAR USED</u>	
A = Chesapeake Bay B = Coastal Bays C = Ocean, < 1 Mile	D = Ocean, 1 – 3 Miles E = Ocean, 3 – 12 Miles F = Ocean, 12+ Miles	1 = Trawl 2 = Gill Net, Drift 3 = Gill Net, Anchor	4 = Pound/Fyke Net 5 = Hand 6 = Other, Specify
DATE	# OF FEMALES	# OF MALES	# NOT SEXED
AREA OF HARVEST	GEAR USED	SEAFOOD DEALER #	
5/1/2023			
5/2/2023			
5/3/2023			

RETURN WITHIN 3 DAYS AFTER THE WEEK IS OVER TO:

Maryland Department of Natural Resources
Fishing and Boating Services B-2
Attn: Horseshoe Crab Monitoring
580 Taylor Avenue
Annapolis, MD 21401
Fax #: 410.260.8279
Attn: Chris Jones, Horseshoe Crab Monitoring

INSTRUCTIONS TO PERMITTEE

- 1) Your name, address, license number, permit number, and daily maximum allowable landing limit appears in the top section of this permit.
- 2) Write the number of female and male horseshoe crabs in the **NUMBER OF FEMALE** and **NUMBER OF MALE** space.
- 3) Write the number of horseshoe crabs, which were not sexed in the **NUMBER NOT SEXED** space.
- 4) Write the area of harvest using the letter codes on top of the permit in the **AREA OF HARVEST** space.
- 5) Write the gear used to harvest the horseshoe crabs using the numeric codes on the top of the permit in the **GEAR USED** space.
- 6) If horseshoe crabs are sold to a seafood dealer, write the dealer's ID number in the **SEAFOOD DEALER'S ID NUMBER** space.
- 7) You are responsible for the accuracy of any and all information recorded on this permit.
- 8) You must return this permit to the Department of Natural Resources (address and fax number below) within 3 days after the week is over. Failure to do so, **even if "0" horseshoe crabs are landed**, could result in the revoking of your permit.

VII. HORSESHOE CRAB TAG RECAPTURES

Tag Number	Date Recovered	HSC Kept/Released	Tag Kept/Mailed/Disposed

If you need additional information or have questions please call:
Chris Jones 410.260.8343 or 800.620.8DNR x.8343



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Red Drum (*Sciaenops ocellatus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2023

Prepared by

Matthew B. Jargowsky

Maryland Department of Natural Resources
Fishing and Boating Services

June 12, 2024

Red Drum Compliance Report Template
Due Date: July 1
States/Jurisdictions: New Jersey – Florida

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Maryland's commercial fishery landed C pounds of red drum in 2023 (Figure 1).

Recreational Fishery

Maryland landed 38,624 lbs. of red drum in their recreational fishery in 2023 (PSE = 44.7).

Maryland landed 17,896 red drum in their recreational fishery in 2023 (PSE = 44.8; Figure 2).

Maryland released 98,536 red drum in their recreational fishery in 2023 (PSE = 48.5; Figure 3).

All of the preceding recreational estimates were downloaded from the MRIP website. (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division).

Licensed charter boat captains in Maryland are required to keep log books of their clients' catch. Log books from 2023 indicate 103 red drum were caught, 33 of which were harvested (Figure 4). Charter boat red drum catches were reported every year from 1993-2023, except for 1996.

III. Fishery Monitoring Program

- a. Summarize fishery dependent monitoring programs including bycatch monitoring programs.

Maryland conducted weekly monitoring of commercial pound nets in Maryland's portion of the Chesapeake Bay from May 23, 2023, through September 19, 2023, and then sporadic monitoring through November 30, 2023. Seventy-one red drum were measured in 2023, averaging 539 millimeters TL and ranging from 270 to 1115 millimeters TL (Figure 5).

- b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland did not conduct fishery independent monitoring for red drum in 2023.

IV. Management Programs

- a. Summarize any regulatory changes from the previous year or planned changes for the current year. States with a commercial landings cap, please report any overages and the payback schedule.

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

08.02.05.16

.16 Red Drum.

Commercial

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a commercial licensee may not catch or possess red drum less than 18 inches in total length or greater than 25 inches in total length.
- A commercial licensee may not catch or possess more than five red drum per day.

Recreational

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a person may not catch or possess red drum less than 18 inches in total length or greater than 27 inches in total length.
- A person may not catch or possess more than one red drum per day.

V. Law Enforcement Reporting Requirements

Please include in this section any major law enforcement issues related to red drum that occurred in the previous calendar year.

N/A

Figure 1. Commercial red drum landings reported to Maryland DNR, 1981-2023.

Redacted due to confidential data.

Figure 2. MRIP harvest estimates for red drum in Maryland, 1981-2023.

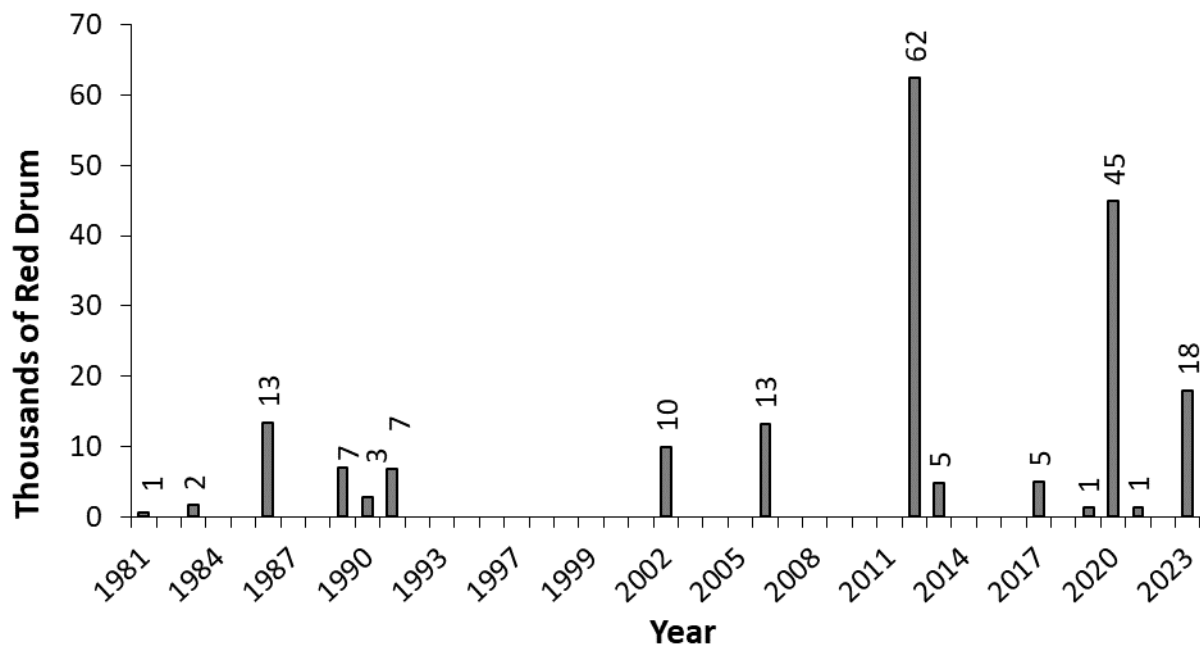


Figure 3. MRIP release estimates for red drum in Maryland, 1981-2023.

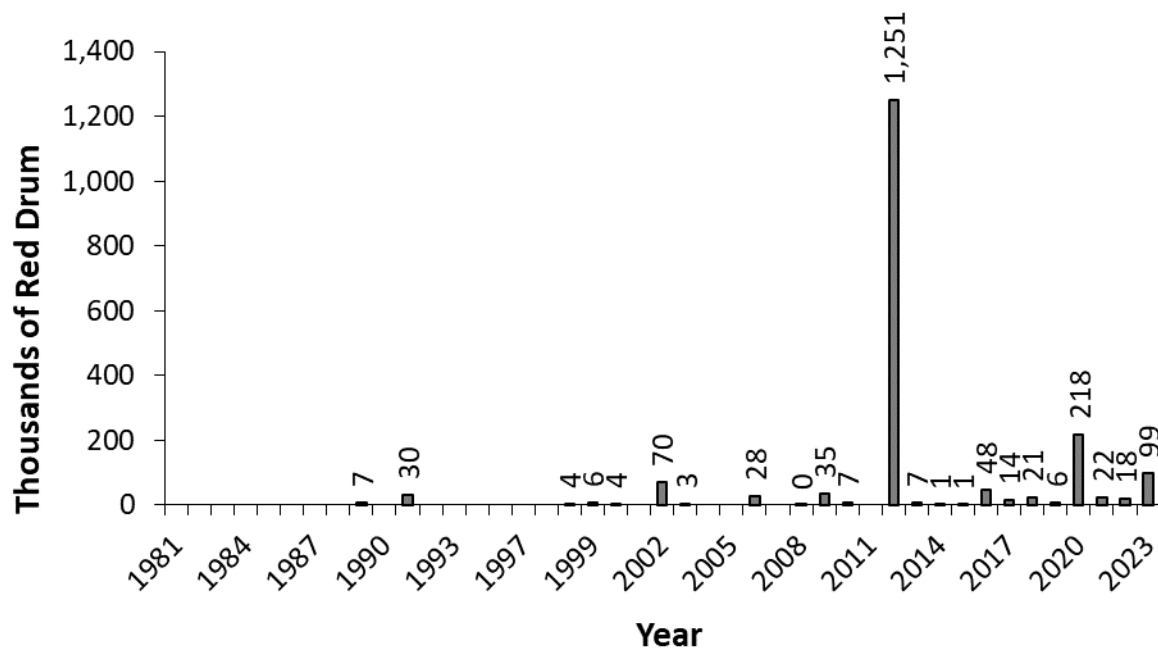


Figure 4. Red drum harvest and releases reported from Maryland's charter boat fishery in numbers, 1993-2023.

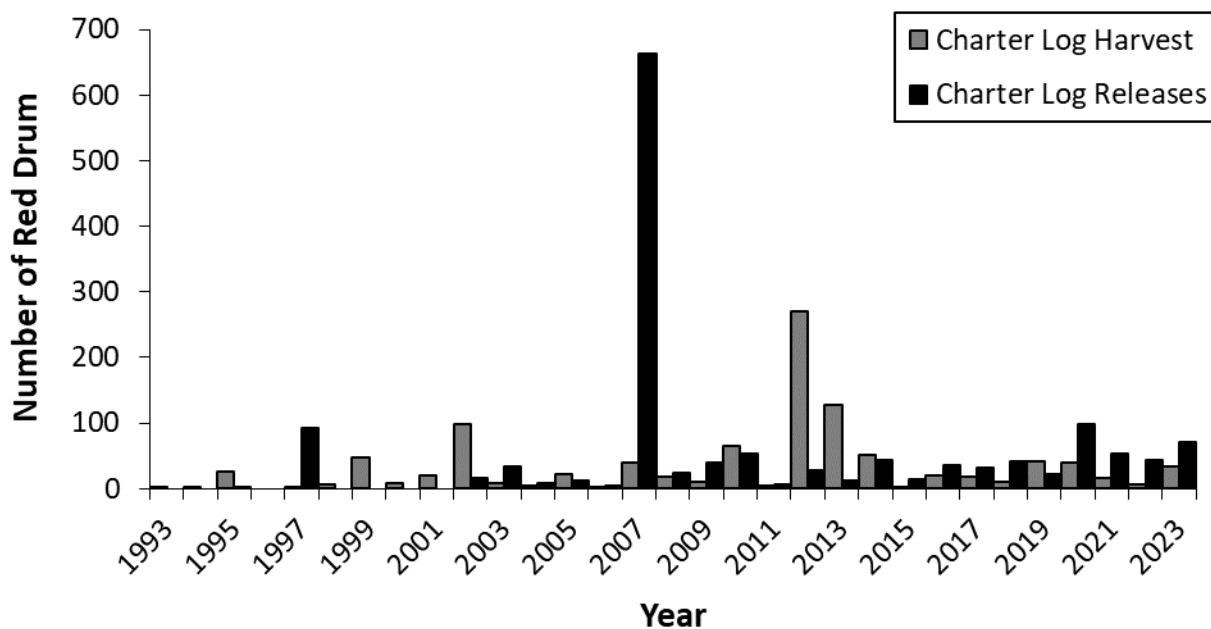
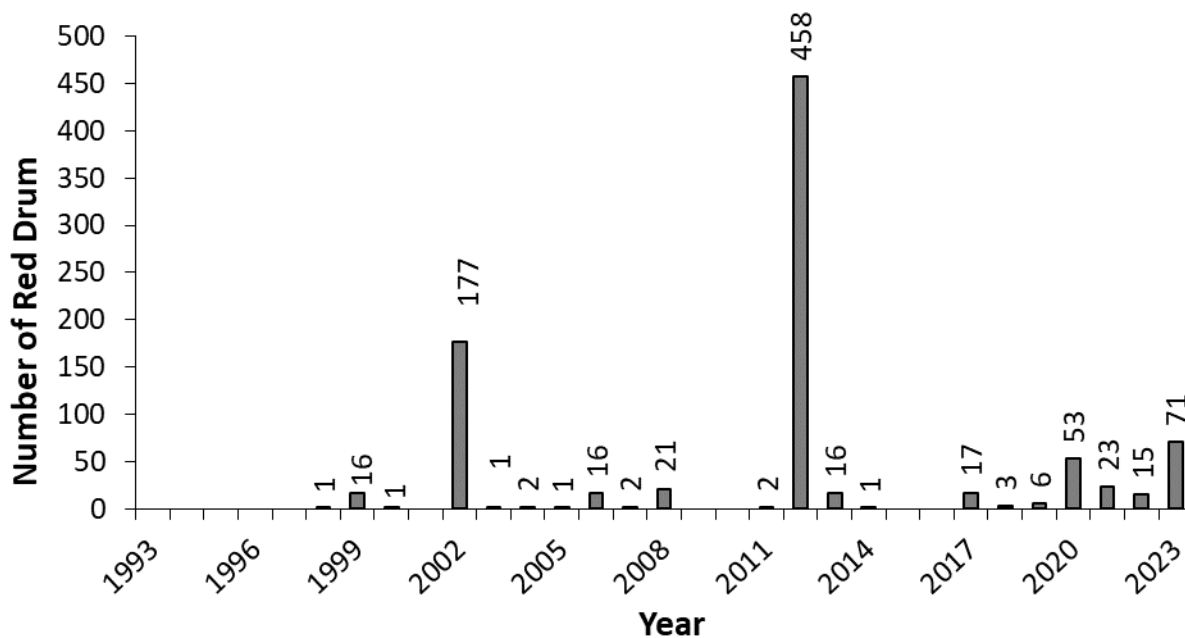


Figure 5. Red drum caught in commercial pound nets monitored by Maryland DNR biologists, 1993-2023.





Maryland's 2023 Scup (*Stenotomus chrysops*) Compliance Report to the
Atlantic States Marine Fisheries Commission
June 2024

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

This program receives Federal financial assistance from the U.S. Fish and Wildlife Service. Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, or disability.

If you believe that you have been discriminated against in any program, activity, or facility, or if you need more information, please write to:

Office of Fair Practice
Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2024

DNR

I. Introduction

The recreational (35 percent) and commercial (65 percent) scup allocations were updated with the approval of Amendment 22 (September 2022). These changes were effective January 2023. The 2023 management track stock assessment indicated the stock is not overfished nor experiencing overfishing. Spawning stock biomass estimated at 436 million pounds in 2022 is over two times the target of 173 million pounds.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2023 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by the Maryland Fishing and Boating Services via weekly reports of dealer transactions to the National Oceanic and Atmospheric Administration.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating Services has managed the Access Point Angler Intercept Survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Maryland has conducted juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. A total of 140 trawls and 38 beach seine hauls were conducted annually. In 2023, zero scup were collected by trawl or beach seine.

Regulations

Two scup public notices were issued in 2023. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx.

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2023 Recreational Scup Catch Limit — Effective 6/19/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces a modification to the recreational scup catch limits for the Atlantic Ocean, its coastal bays, and their tributaries. Effective 12:01 a.m. June 19, 2023, an individual may not catch or possess more than 40 scup per day.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

https://asmfc.org/files/Meetings/SFlounderScupBSBboardMarch2023/SFlounderScupBSB_Board_MtgSummary_March2023.pdf

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch scup recreationally.

AUTHORITY

Code of Maryland Regulations 08.02.05.22

Josh Kurtz
 Secretary of Natural Resources

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2023 Recreational Scup Size Limit — Effective 1/1/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces a modification to the recreational minimum size limit for scup.

2023 SCUP RECREATIONAL SIZE LIMIT

The recreational size limit for scup for the 2023 season is nine inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch scup recreationally.

EFFECTIVE TIME AND DATE

This change is effective at 12:01 a.m. January 1, 2023. The National Marine Fisheries Service anticipates modifications to the scup fishery for 2023. If changes are made, the Atlantic States Marine Fisheries Commission will follow with modifications for state waters. A new public notice will be issued if modifications are made.

AUTHORITY

Code of Maryland Regulations 08.02.05.22

Jeannie Haddaway-Riccio
 Secretary of Natural Resources

Code of Maryland Regulations**A. Minimum Size.**

- (1) Recreational. A recreational angler may not catch or possess a scup less than 8 inches in total length.
- (2) Commercial. A commercial tidal fish licensee may not catch or possess scup less than 9 inches in total length.

B. Commercial Gear Restrictions.

- (1) Trawls.
 - (a) Except for a person landing less than a total of 500 pounds of scup from November 1 through April 30 or 100 pounds of scup from May 1 through October 31, a person may not use a trawl with:
 - (i) Mesh less than 5 inch stretched mesh size;
 - (ii) More than 25 meshes in the codend with more than 100 continuous meshes of 5 inch mesh forward of the codend; or
 - (iii) Mesh size less than 5 inches throughout the trawl net for trawl nets with codends less than 125 meshes.
 - (b) A person may not use a roller rig trawl with a roller diameter in excess of 18 inches to catch scup.
- (2) Pots and Traps. A pot or trap used to catch scup shall have:

- (a) An escape vent of at least a:
 - (i) 3.1 inch diameter round opening, or
 - (ii) 2.25 inch square opening; and
- (b) Hinges or fasteners on one panel or door made of one of the following degradable materials:
 - (i) Untreated hemp or jute string of 3/16 inch in diameter or smaller,
 - (ii) Magnesium alloy fasteners, or
 - (iii) Ungalvanized or uncoated iron wire of 0.062 inch in diameter or smaller.

C. Catch Limits.

- (1) Commercial Catch Limits. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.
- (2) A commercial tidal fish licensee may not catch, possess, or land more pounds of scup daily than as set forth in §C(1) of this regulation.
- (3) Recreational Catch Limits. An individual may not catch or possess more than 50 scup per day.

D. General.

- (1) The Secretary may modify or set a season or catch limit by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.
- (2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Table 1. State compliance with the required commercial measures as mandated in the FMP

Has the state implemented the required measure?	
9" minimum size	Yes
5.0" minimum diamond mesh	Yes
Threshold to trigger minimum mesh requirements: (1,000 lbs 10/1 – 4/14, 2,000 lbs from 4/15-6/15, 200 lbs from 6/16 to 9/30)	More restrictive
3.1" circular escape vents, 2.25" square escape vent, or rectangular escape vent of equivalent size.	Yes

Harvest

Commercial Fishery

Maryland's 2023 preliminary commercial scup harvest was 92,230 pounds harvested by otter trawl and pot (Table 2; Source: Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

Recreational Fishery

Maryland's 2023 recreational scup harvest was estimated at 13 fish (PSE 75.2) with a combined weight of 34 pounds (PSE 84.1); National Marine Fisheries Service, Fisheries

Statistics and Economics Division, Personal communication, April 22, 2024).

IV. Planned Management for 2024

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as in 2023. The recreational minimum size will remain at 9 inches and the catch limit will decrease to 30 fish in 2024.

B. Summary of Monitoring Programs that will be in Effect

Same as 2023, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Fisheries Statistical Survey. Accessed on April 22, 2023.
<https://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Northeast Fisheries Science Center. 6-05-23. Scup 2023 Management Stock Assessment Report.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland's 2023 Compliance Report:

American Shad (*Alosa sapidissima*)

Hickory Shad (*Alosa mediocris*)

Alewife Herring (*Alosa pseudoharengus*)

Blueback Herring (*Alosa aestivalis*)

Submitted to
Atlantic States Marine Fisheries Commission

Prepared by

Matthew B. Jargowsky
Maryland Department of Natural Resources
Fishing and Boating Services

matthew.jargowsky@maryland.gov

6/12/2024

American Shad

I. Introduction

Fishery independent surveys for the Susquehanna River and Potomac River spawning stocks were conducted as usual and juvenile abundance surveys were completed in all locations. Fishery dependent monitoring of the recreational catch and release fishery was assessed using statewide voluntary angler logbooks and a roving creel survey at Conowingo Dam. The Nanticoke River spawning stock survey will no longer be conducted moving forward due to logistical issues, making the terminal year of the survey 2021.

II. Request for *de minimis*, where applicable.

NA

III. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	American Shad Losses		
	Number of fish	Weight (lbs) ³	Mean Weight (lbs)
Commercial TOTAL	4,200	8,400	NA
Directed landings	0	0	
Estuarine/State waters bycatch ¹	4,200	8,400	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Non-harvest TOTAL	1,262	2,524	NA
Fish passage mortality ²	1,262	2,524	
Brood stock capture	0	0	
Research losses	0	0	
TOTAL LOSSES	5,462	10,924	NA

¹ Extrapolated from American shad observed mortalities from pound nets in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

² Includes turbine mortality, lift mortality, trap and transport mortality, holding mortality and those sacrificed for otoliths at Conowingo Dam.

³ Reported weights were calculated by multiplying the number of fish by an estimated 2 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational harvest, catch and release only
Landings	NA	
Harvest Composition	NA	
Effort	Y	Monitored via voluntary catch and release angler logbooks and a roving creel survey
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (Susquehanna River/upper Chesapeake Bay)	Y	
Spawning stock survey (Nanticoke River)	Y	Survey conducted by Delaware
Spawning stock survey (Potomac River)	Y	
Calculation of mortality and/or survival estimates (Susquehanna River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (Nanticoke River)	Y	Survey conducted by Delaware
Calculation of mortality and/or survival estimates (Potomac River)	Y	
Juvenile abundance survey(s)	Y	
Hatchery evaluation	Y	

C. Sustainability Evaluation

NA

IV. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

The Nanticoke River pound and fyke net spawning stock survey was not conducted again in 2023 due to the watermen traditionally used for the survey not fishing. It is unlikely that these watermen will fish again in the future, so Maryland is exploring options for alternative surveys. The Nanticoke River is monitored jointly by Maryland and Delaware, who monitor the American shad spawning stock through an electrofishing survey, so all monitoring requirements under Amendment 3 will still be satisfied as long as Delaware continues their survey. The alternative survey will likely be a fishery-independent survey for river herring. This is because the pound and fyke net survey was a better source of river herring spawning stock data than American shad data, and Maryland already has two other American shad spawning stock surveys, but only one river herring spawning stock survey.

V. Progress in implementing habitat recommendations

The Maryland Department of Natural Resources' (DNR) Fish Passage Program (FPP) continues to prioritize the removal of stream barriers that inhibit aquatic organism migrations. To date, most of the blockages to American Shad in Maryland have fish ladders or have been removed. The removal of Bloede Dam in 2019 was deemed a huge success. There have yet to be quantifiable benefits to American shad, though river herring have been detected upstream of the dam removal site, but the removal is an important milestone in the program as they continue to push for more dam removals in Maryland. The FPP is also in discussions with Maryland Department of the Environment (MDE) Dam Safety about how to increase coordination between DNR/MDE to further dam removals with anticipation of infrastructure grants. The FPP is also seeking opportunities for more dam removals through a Mitigation Banking Tool that is being developed by the United States Army Corps of Engineers. Lastly, the FPP has several smaller dam removals in the works now to benefit river herring, which may also tangentially benefit American shad. Plans to improve fish passage at Conowingo Dam were also initiated as part of the 2021 FERC license, but these plans are currently on hold after the U.S. Court of Appeals vacated the license due to issues surrounding a water quality certification.

A. Habitat protection and restoration

The Maryland DNR completed an update to the ASMFC American shad habitat plan, which was approved by the board at the February 2021 meeting. Spawning and rearing habitat estimates were updated with input from the Maryland DNR Fisheries Habitat and Ecosystem Program. The plan identified that the major impediments to American shad recovery in Maryland are hydroelectric dams on the Susquehanna River and habitat degradation associated with watershed development. New information pertaining to the impacts of water withdrawals, channelization, dredging, competition and predation were also added to the habitat plan.

B. Land Use

Maryland DNR Land Acquisition and Planning works to conserve land resources and ecosystems that serve vital ecological, economical and recreational needs for Maryland citizens through a number of programs. As of February 20, 2024, approximately 1.86 million acres of land in Maryland have been protected through the purchase and donation of conservation easements and fee-simple acquisitions.

Hickory Shad

VI. Introduction

Hickory shad spawning stock data was not collected by the Maryland DNR Fish Health and Hatcheries Program (FHHP) in 2023 due to issues with fish collection. An index of abundance for hickory shad in the upper Chesapeake Bay was calculated using data from fishery-independent gill nets targeting striped bass. Fishery dependent monitoring of the recreational catch and release fishery in the upper Chesapeake Bay was assessed using statewide voluntary angler logbooks and a roving creel survey.

VII. Request for *de minimis*, where applicable.

NA

VIII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Hickory Shad Losses		
	Number of fish	Weight (lbs) ¹	Mean Weight (lbs)
Commercial TOTAL	0	0	NA
Directed landings	0	0	
Estuarine/State waters bycatch	Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Other TOTAL	0	0	NA
Fish passage mortality	0	0	
Brood stock capture	0	0	
Research losses	0	0	
TOTAL LOSSES	0	0	NA

¹ Reported weights were calculated by multiplying the number of fish by an estimated 1 pound per fish.

B. Completion of Monitoring

Required Monitoring Components	Additional comments
<i>Fishery-Dependent Monitoring</i>	
Commercial Fishery	No commercial fishery.
Landings	NA
Harvest Composition	NA
Effort	NA
Recreational Fishery	No recreational fishery. Catch and release only
Landings	NA
Harvest Composition	NA
Effort	Monitored via voluntary catch and release angler logbooks and a roving creel survey (not required)
<i>Fishery-Independent Monitoring</i>	
Spawning stock survey (upper Chesapeake Bay)	CPUE was examined from this survey (not required)
Calculation of mortality and/or survival estimates (lower Susquehanna River)	Length, age, sex composition, repeat spawning and mortality of hickory shad was examined from this survey (not required; not collected in 2023)

IX. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

River Herring

X. Introduction

Fishery independent monitoring of the alewife and blueback herring spawning stocks in the North East River (upper Chesapeake Bay tributary) and the juvenile abundance survey were completed as usual. The Nanticoke River spawning stock survey will no longer be conducted moving forward due to logistical issues, making the terminal year of the survey 2021. A new survey will be designed to take its place.

XI. Request for *de minimis*, where applicable.

NA

XII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Alewife Losses			Blueback Herring Losses		
	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)
Commercial TOTAL¹	0	0	NA	0	0	NA
Directed landings	0	0		0	0	
Estuarine/State waters bycatch ²	Unknown	Unknown		Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown		Unknown	Unknown	
Recreational TOTAL	0	0	NA	0	0	NA
Directed harvest	0	0		0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown		Unknown	Unknown	
Other TOTAL	70	35	NA	45	23	NA
Fish passage mortality ³	Unknown	Unknown		Unknown	Unknown	
Brood stock capture	0	0		0	0	
Research losses	70	35		45	23	
TOTAL LOSSES	70	35	NA	45	23	NA

¹ Commercial landings are collectively reported as river herring. Landings were split between species.

² There is no mechanism for commercial fishermen to report river herring bycatch mortality under the current reporting system.

³ No turbine mortality estimates are available for river herring.

⁴ Reported weights were calculated by multiplying the number of fish by an estimated 0.5 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (North East River/upper Chesapeake Bay)	Y	
Spawning stock survey (Nanticoke River)	N	Survey not conducted (not required for river herring)
Calculation of mortality and/or survival estimates (North East River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (Nanticoke River)	N	Survey not conducted (not required for river herring)
Juvenile abundance survey	Y	
Hatchery evaluation	NA	

C. Sustainability Evaluation

NA

XIII. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

APPENDICES TO COMPLIANCE REPORT

Appendix A. Fishery Information

I. American Shad

A. Commercial Fishery

i. Characterization of Fishery

The American shad commercial fishery closed in 1980, and the ocean intercept fishery closed in 2005.

ii. Characterization of Directed Harvest

No commercial data have been collected from commercial fisheries since the closure of the ocean intercept fishery in 2005.

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

American shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries. Commercial fishermen are permitted a 2 fish per day allowance of dead American shad for personal use (no sale is permitted). Release mortality of American shad from this fishery can be high.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report American shad as bycatch under the current reporting system; funding and staffing constraints are also factors. Bycatch mortality reported in the harvest and losses table was extrapolated from American shad observed pound net mortalities in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

2. Estimate of composition (length and/or age)

Limited length and age samples were collected from American shad encountered as bycatch in Nanticoke River commercial fisheries up until 2021. These data should not be considered representative of statewide bycatch composition.

B. Recreational Fishery

i. Characterization of the Fishery

Maryland has permitted a catch and release sport fishery since the closure of the recreational American shad fishery in 1980. American shad anglers are interviewed during the spawning run through a roving creel survey below the Conowingo Dam on the Susquehanna River which provides catch in numbers and hours spent fishing. Shad fisheries throughout Maryland are also characterized through a volunteer logbook survey in which anglers report daily effort and catches.

ii. Characterization of Directed Harvest

Directed recreational harvest of American shad has not been permitted in state waters since 1980.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Total recreational release mortality remains unknown, but the impact of the recreational fishery appears negligible on the recovery of the upper Chesapeake Bay stock.

1. Estimate and method of estimation

A catch and release study was conducted at the Conowingo Dam in 1997 (Lukacovic 1998), and mortality of American shad in the study was 0.97% ($n = 309$). The total catch of American shad from a creel survey in the lower Susquehanna River (Normandeau Associates, Inc. 2011) was 14,831 fish. Using these studies, total recreational release mortality in the lower Susquehanna River can be estimated as 144 American shad per year.

C. Other losses

i. Characterization of Other Losses

1. Research Losses

NA

2. Turbine Mortality

There are two fish lifts operating at the Conowingo Dam, the most downstream dam on the Susquehanna River. All mortality associated with the Conowingo Dam and its fish lifts are included in the fish passage mortality section of the harvest and losses table (III.A). From 1982 to 1996, fish lifted at Conowingo Dam were transported upstream of the four downstream hydroelectric dams on the Susquehanna River. In 1997, the transportation of fish upstream began to be phased out in favor of volitional passage. With volitional passage, fish were emptied from the fish lift into a raceway, which directed fish past a viewing window and into the pool above the dam. In 2001, with all four downstream hydroelectric dams now having fish passage, volitional passage became the only method of upstream passage. In 2021, to prevent the upstream passage of invasive species, American shad and river herring collected in the fish lifts were sorted out for the purposes of upstream transportation. In 2023, 7,493 American shad were successfully transported upstream of the York Haven Dam and 1,919 were successfully transported upstream of the Safe Harbor Dam. Of the 9,412 American shad that were transported upstream, it was estimated that 3,874 fish would attempt to emigrate back through the turbines at the Conowingo Dam (based on turbine mortality estimates for the York Haven Dam, Safe Harbor Dam and Holtwood Dam). From that approximation of American shad, the total Conowingo Dam turbine mortality was estimated to be 969. An additional 202 American shad were sacrificed for life history information and an additional 93 fish were either lift, holding or transport mortalities.

3. Hatchery Propagation

No American shad were removed from waters under the jurisdiction of Maryland for Maryland DNR American shad propagation in 2023.

II. Hickory Shad

A. Commercial Fishery

i. Characterization of Fishery

Maryland's hickory shad commercial fishery closed in 1981.

ii. Characterization of Directed Harvest

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

Hickory shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report hickory shad as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. Estimate of composition (length and/or age)

There are no data available to estimate composition.

B. Recreational Fishery

i. Characterization of the Fishery

Hickory shad are targeted for recreational catch and release fishing in several tributaries of the Chesapeake Bay. Specifically, there is a significant catch and release fishery for hickory shad in the lower Susquehanna River and its tributaries. A roving creel survey below Conowingo dam provides catch in numbers and hours spent fishing for hickory shad for each participating angler. Similar information is collected statewide through a voluntary logbook survey.

ii. Characterization of Directed Harvest

Recreational harvest of hickory shad has not been permitted in Maryland waters since 1981.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Based on limited catch and release mortality rate estimates, recreational fishing mortality appears to be minimal (Lukacovic and Pieper 1998).

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of hickory shad due to practices such as poaching or hook and release.

C. Other losses

- i. **Characterization of Other Losses**

1. **Research Losses**

Hickory shad from the Choptank and Patapsco Rivers are subsampled for otolith examination by the Maryland DNR FHHP.

2. **Turbine Mortality**

Turbine mortality is not a significant source of hickory shad mortality. Since 1991, only 45 hickory shad have been passed upstream of the Conowingo Dam.

3. **Hatchery Propagation**

Adult hickory shad collected by the FHHP with electrofishing gear near Lapidum on the Lower Susquehanna River are sacrificed as broodstock for stocking the Patapsco River and to a lesser extent, the Patuxent River. This did not occur in 2023.

III. River Herring

A. Commercial Fishery

- i. **Characterization of Fishery**

The river herring commercial fishery closed on 26 December 2011.

- ii. **Characterization of Directed Harvest**

Commercial harvest of river herring is not permitted in Maryland.

1. **Landings**

NA

2. **Catch Composition**

NA

3. **Estimation of Effort**

NA

iii. **Characterization of Other Losses**

River herring are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the Chesapeake Bay and various Maryland tributaries. Maryland was monitoring this fishery in the Nanticoke River prior to the moratorium on river herring, and following the moratorium continued to sample river herring from this fishery until 2021.

1. **Estimate and method of estimation**

No data are available to estimate statewide bycatch of river herring in commercial fisheries. There is no mechanism for fishermen to report river herring as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. **Estimate of composition (length and/or age)**

River herring encountered as bycatch in Nanticoke River commercial fisheries were subsampled for length, sex and age from 1989 to 2021.

B. **Recreational Fishery**

i. **Characterization of the Fishery**

A recreational catch and release fishery for river herring is permitted in Maryland, though targeting of river herring is not a common practice. Therefore, mortality due to these catches is considered insignificant.

ii. **Characterization of Directed Harvest**

Directed recreational harvest of river herring is not permitted in Maryland.

1. **Landings and method of estimation**

NA

2. **Estimation of effort or annual CPUE from a subsample**

NA

iii. **Characterization of Other Losses**

The Maryland DNR conducts a roving creel survey in the Susquehanna River. This survey indicates that river herring are not specifically targeted by recreational anglers in the upper Chesapeake Bay. Therefore, hook and line release mortality is considered to be negligible.

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of river herring due to practices such as poaching or hook and release.

C. Other losses

i. Characterization of Other Losses

1. Research Losses

Beginning in 2016, Maryland DNR staff began sacrificing a subsample of river herring from each monitored system to collect otolith samples. Otoliths were recommended as the preferred ageing structure by the most recent river herring stock assessment. These samples will be aged when time allows for training and processing of the structures.

2. Turbine Mortality

Turbine mortality rates for river herring at the Conowingo Dam are unknown, but are likely not a significant source of mortality. Since 2004, a yearly average of just 168 river herring have passed upstream of the Conowingo dam, so very few fish are exposed to turbines during downstream migration. In 2023, 15 alewife and 370 blueback herring were successfully transported upstream of Conowingo Dam.

3. Hatchery Propagation

River herring are not currently removed from waters under the jurisdiction of Maryland for hatchery propagation.

IV. Protected Species (Atlantic sturgeon) bycatch estimates

Atlantic sturgeon bycatch has been zero since the closure of American shad (1980 Chesapeake Bay, 2005 ocean intercept), hickory shad (1981) and river herring (2011) fisheries.

I. Copy of Fishery Regulations for Previous Fishing Year

08.02.05.05

.05 American Shad.

A. Prohibition of Catching, Possession, or Sale of American Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any American shad or any parts of American shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch American shad in cooperation with a scientific investigation of the Department and cooperating persons having a valid scientific collecting permit, including permitted shad egg hatching in approved devices. This person may sell live American shad to the scientific investigation.

(b) The incidental catching of American shad by fishing gear set for other species of fish will not be deemed a violation of this section if the American shad is returned to the water.

(c) Not more than two American shad may be possessed for personal consumption if the shad were found dead when fishing gear operated for other species was retrieved from the water.

B. Possession or Sale of American Shad Lawfully Taken in Another Jurisdiction.

(1) The provisions of §A, of this regulation, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer for sale, or shipment of American shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity demonstrates by substantial evidence that the American shad were lawfully taken and lawfully removed from another jurisdiction.

(2) The requirements of "substantial evidence" as used in §B(1), of this regulation, shall be satisfied by a bill of sale which identifies the American shad as originating from waters not under Maryland jurisdiction.

C. Effective Period of These Sections. On the basis of study findings and interpretations, the Secretary shall annually determine whether the provisions of §A, of this regulation, shall remain in force. At the same time, if those provisions are to remain in force, he shall determine what, if any, changes are necessary.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.05.htm>)

08.02.05.06

.06 Hickory Shad.

A. Prohibition of Catching, Possession, or Sale of Hickory Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any hickory shad or any parts of hickory shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch hickory shad in cooperation with a scientific investigation of the Department.

(b) The incidental catching of hickory shad by fishing gear set for other species will not be considered a violation of this section if the hickory shad is returned to the water.

B. Possession or Sale of Hickory Shad Lawfully Taken in Another Jurisdiction. The provisions of §A, above, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of hickory shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity possesses a bill of sale which identifies the hickory shad as originating from waters not under Maryland jurisdiction.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.06.htm>)

08.02.05.09

.09 River Herring.

A. Definition.

(1) In this regulation, the following term has the meaning indicated.

(2) Term Defined. "River herring" means both alewife herring (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*).

B. An individual may not possess river herring within the jurisdiction of Maryland.

C. Exceptions. The provisions of §B of this regulation do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of river herring which were legally caught in waters not under jurisdiction of Maryland, if the person engaging in the activity possesses a bill of sale which identifies the river herring as originating from waters not under jurisdiction of Maryland.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.09.htm>)

In 2015, Maryland Department of Natural Resources Regulations and Policy staff noticed statewide general non-tidal regulations that addressed river herring had been overlooked when the fishery was closed in 2011. These regulations have been updated to state that there is no open season for river herring in non-tidal waters and a daily creel limit of zero. This regulation was proposed in 2015 and became effective in 2016.

08.02.11.04

.04 Statewide General Regulations.

A. Open Seasons, Creel, Possession, and Size Limits on Game and Fresh Water Fish in Nontidal Waters. Except as otherwise provided in this chapter for specific areas, the following apply Statewide:

(1) Open Seasons.

<i>Species</i>	<i>Open Season</i>
(i) Herring	No open season

(2) Creel and Possession Limits.

	<i>Daily Creel</i>	<i>Possession</i>
(j) Herring (Blueback and Alewife)	closed season — none permitted	

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.11.04.htm>)

II. Copy of Fishery Regulations for Current Fishing Year

NA

III. Law Enforcement Reporting Requirements

NA

Appendix B. Required Fishery-Independent Monitoring

I. American Shad

A. Description of Requirements

Under Amendment 3, Maryland is required to have the following sampling programs in the Susquehanna River/upper Chesapeake Bay, Nanticoke River (cooperative effort among Maryland and Delaware) and Potomac River (cooperative effort among Maryland, District of Columbia, Potomac River Fisheries Commission and Virginia):

1. Annual spawning stock survey to include passage counts, CPUE or some other abundance index and representative subsamples that describe size, age and sex composition of spawning stock.
2. Calculation of mortality and/or survival estimates where possible
3. JAI: Juvenile abundance survey
4. Hatchery Evaluation (Susquehanna River/upper Chesapeake Bay and Potomac River)

B. Description of Work Performed

i. Juvenile Abundance Survey

American shad juvenile indices were derived from the Maryland DNR Estuarine Juvenile Finfish Survey (EJFS) conducted at fixed stations within the upper Chesapeake Bay, Nanticoke River and Potomac River. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore and the other was fully stretched perpendicular from the beach and swept with the current. Ideally, the area swept was equivalent to a 729 m² quadrant. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two stations from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

American shad spawning stock was sampled by hook and line in the Conowingo Dam tailrace (Susquehanna River/upper Chesapeake Bay). Biological information was collected (fork length, sex and scales for aging) and fish were tagged as part of a mark-recapture population estimate. Observations in the Conowingo Dam fish lifts were used as recaptures. Population size was determined using chapman's modification of the Petersen method, adjusted to incorporate fallback rate and days between tagging and the end of the fish passage season. Relative abundance was calculated as the number of fish caught per hour.

The Potomac River American shad spawning stock survey was conducted as usual. American shad were captured in fishery-independent gill nets

targeting striped bass from early April through mid-May. All American shad were measured and sexed, and scales were removed from a subsample of fish (10 fish/20mm length group/sex) for aging. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.75-, 4.5- and 5.25-inch mesh panels were used as those panels account for 84% of the total American shad catch. Each panel was treated as an individual sampling event.

The Nanticoke River has not been sampled since 2021. Geometric mean (GM) was defined as catch of American shad per number of days the net was fished. From 1988-1995, catches from all pound nets sampled on the Nanticoke River were factored into a measure of relative abundance (GM CPUE). Beginning in 1996, methods were revised to only include data from one pound net (Mill Creek) because it was consistently sampled over the time series; harvest from other pound nets was sporadic. Fyke nets were not included in the calculation because anecdotal evidence from the Nanticoke River suggests that they have a poor success rate in the capture of American shad relative to pound nets, rendering the efforts between the two methods incomparable.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960), with a back-transformation bias correction, were used to estimate total instantaneous mortalities (Z) of adult American shad sampled by the Susquehanna River/upper Chesapeake Bay spawning stock survey and Potomac River spawning stock survey. Age composition data was used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Maryland DNR FHHP personnel strip spawned American shad from the Potomac River. The resulting offspring were OTC marked and stocked to various rivers. From 1994 to 2023 Maryland DNR has stocked over 65 million American shad in the Choptank River, Patuxent River, Patapsco River, Nanticoke River and Potomac River. Ten to fifteen percent of all the eggs and fry resulting from the use of Potomac River broodstock were restocked as close to the capture site as was feasible. As of 2023, the Patapsco and Choptank Rivers were the primary stocking locations. The percentage of hatchery fish present in these populations was determined annually via juvenile seine surveys.

The Pennsylvania Fish and Boat Commission and the Delaware Division of Fish and Wildlife determine the proportion of hatchery reared juveniles that return as adults to the Susquehanna River and Nanticoke River,

respectively.

C. Results

i. Juvenile Indices

1. Index of Abundance

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment

1. Length-Frequency

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

Results provided. Maryland does not conduct a hatchery evaluation on the Potomac River. This was a cooperative task between the Potomac River Fisheries Commission, Maryland, Virginia and the District of Columbia. Another agency besides Maryland may provide this information.

II. Hickory Shad

A. Description of Work Performed

Amendment 1 recommends the monitoring of juvenile hickory shad in the Chesapeake Bay tributaries.

i. Juvenile Abundance Survey

The Maryland DNR EJFS does not collect juvenile hickory shad in significant numbers and therefore juvenile indices are not calculated.

ii. Annual Spawning Stock Surveys

Hickory shad spawning stock data were collected by the Maryland DNR FHHP, who used electrofishing gear to sample hickory shad near Lapidum on the lower Susquehanna River. Maryland DNR staff removed scales, determined sex and measured fork and total length of captured hickory shad. Scales were later read for age and spawning history. No hickory shad were captured with these methods in 2023. Hickory shad were also captured in fishery-independent gill nets targeting striped bass from early April through mid-May in the upper Chesapeake Bay. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.0-, 3.75- and 4.5-inch mesh panels were used as those panels account for 95% of the total hickory shad catch. Each panel was treated as an individual sampling event.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960), with a back-transformation bias correction, were used to estimate total instantaneous mortality (Z) of hickory shad from the lower Susquehanna River. Age composition data were used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those fish was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Recent hickory shad stocking efforts have focused primarily on the Patapsco River and to a lesser extent, the Patuxent River. Both adult and juvenile hickory shad may be sacrificed for hatchery evaluation when they are encountered by FHHP surveys.

III. River Herring

A. Description of Requirements

Under Amendment 2, Maryland is required to have the following sampling programs in the upper Chesapeake Bay:

1. Annual spawning stock survey and representative sampling for biological data
2. Calculation of mortality and/or survival estimates
3. JAI: Juvenile abundance survey (GM).

B. Description of Work Performed

i. Juvenile Abundance Survey

Juvenile river herring indices were derived from the Maryland DNR EJFS at fixed stations within the upper Chesapeake Bay and various Chesapeake Bay tributaries. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore

and the other was fully stretched perpendicular from the beach and swept with the current. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two sites from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

Alewife and blueback herring spawning stocks were assessed with a gill net survey in the North East River, an upper Chesapeake Bay tributary. The gill net was fished at four randomly chosen sites once a week from mid-March through mid-May. The gill net consisted of three different size monofilament mesh panels (2.25-, 2.5- and 2.75-inch stretch mesh) each 100ft wide and 6ft deep. The 2.25-inch mesh panel replaced a 3-inch mesh panel in 2015 because few blueback herring were caught in the 3-inch mesh panel, and there was some indication the smallest blueback size group was not represented in the sample. River herring were measured (fork and total length), scales were removed below the insertion of the dorsal fin and sex was determined (by expression of gonadal products). Scales were read for age and spawning marks. Catch-per-unit-effort (CPUE) was estimated separately for alewife and blueback herring. For alewife, CPUE was calculated for all years using catch from only the 2.5- and 2.75-inch mesh panels (2013 – 2023). For blueback herring, CPUE was calculated from 2015 – 2023 on, using catch from all three mesh panels. Each sampling site was treated as an individual sampling event.

The Nanticoke River has not been sampled since 2021. GM CPUE in the Nanticoke River was defined as catch of river herring per number of days the net was fished. Pound nets were not included in the calculation.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960), with a back-transformation bias correction, were used to estimate total instantaneous mortality (Z) of adult river herring sampled by the North East River/upper Chesapeake Bay gill net survey. Age composition data were used in the analysis, where the first age-at-full recruitment was the age with the highest frequency. Estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age). Since strong year-class patterns were observed in the data, both cross-sectional and longitudinal catch curve analyses were performed.

iv. Hatchery Evaluation

NA

C. Results

i. Juvenile Indices**1. Index of Abundance**

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment**1. Length-Frequency**

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

NA

LITERATURE CITED

- Heisey, P. G., D. Mathur, J. L. Fulmer, and E. Kotkas. 2008. Turbine passage survival of late running adult American shad and its potential effect on population restoration. American Fisheries Society Symposium 61:141-152, Amer. Fish. Soc., Bethesda, MD.
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- Normandeau Associates, Inc., and Gomez and Sullivan Engineers, P.C. 2011. Conowingo Pond Creel Survey RSP 3.25A. Prepared for Exelon Corporation, June 2011. 397p.
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Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spanish Mackerel (*Scomberomorus maculatus*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2023

Prepared by

Katherine M. Messer

**Maryland Department of Natural Resources
Fishing and Boating Services**

September 2024

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

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I. Introduction

Maryland had no changes to monitoring or regulations, and no significant changes in harvest for Spanish mackerel in 2023. Maryland's fishery dependent monitoring program in 2023 measured 94 Spanish mackerel, 152 less than 2022. All regulations are listed in III-c below.

II. Request for *de minimis*, where applicable

Maryland does not request *de minimis* status.

III. Previous calendar year's fishery and management programs

a. *Fishery dependent monitoring*

MD DNR does not have a specific monitoring program for Spanish mackerel; however, they typically are encountered in the onboard commercial pound net survey, which was conducted from May 30, 2023, to November 30th, 2023. Ninety-four Spanish mackerel were measured from the onboard pound net survey in 2023 with fork lengths ranging between 240 – 580 mm and a mean fork length of 399 mm.

b. *Fishery independent monitoring*

MD DNR does not conduct independent monitoring specifically targeting, or routinely encountering, Spanish mackerel.

c. *Copy of regulations (2023)*

08.02.05.14 .14 Spanish mackerel

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. An individual may not catch or possess more than 15 Spanish mackerel per day.
- (3) Season. The recreational season for catching Spanish mackerel is January 1 through December 31.
- (4) All Spanish mackerel harvested by a recreational angler shall be landed with the heads and fins attached naturally.

B. Commercial Fishery.

- (1) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. No more than 3,500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.
- (3) Season. The commercial season for catching Spanish mackerel is March 1 through the last day of February.

C. General.

(1) The Secretary may modify catch limits or size limits or open or close a season as required by the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Spanish Mackerel by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

d. ***Harvest***

Commercial Fishery

Maryland's directed fishery landed 1,917 pounds of Spanish mackerel in 2023 (landings considered preliminary).

Recreational Fishery

Maryland landed an estimated 63,833 Spanish mackerel weighing 83,661 pounds in the 2023 recreational fishery (MRIP personal communication 9/11/2024). Maryland recreational anglers released 30,105 Spanish mackerel in their recreational fishery in 2023 (MRIP personal communication 9/11/2024).

IV. Planned management programs for the current calendar year

a. ***Regulations and public notice for 2024***

Public notice effective 8/5/2024

WHAT THIS NOTICE DOES

The Secretary of the [Maryland Department of Natural Resources](#) announces:

1. A change to the commercial catch limit for Spanish mackerel; and
2. A change to the commercial season for Spanish mackerel.

NEW CATCH LIMIT

Not more than 500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.

COMMERCIAL SEASON

The commercial season for Spanish mackerel will close at 12:01 a.m. November 16, 2024. The season will reopen at 12:01 a.m. January 1, 2025, with no additional restrictions.

WHY THIS IS NECESSARY

Commercial landings have reached the commercial quota for the Atlantic migratory group Spanish mackerel northern zone. The northern zone for Atlantic migratory group Spanish mackerel includes federal waters from North Carolina through New York. The commercial harvest of the Atlantic migratory group Spanish mackerel northern zone in federal waters closed July 28, 2024. The Atlantic States Marine Fisheries Commission Fishery Management Plan for Spanish Mackerel allows states to implement a bycatch in state waters. This step must be taken to prevent the quota from being further exceeded, while allowing a minimal bycatch amount of Spanish mackerel to be landed to avoid dead discards.

WHO THIS NOTICE AFFECTS

This closure applies to all individuals who catch Spanish mackerel commercially.

EFFECTIVE DATE

This notice is effective at 12:01 a.m. August 5, 2024, and will remain in effect through and including December 31, 2024.

AUTHORITY

Code of Maryland Regulations [08.02.05.14C](#)

b. Regulatory changes from the previous year

N/A

Reference

MRIP 2024. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division September 11, 2024



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spot (*Leiostomus xanthurus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2023

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

October 15, 2024

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2023.**

Maryland's directed fishery landed 51,597 pounds of spot in 2023.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2023.**

Maryland recreational anglers landed an estimated 3,083,906 spot (PSE = 18.5; MRIP 2024) weighing an estimated 638,790 pounds (PSE = 18.6; MRIP 2024) in 2023. Maryland recreational anglers released an estimated 4,060,882 spot (PSE = 14.6; MRIP 2024) in 2023.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs**

Maryland conducted an onboard commercial pound net survey on the Potomac River and the Chesapeake Bay, sampling each area once every other week from May 23, 2023, through September 18, 2023. The 2023 spot mean length from the onboard sampling of 184 mm TL was a decrease compared to the 2022 value of 192 mm TL, and was the fourth lowest value of the 31 year time series. Ninety percent of spot encountered in the onboard pound net survey in 2023 were between 170 and 209 mm TL, indicating a truncated length frequency distribution. In 2023, 89% of spot sampled from the onboard pound net survey were age one, 11% were age zero, and no age two plus fish were sampled (119 ages and 1,339 lengths).

b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland conducted a fisheries independent gill net survey on the Choptank River once per week from June 5, 2023, to August 30, 2023. Experimental monofilament gill nets with stretched mesh sizes of 63.5, 76.2, 88.9 and 101.6 millimeters were set at four randomly selected locations within the sampling area each sampling day. Panels for each mesh size were 30.5 m long by 1.8 m deep, and were rigged to sink. Spot geometric mean catch per hour in the Choptank River gill net survey was highest in 2020 - 2022, moderate in 2013, 2014, 2017, 2019, and 2023 and lowest in 2015, 2016 and 2018. Total annual catch ranged from a low of 109 fish in 2016 to a high of 812 in 2020, with 213 encountered in 2023. Annual length frequency distributions have been variable throughout the survey, with similar distributions in 2013, 2014, 2020, 2022, and 2023 centered on the 200 mm length group. Bimodal distributions were apparent in 2015 and 2017, and singular peak distributions were centered on the 190 mm TL group in 2016, 2018, 2019 and 2021.

Four juvenile indices (JI) were calculated, two from the Maryland portion of Chesapeake Bay and two from the Maryland coastal bays. Finfish collected by Maryland's Chesapeake Bay Blue Crab Trawl Survey have been enumerated since 1980. However, since some data entry inconsistencies made electronic data files prior to 1989 incomplete for finfish species, only data from 1989 through 2023 were used to generate a Chesapeake Bay spot juvenile index. Fixed sites were sampled once a month from May thru October in six tributaries of the Chesapeake Bay. A 4.9 meter semi-balloon otter trawl was towed for 6 minutes at 4.0-4.8 km/h. A Chesapeake Bay juvenile trawl index was calculated as the geometric mean catch per tow. Spot juvenile trawl index values from 1989-2023 were quite variable. The index values in recent years declined from 2012 through 2015 and remained low through 2018, but increased in 2019 and remained above the

time series mean from 2020 through 2023, with the 2023 value of 27.05 fish per tow being the ninth highest value of the 35-year time series.

The second JI was derived from the Striped Bass Juvenile Seine Survey (JSS). This survey used a 30.5 meter long by 1.2 meter deep beach seine at fixed stations in five areas of Maryland's Chesapeake Bay. The JSS index was calculated as a geometric mean catch per haul. The JSS has permanent and auxiliary sites, only permanent sites were used in index calculations for this report. The survey began in 1954, but sampling frequency was standardized in 1962, so that was the first year used to calculate the JI time series. The 2022 GM catch per haul of 1.92 was the highest value since 2010, and was the third consecutive year above the time series mean of 1.29 fish per haul, but the index value declined in 2023 to 0.84 fish per haul.

A 4.9-meter semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972. Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably, therefore, index values were calculated for 1989-2023. The geometric mean catch per hectare of juvenile spot was used as a standardized index of abundance. The 2023 GM of 11.3 spot per hectare decreased compared to the 2022 value, which was the second highest value of the 35-year time series, but was still above the time series mean of 9.3 spot per hectare.

The final juvenile index was derived from the coastal bays seine survey, which utilized a 1.8 meter by 30.5 meter seine with a single central bag. Nineteen fixed stations were sampled once a month in June and September, and the corresponding Coastal Seine Index was calculated using all sites to derive an annual geometric mean catch per haul. Sites and sampling frequency were not standardized until 1989, therefore, only 1989-2023 data was used for index calculation. The 2023 coastal bays seine survey GM index value decreased to 19.2 spot per haul, but was still above the 35-year time series mean of 8.4 spot per haul.

IV. Planned management programs for the current calendar year

a. Summarize any regulatory changes from the previous year and provide an update on any planned
N/A

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.
N/A

References

MRIP. 2024. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division October 15, 2024.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spotted Seatrout (*Cynoscion nebulosus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2023

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

August 8, 2024

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2023:**

Maryland's directed fishery landed 1,596 pounds of spotted seatrout in 2023.

Recreational Fishery**Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2023:**

MRIP estimated that Maryland landed 21,533 (PSE = 60.3, estimate not significantly different than zero) spotted seatrout weighing 47,091 pounds (PSE = 66.8, estimate not significantly different than zero) in the 2023 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/8/2024).

Maryland recreational anglers released an estimated 49,493 (PSE = 50.5, estimate not significantly different than zero) spotted seatrout in the 2023 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/8/2024).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2023 charter boat captains reported harvesting 136 spotted seatrout with an estimated weight of 375 pounds. They reported releasing 20 spotted seatrout with an estimated weight of 50 pounds in 2023.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Spotted seatrout are sporadically encountered in low numbers, but are enumerated and measured to the nearest millimeter total length (TL) when encountered. Sixty-two spotted seatrout were measured in 2023, with a mean length of 486 mm TL.

b. Summarize fishery independent monitoring and provide a brief review of the results:

Maryland conducted no fishery independent monitoring directed at spotted seatrout in 2023. A low number of juvenile spotted seatrout are encountered in the coastal bays seine survey and the Chesapeake Bay blue crab trawl survey as bycatch, indicating the species utilizes these areas as nursery habitat. Annual spotted seatrout catch for the coastal bays survey ranged from 0-39 fish; with zero catch in eight of the 35 years surveyed, and four being caught in 2023. The Chesapeake Bay blue crab trawl survey caught no spotted seatrout in seven of 35 years but did have six years of higher catch (2000 = 71, 2001 = 90, 2009 = 139, 2013 = 139, 2014 = 98 and 2020 = 71), potentially indicating stronger years of recruitment. Four spotted seatrout were caught in 2023.

IV. Planned management programs for the current calendar year**a. Summarize any regulatory changes from the previous year:**

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

Commercial

12" TL minimum size limit

Recreational

12" TL minimum size limit

Maryland's spotted seatrout and weakfish regulations are combined in state regulation, hence the inclusion of weakfish in the following text. Language pertaining to spotted seatrout is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year:

There were no law enforcement issues in 2023.



Wes Moore
Governor

Josh Kurtz
Secretary

Maryland Striped Bass (*Morone saxatilis*) Compliance Report
On the 2023 Fishing Year
to the
Atlantic States Marine Fisheries Commission

COMMERCIAL LANDINGS DATA ARE PRELIMINARY
This report will be updated when final landings data are available

Prepared by

Eric Q. Durell

Fishing and Boating Services
Maryland Department of Natural Resources
June, 2024

This program receives Federal financial assistance from the Department of the Interior - US FWS Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, or disability.

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2024 Atlantic Striped Bass Compliance Report for Maryland

Throughout this report, please indicate **confidential data with red font**. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

I. Request for *de minimis*.

Maryland does not request *de minimis* status.

II. Report 2023 fishery regulations (complete respective tab in the Compliance Workbook).

2023 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 28
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31
Susquehanna Flats	N/A	N/A	Closed	Apr 1-May 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-Apr 30
Chesapeake Bay	35" TL min	1/person/day	Geographic restrictions apply	May 1-May 15
Chesapeake Bay	19-31" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining; or bait fishing and targeting striped bass	May 16-May 31
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Susquehanna Flats	19-26" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19-31" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31

2024 Atlantic Striped Bass Compliance Report for Maryland

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	19-31" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
		Charter only 2/person/day if e-reporting	Above applies AND only 1 fish/person greater than 28" TL	
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-35" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-May 15
Atlantic Ocean, Coastal Bays, and tributaries	28-31" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	May 16-Dec 31

2023 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,445,394 pounds	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 28, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31; common pool select days only
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 28, Dec 1-31; common pool select days only
Atlantic Ocean: gill net and trawl	24" TL min	none	89,094 pounds	Jan 1-May 31, Oct 1-Dec 31

III. Report 2024 fishery regulations (complete respective tab in the Compliance Workbook).

2024 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 28
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31

2024 Atlantic Striped Bass Compliance Report for Maryland

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31
Susquehanna Flats	N/A	N/A	Closed; No catch and release	Apr 1-May 31
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-May 15
Chesapeake Bay	19-24" TL	1/person/day all modes	Geographic restrictions apply; circle hooks if chumming, live-lining; or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day all modes	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-31" TL	1/person/day all modes	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-Dec 31

2024 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,344,216 pounds	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 29, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31; common pool select days only
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 29, Dec 1-31; common pool select days only
Atlantic Ocean: gill net and trawl	24" TL min	none	82,857 pounds	Jan 1-May 31, Oct 1-Dec 31

2024 Atlantic Striped Bass Compliance Report for Maryland

IV. Previous calendar year's fishery (2023)

A. Commercial Fishery (complete all applicable tabs in Compliance Workbook)

COMMERCIAL LANDINGS DATA ARE PRELIMINARY
This report will be updated when final landings data are available

Coastal Commercial Landings:

In 2023, Maryland's Atlantic coast fishery landed 3,603 fish weighing 84,633 pounds. Coastal commercial landings did not exceed the state's quota of 89,094 pounds. The major gear type was gill net. Mean fish weight was 23.5 pounds; mean fish length was 40.3 inches (1,024 mm) TL; mean fish scale age was 12.

Chesapeake Bay Commercial Landings:

In 2023, the Chesapeake Bay commercial fishery landed 284,304 fish weighing 1,318,970 pounds. Commercial landings did not exceed the state's quota of 1,445,394 pounds. Major gear types were pound nets (49%), gill nets (45%), and hook and line (6%). Mean fish weight was 4.6 pounds; mean fish length was 22.1 inches (560 mm) TL; mean fish scale age was 5.

Estimate of commercial effort and CPUE:

In 2023, total commercial effort by striped bass permit holders was estimated at 3,131 days, which was greater than 2022 (2,612 days). Commercial CPUE in 2023 was 92 fish per day, less than the 2022 CPUE of 114 fish per day. Commercial CPUE in 2023 was 448 pounds per day, compared to 556 pounds per day in 2022.

Estimate other commercial fish loss (e.g., bycatch, poaching, personal consumption):

N/A

Summarize results of commercial harvest tagging program in 2023:

Commercial harvest tags are affixed at the point of harvest. In 2023, 442,850 commercial tags were issued to 647 participants, and 287,907 tags were reported used. Numbers of tags returned, reported missing, or unaccounted for are unknown at this time. Commercial licensees are required to return unused tags to the Department each year to allow a thorough audit of tag use. This audit has been delayed by staffing issues.

B. Recreational Fishery (complete all applicable tabs in Compliance Workbook)

Indicate MRIP query date: 04/22/2024

Coastal recreational harvest (A+B1) and live releases (B2):

The estimate of total recreational landings (A+B1) on Maryland's Atlantic coast in 2023 was

2024 Atlantic Striped Bass Compliance Report for Maryland

3,081 fish weighing 30,777 pounds. No estimate was available in 2022.

Total recreational releases (B2) on Maryland's Atlantic coast in 2023 were estimated at 41,976 fish. This is a 66% decrease compared to 2022.

Chesapeake Bay recreational harvest (A+B1) and live releases (B2):

Total recreational landings (A+B1) in Maryland's Chesapeake Bay in 2023 were estimated at 502,259 fish weighing 2,195,017 pounds. This is a 22% decrease in numbers of fish and a 29% decrease by weight compared to 2022. Mean harvested fish weight was 4.4 pounds (based on MRIP); mean fish length was 22.6 inches (574 mm) TL; mean fish scale age was 5.

Total recreational releases (B2) in Maryland's Chesapeake Bay in 2023 were estimated at 3,132,920 fish. This is a 4.8% decrease compared to 2022.

Chesapeake Bay Spring migrant harvest estimate:

In 2023, the Maryland portion of the Chesapeake Bay spring migrant harvest was 972 fish (253 fish by charter boats; 719 fish by private anglers). This is a 65% decrease compared to 2022. The estimated total weight of the migrant harvest was 19,806 pounds. Mean fish weight was 20.4 pounds and mean fish length was 35.1 inches (892 mm) TL.

V. Mandatory Monitoring Programs (complete applicable tabs in Compliance

Workbook) Juvenile Abundance Index (JAI) Surveys:

Maryland's 2023 JAI is GM=0.57, which is lower than 2022 (1.78).

Spawning Stock Biomass (SSB) Index Surveys:

Maryland's 2023 SSB index is 448, which is an increase compared to 2022 (271).

Striped Bass Tagging Program results:

In 2023, Maryland tagged and released 687 striped bass; 24 striped bass recaptures were reported.

Summarize any survey/monitoring programs changes for current year (2024):

N/A

2024 Atlantic Striped Bass Compliance Report for Maryland

VI. Identify common striped bass violations that occurred in 2023. Quantitative information is optional. Identify any new or emerging enforcement issues:

The most common striped bass violations in 2023 were recreational size limit, catch limit, season, and closed area violations. Recreational violations far outnumbered commercial violations. (source: Jacob Holtz, Program Manager, Regulatory and Legislative Review Division, personal communication).



Maryland's 2023 Compliance Report for Summer Flounder (*Paralichthys dentatus*)
to the Atlantic States Marine Fisheries Commission

June 2024

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2024

DNR

I. Introduction

Summer flounder were managed as one stock extending from North Carolina to Maine. In Maryland, summer flounder occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge.

The commercial fishery operated under Addendum 21 (December 2021), which established quota allocation of summer flounder between the states. Under the new allocation system, when the coastwide commercial summer flounder quota is 9.55 million pounds or less, the quota will be distributed according to the existing (Amendment 4) allocations. In years when the coastwide quota exceeds 9.55 million pounds, the first 9.55 million pounds will be distributed based on the existing allocations. The additional quota, above 9.55 million pounds, will be distributed in equal shares to all states, except Maine, Delaware, and New Hampshire, which would split one percent of the additional quota. The total percentage allocated annually to each state will depend on how much additional quota beyond 9.55 million pounds, if any, is available in any given year.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2023 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to National Oceanic and Atmospheric Administration (NOAA).

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the access point angler intercept survey (APAIS) survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Maryland has conducted juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. In 2023, summer flounder were collected in 49 of 140 trawls (35.0%) and 29 of 38 beach seines (76.3%). A total of 430 summer flounder were collected in trawl (170 fish) and beach seine (260 fish) samples. Summer flounder ranked six out of 66 species in overall finfish abundance. The trawl and beach seine catch per unit effort (CPUE) was 9.7 fish/ha and 6.8 fish/haul, respectively. The 2023 trawl relative abundance index was below the grand mean while the beach seine index was above the grand mean (Figures 1 - 2). Since 2016, summer flounder were more abundant in the shallower beach seine sites rather than the deeper trawl sites as previously observed (Figure 3).

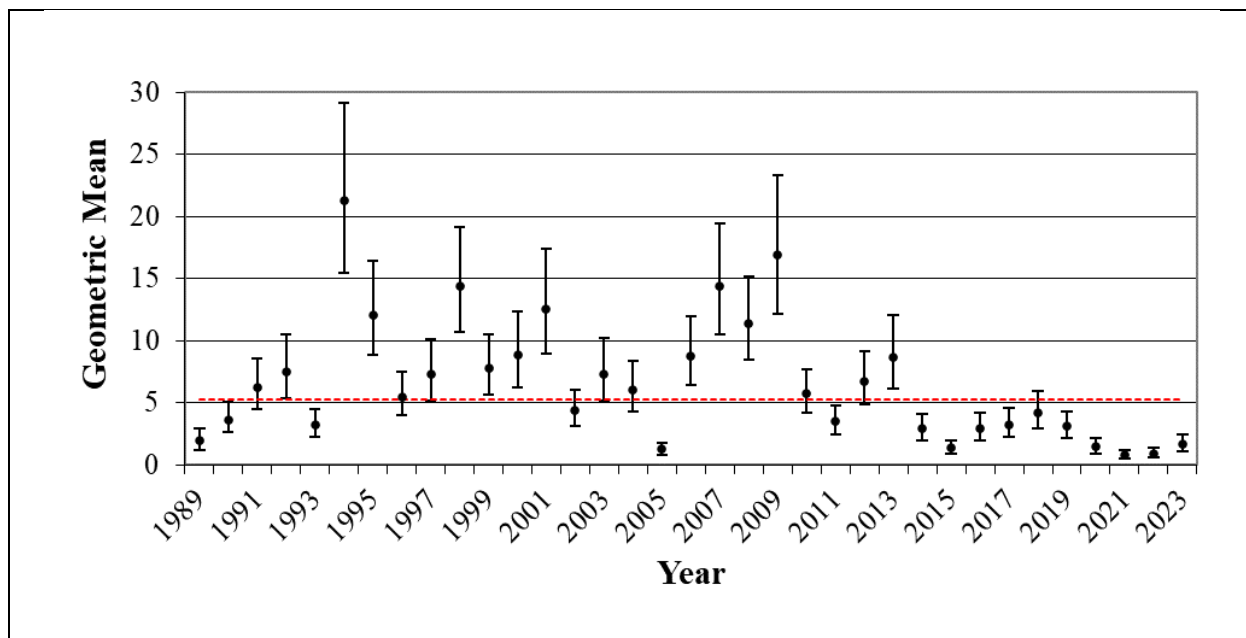


Figure 1. Summer flounder (*Paralichthys dentatus*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 – 2023). Dotted line represents the 1989 - 2023 time series grand mean ($n_{1989 - 2019, 2021 - 2023} = 140/\text{year}$, $n_{2020} = 120$).

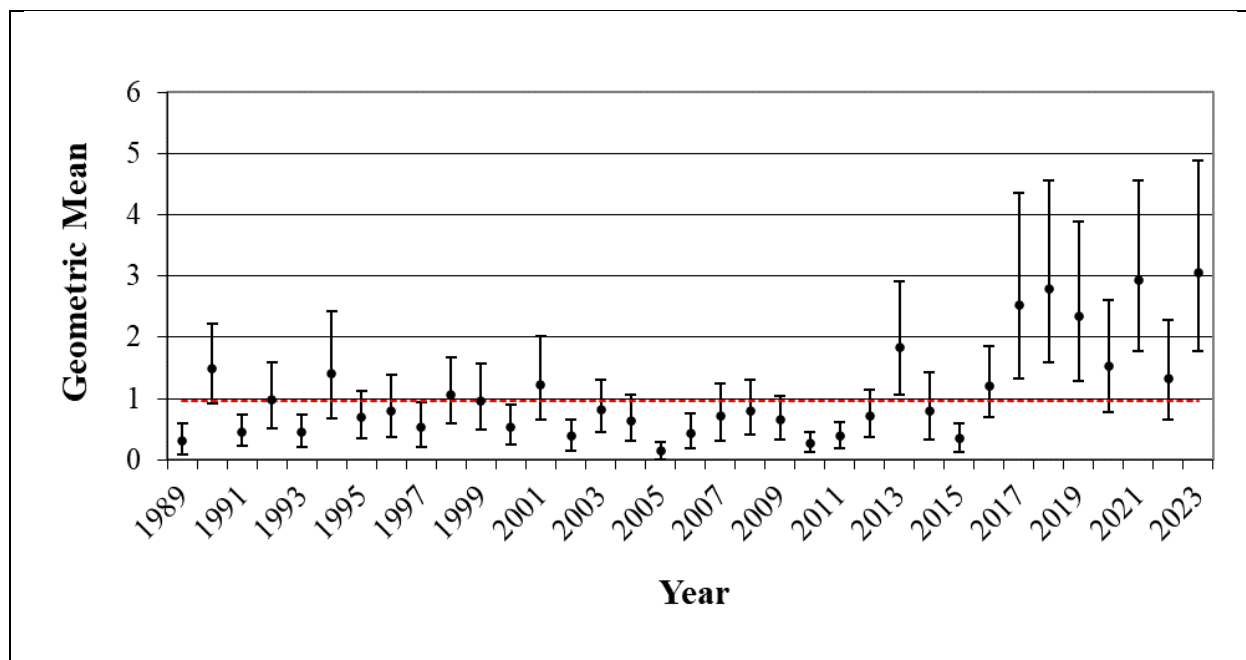


Figure 2. Summer flounder (*Paralichthys dentatus*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2023). Dotted line represents the 1989 - 2023 time series grand mean ($n = 38/\text{year}$).

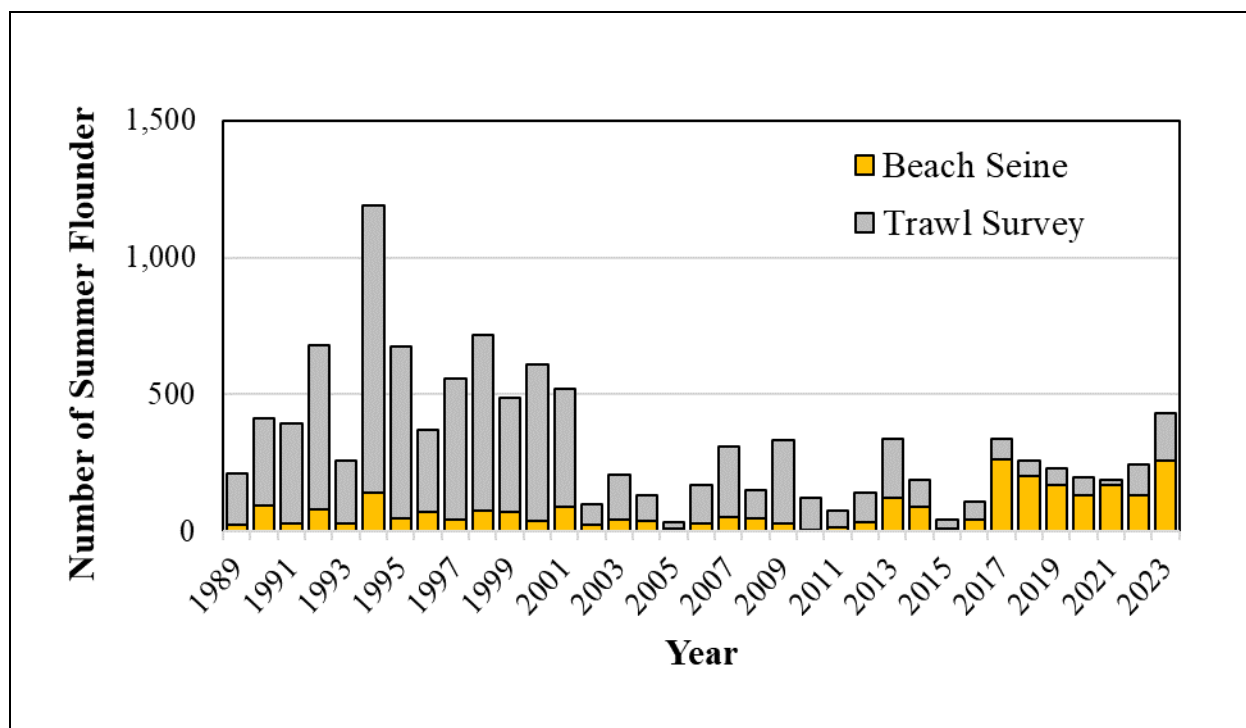


Figure 3. Summer flounder (*Paralichthys dentatus*) relative abundance shift toward shallow water in June.

C. Regulations

One summer flounder public notice was issued for 2023. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx.

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2023 Summer Flounder Fishery — Effective 1/1/2023

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the season, catch limit, and minimum size for the 2023 summer flounder fishery.

SEASON

The season is open January 1, 2023, through December 31, 2023.

RECREATIONAL MINIMUM SIZE AND CATCH LIMIT

- 16 inches
- 4 fish/person/day

COMMERCIAL MINIMUM SIZE

- Hook and Line: 16 inches
- Gear other than Hook and Line: 14 inches

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch summer flounder recreationally or commercially.

EFFECTIVE TIME AND DATE

This notice is effective at 12:01 a.m. January 1, 2023.

AUTHORITY

Code of Maryland Regulations 08.02.05.12

Jeannie Haddaway-Riccio
 Secretary of Natural Resources

Code of Maryland Regulations 08.02.05.12

<https://dsd.maryland.gov/regulations/Pages/08.02.05.12.aspx>

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess summer flounder less than:
 - (a) 16 inches total length in the Atlantic Ocean, its coastal bays, and their tributaries; and in the Chesapeake Bay and its tidal tributaries.
- (2) Catch Limits. An individual may not catch or possess more than four summer flounder per day in the Atlantic Ocean and coastal bays, and in the Chesapeake Bay and its tidal tributaries.
- (3) The recreational season was open from January 1 through December 31 in 2023.

B. Commercial Fishery.**(1) Quotas.**

(a) The annual commercial quota for Maryland is established by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.

(b) The annual commercial quota is divided into an allocation for:

- (i) The Atlantic Ocean, its coastal bays, and their tributaries;

- (ii) The Chesapeake Bay and its tidal tributaries;
 - (iii) The Potomac River; and
 - (iv) The harvest of summer flounder provided for in §B(3)(a) and
 - (4) of this regulation.
 - (c) The annual commercial quota and allocations are subject to downward adjustment action if there are overages in the previous year's landings.
 - (d) Equal individual allocations shall be established for the portion of the annual commercial quota provided for in §B(1)(b)(i) of this regulation and allocated by permit to an individual that meets the requirements set forth in §C(5) of this regulation.
 - (e) An individual who possesses a Maryland summer flounder landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any quota transfers, shall have the overage deducted from the permit allocation for the following year.
 - (f) A Maryland summer flounder permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an individual may not hold more than 29 percent of the allocation for the total fishery.
 - (2) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a summer flounder less than:
 - (a) The size limit set forth in §A(1) of this regulation if caught by hook and line; or
 - (b) 14 inches total length if caught by gear other than hook and line.
 - (3) Daily Catch Limits. An individual licensed to catch fish for commercial purposes may not catch, possess, or land more than:
 - (a) 100 pounds of summer flounder per day from the Atlantic Ocean, its coastal bays, and their tributaries unless in possession of a Maryland summer flounder landing permit; and
 - (b) 50 pounds of summer flounder per day from the Chesapeake Bay and its tidal tributaries.
 - (4) An individual licensed to catch fish for commercial purposes may not:
 - (a) Transfer summer flounder from one vessel to another vessel; or
 - (b) Land more than 5 percent by:
 - (i) Number of summer flounder under 14 inches as part of the daily limit for flounder caught by gear other than hook and line; or
 - (ii) Weight of summer flounder in excess of the daily catch limits established in §B(3) of this regulation.
 - (5) Summer flounder harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a dealer with a federal permit.
- C. Licenses and Permits.
- (1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land summer flounder.
 - (2) A vessel which is used to catch, possess, or land summer flounder for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.
 - (3) A permittee may catch, possess, or land summer flounder for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit

issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for summer flounder by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared by the August 31 deadline in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland summer flounder landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Summer Flounder Landing Permit.

(a) No more than seven summer flounder landing permits may be issued by the Department. The number of summer flounder landing permits is based on the reported catch and landing records of summer flounder in Maryland during 1998—2003.

(b) The Department may issue a permit to catch and land summer flounder in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

(i) Declared or was eligible to declare, in the previous year, an intent to fish for summer flounder in accordance with §C(4) of this regulation in the previous year and has not transferred the permit; or

(ii) Received a summer flounder landing permit through a permanent business transfer in accordance with §C(7) of this regulation.

(6) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland summer flounder landing permit.

(c) An operator may catch, possess, or land summer flounder for commercial purposes on a vessel owned by a permittee if they are in possession of that permittee's permit.

(7) Permanent Transfer of a Landing Permit. The Department may approve the permanent transfer of a Maryland Summer Flounder landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(8) Temporary transfers of summer flounder landing permits are not permitted.

(9) Regardless of the number of authorized individuals with Maryland summer flounder landing permits on board any one federally permitted vessel, no more than two summer flounder quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) A person who catches summer flounder for commercial purposes may not use a trawl net with stretched mesh size of less than 6 inches square or 5-1/2 inches diamond applied throughout the net, including the body, extensions, and cod end.

(2) For the purposes of measuring the required mesh sizes, at least 20 meshes shall be measured, of which:

(a) At least 12 meshes shall measure the minimum size or larger; and

(b) The remaining meshes may not measure more than 1/4 inch less than the minimum mesh size.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland summer flounder landing permit shall record the harvest of summer flounder on the permit daily and submit the completed permit to the Department within 14 days from the end of the summer flounder season.

(2) A dealer shall transmit information weekly, or as requested, on each summer flounder transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may modify catch limits, size limits, quotas, or open or close a season in order to comply with species management through the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for summer flounder, by publishing notice on the Fisheries Service website at least 48 hours in advance, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

(3) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coast-wide quota is harvested and not exceeded.

Table 1. State implemented commercial measures as mandated in the Atlantic State Marine Fisheries Commission (ASMFC) Summer Flounder FMP.

14" minimum size	Yes
5.5" diamond or 6" square minimum mesh	Yes
5.5" mesh beyond the cod end, for the entire net	Yes
Threshold to trigger minimum mesh size requirements: (200 lbs 11/1 - 4/30; 100 lbs from 5/1 - 10/31)	More restrictive
Prohibition of transfers at sea	Yes

D. Harvest by Gear Type**1. Commercial Landings**

Maryland's commercial quota is allocated to the Atlantic coastal waters, the Chesapeake Bay, and the Potomac River. The Potomac River quota is set aside from both Maryland and Virginia by agreement. Maryland established individual fishing quotas for the Atlantic coastal waters including the coastal bays, and their

tributaries. The individual fishing quota system assigns a specific quota per fisherman and allows fishermen to plan and manage the fishing business for best economic yield. In 2023, there were seven permitted summer flounder harvesters in Maryland. There is additional Maryland quota not allocated to individual fishing quotas to allow for minimal bycatch on the coast and in the Chesapeake Bay. The preliminary Maryland commercial harvest in 2023 was 468,382 pounds (Table 2; Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

2. Recreational Landings

Maryland's 2023 recreational catch of summer flounder was estimated at 68,567 fish (PSE 27.2) with an estimated total weight of 151,535 pounds (PSE 28.1; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 6, 2024).

IV. Planned Management for 2024

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as in 2023 except for:
 COMMERCIAL MINIMUM SIZE • Hook and Line: January 1, 2024 – May 31, 2024: 16 inches to June 1, 2024 – December 31, 2024: 17 1-/2 inches • Gear other than Hook and Line: 14 inches.

Recreational measures will include a 16-inch minimum size, a four fish creel, from January 1 until May 31 and a four fish creel and a 17.5-inch minimum size from June 1 until December 31.

B. Summary of Monitoring Programs that will be in Effect

Same as 2023, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics Division. Personal Communication. Marine Recreational Information Program. Accessed on May 6, 2024. st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.



Maryland's 2024 (Fishing Year 2023) Tautog (*Tautoga onitis*) Compliance Report
to the
Atlantic States Marine Fisheries Commission
May 1, 2024

Wes Moore
Governor

Josh Kurtz
Secretary

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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2024

DNR

I. **Introduction**

Maryland was considered *de minimis* in 2023. There were no changes to the tautog season, size limit or creel regulations from the previous year, which applied to both recreational and commercial fisheries. The requirement to tag commercial fish was implemented July 16, 2020. Regulations for 2024 will remain the same as 2023. Preliminary 2023 commercial harvest reports indicated that [C] pounds of tautog were landed in Maryland. The National Oceanic and Atmospheric Administration preliminary 2023 Marine Recreational Information Program has determined a total recreational harvest estimate for 21,622 (PSE 32.2; numbers of fish; A+B1). There were no significant changes in monitoring in 2023. A total of 210 tautogs were collected and aged by opercula. Ages were determined on 200 fish and ranged from three to 19 years old.

II. **Request for *de minimis*, where applicable.**

Maryland qualifies for *de minimis* status and requests that status at this time.

III. **Previous calendar year's fishery and management program**

a. **Activity and results of fishery dependent monitoring.**

Length, sex, and opercula were collected from 211 tautog from March to December. Biological samples were obtained from eight dockside trips (62%) and one at sea charter trip (38%). Those samples combined represented the range of fish lengths commonly caught in the recreational fishery in Maryland. Age data was determined on 200 tautog.

b. **Activity and results of fishery independent monitoring.**

Juveniles of many finfish species are annually sampled by the department's Trawl and Beach Seine surveys. In 2023, seven tautog were captured in 140 trawls and three tautog were captured in one of 36 beach seines. Juvenile tautogs prefer submerged aquatic vegetation habitat, which was not adequately sampled during the trawl and beach seine surveys. The department's annual Submerged Aquatic Vegetation Habitat Survey captured 124 juvenile tautog ($\bar{x}$ length = 91 mm) in 16 beach seine hauls resulting in 6.6 fish/haul within vegetated habitat. The geometric mean was 3.95 fish/haul (Figure 1).

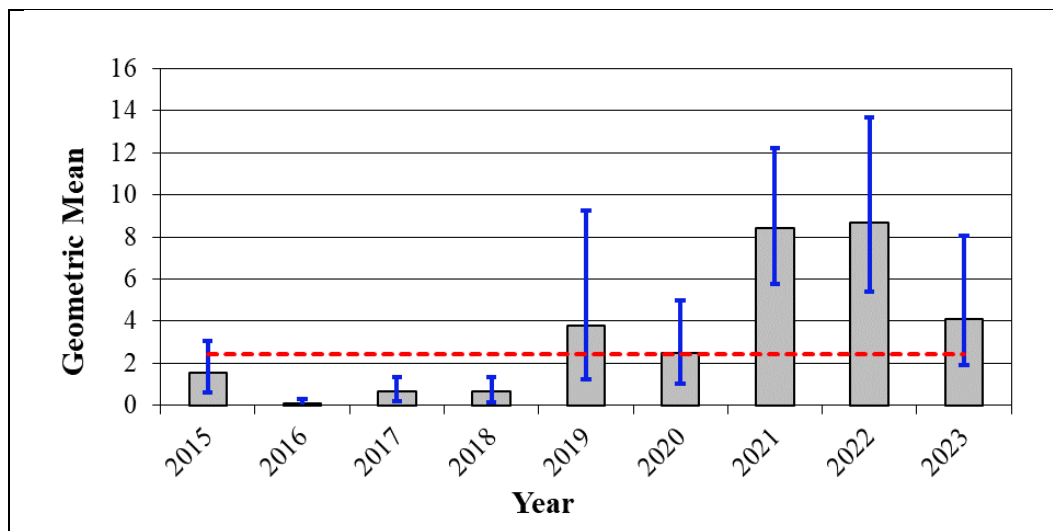


Figure 1. Tautog SAV Habitat Survey beach seine index of relative abundance (geometric mean) with 95% confidence intervals (2015 - 2023). Dotted line represents the 2015 - 2023 time series grand mean (n = 149, average 16/year).

c. **Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.**

The Code of Maryland Regulations pertaining to tautog (section 08.02.05.20) were online at dsd.maryland.gov/regulations/Pages/08.02.05.20.aspx

08.02.05.20

.20 Tautog.

A. An individual may not catch or possess:

- (1) A tautog less than 16 inches total length; and
- (2) A tautog from May 16 through June 30.

B. Season and Creel Limit.

- (1) From July 1 through October 31, an individual may not catch and possess more than two tautog per day.
- (2) From November 1 through May 15 of the following year, an individual may not catch and possess more than four tautog per day.

C. Commercial Gear and Tagging Requirements.

- (1) A pot or trap used to catch tautog shall have hinges or fasteners on one panel or door made of one of the following degradable materials:
 - (a) Untreated hemp or jute string of 3/16 inch in diameter or smaller;
 - (b) Magnesium alloy timed float releases (pop-up devices) or similar magnesium alloy fasteners; or
 - (c) Ungalvanized or uncoated iron wire of 0.094 inch in diameter or smaller.

- (2) Before removing any tautog caught for commercial purposes from a boat or removing a boat from the water, a person shall affix a tag supplied by the Department to the cheek bone of the tautog.

- (3) Tags:
 - (a) Shall be supplied by the Department;
 - (b) Are not transferrable;
 - (c) Expire at the end of each calendar year;
 - (d) May not be reused, defaced, modified, or counterfeited;
 - (e) Shall be securely affixed to a whole tautog or accompany fillets until sale to the final consumer; and
 - (f) Shall only be used by the commercial tidal fish licensee to whom they were assigned.
- (4) A licensee shall return unused tags to the Department not later than February 15 of each year.
- (5) Tautog caught for commercial purposes shall be landed in the state that is identified on the tag.

D. General.

- (1) The Secretary may modify catch limits or size limits or open or close a season in order to implement the Atlantic States Marine Fisheries Commission Fishery Management Plan for Tautog by issuing a public notice on the Department's website.
- (2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.
- (3) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.
- (4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.
- (5) An individual may not sell or purchase a commercially caught tautog, alive or dead, that has not been tagged in accordance with this regulation.

d. Harvest broken down by commercial (by gear type where applicable) and recreational, and non-harvest losses (when available).

1. Commercial Landings:

The Maryland Department of Natural Resources and the Atlantic Coastal Cooperative Statistics Program Data Warehouse indicated that [C] pounds of tautog were landed in Maryland during the 2023 calendar year (Table 1).

Table 1 removed due to confidential data.

2. Recreational Landings:

The National Oceanic and Atmospheric Administration preliminary 2023 Marine Recreational Information Program has determined a total recreational harvest estimate for 21,622 (PSE 32.2; numbers of fish; A+B1) as of May 13, 2024.

e. Review of progress in implementing habitat recommendations.

The Department's annual Submerged Aquatic Vegetation Habitat Survey documented juvenile tautog abundance in Sinpuxent Bay. These results document important habitat that supports sustainable tautog recruitment.

IV. Planned management programs for the current calendar year

a. Summarize regulations that will be in effect. (Copy of current regulations if different from III c.) Highlight any changes from the previous year.

The recreational and commercial fishing [regulations](#) for 2024 will remain the same as 2023.

b. Summarize monitoring programs that will be performed.

The Department will continue to monitor tautog juvenile relative abundance with the Trawl, Beach Seine, and the Submerged Aquatic Vegetation Habitat surveys.

V. Plan specific requirements

a. States are required to collect and report commercial and recreational catch estimates, a suitable time series of fisheries independent indices of abundance as determined by the Tautog Technical Committee, and 200 aged length samples per state within the range of lengths commonly caught by the fisheries.

Table 2. Summary of Maryland tautog compliance data. Maryland was *de minimis* in 2023 and was not required to conduct commercial market, directed fisheries, or ventless trap survey work.

Source	Lengths	Ages
Commercial Fishery Market Sampling	0	0
Recreational Fishery Sampling	210	200
Directed Pot and Rod & Reel Sampling	0	0
Resource Assessment Trawl Survey	7	0
Ventless Trap Survey	0	0
Other: Coastal Bays Beach Seine Survey	3	0
Other: Submerged Aquatic Vegetation Habitat Survey	124	0

b. Commercial Harvest Tagging Program- States are required to implement the commercial tagging program starting in 2020. States must annually describe the biological metric used to allocate tags, report the number of tag violations (if possible), and complete the table below.

The State of Maryland purchased 100 tautog tags for fishing year 2023. Our biological metric was based on our 16 inch minimum size and the previous landings over the last three years (2020-2023).

Table 3. Commercial Harvest Tagging Program.

State	MA	RI	CT	NY (LIS)	NY (south shore)	NJ	DE	MD	VA
Quota (if applicable)								N/A	
Maximum Commercial Harvest per Region								N/A	
Avg. Commercial Weight (pounds)								7.09	
Number of Participants								C	

Number of Tags Issued								C	
Number of Tags Returned								C	
Number of Tags Used								C	
Tags Reported Lost								0	
Tags Reported Damaged								0	
Number of Tags Unaccounted for								0	

VI. Law Enforcement Reporting Requirements.

No plan specific requirement.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Weakfish (*Cynoscion regalis*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2023

Prepared by

Harry W. Rickabaugh Jr.

**Fisheries and Boating Services
Maryland Department of Natural Resources**

September 12, 2024

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

a. **a. Report commercial landings, including any reported bycatch, in pounds, for 2023.**

Maryland's directed fishery landed 1,493 pounds of weakfish in 2023.

Maryland commercial fishermen reported landing weakfish on 112 trips, with one trip equaling 100 pounds of weakfish in 2023.

Maryland commercial fisherman reported landing more than 100 pounds of weakfish on one trip, with a combined overage of 54 pounds in 2023.

Recreational Fishery

a. **Report recreational harvest, in both pounds and numbers of fish, and releases in numbers of fish for 2023.**

Maryland landed an estimated 21,455 weakfish (PSE = 80.4, value not significantly different than zero) weighing 55,264 pounds (PSE = 66.9, value not significantly different than zero) in the 2023 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/8/2024).

Maryland recreational anglers released an estimated 31,359 weakfish (PSE = 81.7, value not significantly different than zero) in the 2023 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 8/8/2024).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2023, charter boat captains reported harvesting 22 weakfish with an estimated weight of 45 pounds. They reported releasing 177 weakfish weighing an estimated 243 pounds in 2023.

III. Fishery Monitoring Programs

a. **Fishery Dependent Programs**

Addendum I to Amendment 4 requires non de minimis states to collect 6 individual fish lengths for each metric ton of weakfish landed commercially and 3 individual fish ages for each metric ton of total weakfish landed. Based on de minimis requests in the 2023 FMP Review (and subsequent approval by the Board), the following states must submit this data: RI, CT, NY, NJ, DE, MD, VA, NC, and SC.

Maryland collected three weakfish lengths and three weakfish ages from the commercial pound net fishery in 2023. Maryland also collected four additional lengths from a fishery independent gill net survey conducted in the Choptank River. Maryland did meet the four length samples required, with the addition of the fishery independent fish, but did not meet the 75 age samples required, based on landings reported in Section II above. This is the first year Maryland did not meet the minimum number of age samples required. The number of commercial pound net sampling trips made in 2023 was similar to previous years, and we sampled every weakfish we encountered. Current commercial landings are very low making intercepting landed weakfish at

fish dealers very difficult, so no additional dealer samples were obtained in 2023. The age sample requirement was much higher than recent years, due to a large increase in the MRIP harvest estimate, although MRIP still indicates that estimate is highly uncertain and not significantly different from zero.

b. Fishery Independent Programs

Many states provide YOY indices (RI, CT, NY, NJ, DE, MD, VA, NC, FL) and/or Age 0+ or 1+ indices (CT, NJ, DE, NC, GA, FL) of relative abundance for weakfish. If your state collects this data from a trawl survey please indicate the relative abundance of weakfish in 2023 (i.e., fish/tow or kg/tow).

Maryland provides a young of the year (YOY) index for weakfish from its Coastal Bays Trawl Survey, and the 2023 geometric mean catch per hectare was 1.06 weakfish. The 2023 value was higher than the 2022 value of 0.67 fish per tow, but remained below the 35-year time series mean of 1.67 fish per hectare.

Maryland also provides a YOY index for weakfish from the Chesapeake Bay Blue Crab Trawl Survey, and the 2023 geometric mean catch per tow was 1.26. The 2023 value increased compared to 2022, but was still below the 35-year time series mean of 2.59 fish per tow.

IV. Management Program

a. Summarize any regulatory changes from the previous year:

N/A

b. Law Enforcement

There were no law enforcement issues.

c. Please provide regulatory language that shows you are meeting management measures stipulated in Addendum IV:

- **1-fish creel limit in the recreational fishery**
- **100-pound landings limit, per vessel, per day or trip (whichever is the longer period of time) in the directed commercial fishery**
- **100-pound bycatch limit per vessel, per day or trip (whichever is the longer period of time) for all non-directed fisheries**
- **100-fish allowance in the finfish trawl fishery for undersized fish (less than 12 inches total length)**

Maryland's weakfish and spotted sea trout regulations are combined in state regulation, hence the inclusion of spotted sea trout in the following text. Language pertaining to weakfish is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Appendix C. Compliance Reports to the Atlantic States Marine Fisheries Commission for Calendar Year 2024

The Atlantic States Marine Fisheries Commission (ASMFC) requires the states to prepare annual compliance reports to ensure that they are implementing the coastwide management requirements stated in the fishery management plans. Maryland reports on the following species: American eel, Atlantic croaker, Atlantic menhaden, Atlantic striped bass, Atlantic sturgeon, black drum, black sea bass, bluefish, horseshoe crab, Spanish mackerel, red drum, American shad and river herring, scup, spot, spotted seatrout, summer flounder, tautog, and weakfish. Appendix A includes the 2024 calendar year ASMFC compliance reports for these species in the order listed. All confidential data have been redacted by being removed or replaced with a [C].

Additional information on stock status and fishery management measures for these migratory fish species can be found at asmfc.org and mafmc.org. Contact information for ASMFC staff is available at asmfc.org/species/, and the publications library is available at asmfc.org/category/resources/.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

State of Maryland American Eel (*Anguilla rostrata*) Compliance Report to the Atlantic States Marine Fisheries Commission Calendar Year 2024

**Prepared by: Alexis Park
Fishing and Boating Services
Maryland Department of Natural Resources
July 2025**

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I. COMMERCIAL FISHERY

a. Synopsis of regulations in place – 2024 season

1. The Secretary of the Department of Natural Resources may establish or modify catch limits, size limits, and seasons for American eel in order to implement the U.S. coastwide cap set by the Atlantic States Marine Fisheries Commission (ASMFC) Interstate Fishery Management Plan for American Eel, by issuing a public notice on the Fisheries Service website. The coastwide cap was 916,473 pounds in 2024. In April 2024, ASMFC approved Addendum VII to the American eel Interstate Fishery Management Plan that sets the coastwide cap to 518,281 pounds starting in 2025.
2. A license is required to catch eels for sale in tidal waters. Commercial fishing is prohibited in non-tidal waters. Limited entry exists for new commercial fishermen.
3. Submittal of monthly commercial catch reports with daily information (lbs. landed, gear type, and amount of gear by area) is required. *
4. Except by spear or baited traps or pots, eels may not be taken between September 1 and December 31. **
5. A person may not catch, possess, land, or sell eels for commercial purposes which are less than 9 inches total length, except as permitted under COMAR 08.02.(appropriate aquaculture permit). **
6. No possession limit.
7. An eel pot must be constructed with a minimum wire mesh size of 1/2" by 1/2" in entirety. **
8. A person may not set buoyed eel pots in those channels designated as crab pot buoy-free channels or other prohibited channels.
9. A commercial crabber licensed to catch crabs may use up to 50 eel pots per day to catch eels for personal use as trotline bait with no harvest limit and must submit eel catch reports (lbs. landed and gear amount by area). Commercial crabbers are subject to the same minimum harvest size and pot mesh requirements of commercial eel harvesters.

b. Estimates of directed harvest, by month, by region as defined by the states—calendar year 2024

1. Pounds landed by life stage and gear type

A distinction is not made between life stages of American eel in Maryland commercial records. Legal commercial gear in Maryland waters does not retain glass and elver stage eels. The commercial eel pot fishery accounted for over 95% of Maryland eel harvest since catch and effort information was required to be reported in 1992, approximately 99% of all eels landed were caught with eel pots in 2024. These are believed to be entirely yellow eels. *

The total reported commercial eel harvest for Maryland in 2024 was 200,587 pounds, ranking 32nd since 1983 in total harvest. A total of 198,976 pounds were reported on finfish reporting forms and 1,611 pounds were reported for personal use on the crab

reporting forms. Harvest in 2024 increased approximately 28% from 2023 and remained below the time series mean of 373,564 pounds for the last six consecutive years (Figure 1). * The fishery, which experienced lower demand and poor market conditions in 2019 was significantly impacted by the Covid-19 pandemic, and the export market has yet to recover. The substantial drop in recent harvest over the last five years is believed to be market driven.

Monthly eel landings in Maryland have historically indicated a bi-modal fishery with the largest seasonal peak occurring in the spring followed by another peak in the fall. In 2024, the largest seasonal peak occurred in spring (April–May) with approximately 32% of the total harvest; summer (July–August), 27%; and fall (October–November), 21%. Monthly eel landings for 2024, outside of the peak month of May (16.3%), ranged from 0.003% in February to 16.0% in April; no eel landings were reported in January.

2. Biological data from representative sub-samples to include sex ratio and age structure (for yellow/silver eels), length and weight if available

A total of 611 and 541 commercially harvested American eels were sampled from the eel pot fishery in the Chester and Choptank rivers, respectively. Sagittal otoliths from 237 sub-sampled eels were extracted for age analysis and 136 eels were sub-sampled for sex determination. The prevalence rate of *Anguillicola crassus* was 63% (N = 65) for Chester River eels and 49% (N = 95) for Choptank River eels. Chester River eels were 46% female and Choptank River eels were 63% female. There was a similar distribution between the Chester and Choptank rivers eels with the first four size bins each containing >10% of the total sample (Figures 2 and 3); both Chester and Choptank river eels demonstrated a heavily skewed size distribution towards eels in the smallest size bins. Mean length of Chester River eels was 321 mm and 7% of the eels were > 400 mm (considered large by commercial standards). The mean length of Choptank River eels was 352 mm and 22% were > 400mm. *

Age structure for each system was determined using an age-at-length key. The mean age for all sub-sampled yellow eels in the Chester and Choptank rivers was determined as 4.3 and 3.2 years, respectively. The age structure ranged from 2 to 9 years for Chester River eels (2023–2024) and from 1 to 7 years for Choptank River eels (2024; Table 1). The age at full recruitment (modal age) was age 4 for Chester River eels and age 2 for Choptank River eels. Ages 3 and 4 represented 75% of the catch for the Chester River, and ages 2 and 3 represented 80% of the catch for the Choptank River. Application of Heincke's method for the Chester and Choptank rivers eels indicated levels of fishing mortality at $F = 0.83$ and $F = 0.60$, respectively.

3. Estimated percentage of harvest going to food versus bait: Data not available.

c. Estimates of export by season

Dealers are required to report the weight and price paid for American eels purchased, as well as the weight and price of eels sold, but are not required to report the export of eels. Therefore, estimates of exports by season cannot be made with any degree of accuracy.

d. Harvest data provided as catch-per-unit-effort (CPUE) by life stage and gear type

Eel pot CPUE was 1.04 pounds per pot in 2024, the third consecutive decline since the

peak CPUE in 2021. However, this marked the twelfth consecutive year the CPUE was greater than the time series mean of 0.76 pounds per pot (1992–2024; Figure 4). From 1992–2002, CPUE was stable at relatively low levels, then increased sharply from 2002–2006 and remained stable at a relatively high level during 2007–2013 before steadily increasing from 2014 to present day. Since 2014, the mean CPUE is 1.11, this is 50% greater than the first twenty-two years of the time-series data (1992–2013). Overall, a linear regression indicated a strong, positive trend in the arithmetic CPUE since 1992 (slope = 0.03; SE = 0.002; $r^2 = 0.87$; $P < 0.0001$; $N = 32$). Total eel pot effort in 2024 increased approximately 35% from 2023, the highest level since 2019. However, it still represents only 31% of the average effort during 2011–2018. *

e. Permitted catch for personal use, if available.

In 2024, licensed commercial crabbers harvested 1,611 pounds of American eel for use as trotline bait with a CPUE of 0.51 pounds per pot, a decline from 2023. Commercial crabbers exceeded the eel harvest time series mean of 20,336 pounds only once since 2014. It should be noted that the reporting of eel harvest from crab reporting forms were somewhat sporadic throughout the time-series data. *

II. RECREATIONAL FISHERY

a. Synopsis of regulations in place – 2024 season

1. Open Season: All year.
2. Minimum Length: 9 inches total length. **
3. Hook and line: tidal and non-tidal possession limit: 25 daily. **
4. A licensee authorized to catch crabs may use up to 10 pots to catch up to 25 eels daily for personal use as crab trotline bait without obtaining authorization to catch finfish.
5. Recreational fishers who use pots to harvest eels are required to comply with the same pot construction requirements as commercial eel harvesters.

b. Estimate of recreational harvest by season – calendar year 2024 – Data not available.

1. Biological data taken from representative sub-samples to include sex ratio, age structure, length and weight – Data not available.

III. FISHERY-INDEPENDENT MONITORING

a. Results of the annual young-of-year (YOY) abundance survey – Spring 2024

1. Turville Creek Young-of-Year Survey

A young-of-year (YOY) abundance survey was conducted at Turville Creek, a tributary to the Isle of Wight Bay, in Maryland's coastal bay watershed from 2/29/2024 to 5/2/2024. An Irish elver ramp/trap was fished 38 times over the 9-week period. A total of 89,298 glass eels were captured, which resulted in a CPUE of 108.2 eels/hour (Figure 5). The CPUE increased from 2023 (39.7) but remained below both the time series mean of 141.7 eels/hour in three of the last four years. The total number of glass eels captured and

CPUE in 2024 ranked 18th and 16th over the 25-year time-series, respectively. The overall index from 2000 to 2024 is variable with no discernable trend in abundance for glass eels in Maryland's coastal bays. *

b. Description of other fishery-independent surveys and results

1. Sassafras River Eel Pot Survey

A Sassafras River fishery-independent eel pot survey, previously conducted from 1998 to 2000, was replicated annually since 2006. In 2024, 30 pots were set in fixed locations and fished on 12 separate days from 5/20/24 to 6/28/24. A total of 670 American eels were collected over the course of the survey. The total number of eels collected increased slightly in 2024 but remained below the time series average of 872 eels. Sagittal otoliths from 125 sub-sampled eels were extracted for age analysis and 74 were sub-sampled for sex determination. The prevalence rate of the swim bladder parasite, *A. crassus*, was 59% (N = 88). Females comprised 79% of the catch in 2024. The 2024 daily CPUE in pounds per pot ranged from 0.47 to 1.14 with a mean of 0.80, which represented an 18% increase over 2023 and ranked 5th out of the 19 years of sampling (Figure 6). Catch per unit effort, based in units of weight, in 2024 remained over the time series mean of 0.54 pounds per pot as a result of the higher proportion of females and their associated larger mean lengths and weights. After CPUE approximately doubled in 2009 relative to the 1998–2000 and 2006–2008 periods, it remained in a tight range (0.48–0.62) in seven of eight years through 2016. Six of the highest CPUE's occurred during 2017–2024. A linear regression indicated a strong and positive relationship in the Sassafras River eel population since 2006 (slope = 0.03; SE = 0.005; $r^2 = 0.70$; $P < 0.0001$; N = 19).

Size structure was compared for four separate time periods (1998–2000, 2006–2013, 2014–2018, and 2019–2024; Figure 7). These time periods were chosen to demonstrate the notable changes in length distributions and trends in size structure over the history of the survey. For each successive time-period data, the length distributions have become more evenly distributed and there was a shift to larger eels. The proportion of eels considered large by commercial standards (≥ 400 mm) was 3% in 1998–2000; 12% in 2006–2013; 21% in 2014–2018; and 31% in 2019–2024. The mean size of Sassafras River eels increased from 309 mm to 331 mm to 358 mm to 380 mm over the four successive time periods.

Age structure was determined using an age-at-length key. The age at full recruitment (modal age) for the Sassafras River eels was age 4. The modal age for two of the previous five years was age 5. Higher female composition was observed since 2018 and there was an overall shift to larger eels in the size structure, these factors likely led to a higher modal age during previous years. In 2024, the Sassafras eel population was still dominated by older female eels with the average age of 6.3 (Table 2), just below the five-year (2020–2024) average age of 7 for females, respectively. The proportion of 8+ year old eels represented 21% of the catch in numbers in 2024; these older age classes represented less than 4% of total catch in numbers prior to 2019. In 2024, the Sassafras eel population was still dominated by older female eels, and there was a notable increase of eels >560 mm in both 2023 (11.4%) and 2024 (17.6%), respectively. The presence of eels < 300 mm declined in 2024 (17%) from 32% in 2023 and was below the time series mean of 23%, respectively. Application of Heincke's method for the Sassafras River eels indicated fishing mortality at $F = 0.03$, the lowest F since the survey started in 2006. Fishing mortality in the Sassafras River averaged 0.17 since 2020, well below the average F of 0.35 since 2010, respectively. *

c. Projects planned for the next five years

1. YOY abundance survey in Maryland's coastal bays (Turville Creek).
2. Fishery-independent yellow eel pot survey in the Sassafras River.
3. Fishery-dependent commercial harvest eel survey in tributaries of the Chesapeake Bay.

IV. CHARACTERIZATION OF OTHER LOSSES

a. Impingement/entrainment mortalities of eel at power generation facilities, water intakes, and navigation locks

1. Conowingo Dam opened flood gates on April 10th (10) and August 11th (11) to spill water due to flooding on the Susquehanna River. During these events fish would bypass the turbines. No data is available concerning mortality of eels through turbines. The Conowingo West Eel Collection Facility (CWEFCF) was operational from May 1st to December 3rd, 2024. A total of 371,655 juvenile eels were captured at the CWEFCF during the 2024 season and a total of 71 eels died in the collection tank (0.02% mortality). During the entire 2024 season, a total of 639 (1.12% mortality) deceased juvenile eels were recovered from combined holding tanks for both CWEFCF and Octoraro Creek Eel Collection Facility (OCECF). External injuries were noted on 2.5% of the bi-weekly examined eels (24 of 954 individuals) from CWEFCF. Mortality during transport trips from the CWEFCF totaled 135 eels (0.02%). For further information, see the reports below:

Gomez and Sullivan Engineers and Normandeau Associates, Inc. 2025. Fishway Operation and Maintenance Plan 2024 Annual Report. Conowingo Hydroelectric Project FERC Project Number 405. Prepared for Constellation.

Normandeau Associates, Inc. 2025. Muddy Run Pumped Storage Project and Conowingo Hydroelectric Project Conowingo West Eel Collection Facility, 2024. FERC Project Numbers 2355 and 405. Prepared for Constellation.

b. Bycatch mortalities in commercial and recreational fisheries – Data not available.

c. Confiscated poundage from illegal or undocumented fisheries (i.e., poaching) – Data not available.

d. Scientific losses (i.e., samples collected for contaminants analysis, other studies)

1. Data is available from Normandeau Associates, Inc. (2025). Normandeau Associates collected biweekly subsamples from May 1st to September 15th, 2024, as a condition of the PA DEP 401 Water Quality Certification for the Muddy Run Pumped Storage Project Eel Plan, a total of 954 eels were collected for biological data. An estimated 11% (100 of the 954) of eels were dissected for parasite analysis and age determination. The Susquehanna River Basin Commission (SRBC) also removed a total of 600 juvenile eels for an “Eels in the Classroom” program.

e. Mass mortalities of eel due to disease, spills or other causes – Data not available.

V. QUANTIFICATION OF ESCAPEMENT AND CHANGES IN PASSAGE (e.g., dam removals, new impediments)

1. No dam removals occurred during the 2024 calendar year.

VI. EEL MANAGEMENT PROGRAM FOR THE CURRENT CALENDAR YEAR, 2025

1. In addition to continuing ongoing fishery-independent surveys in 2025, fishery-dependent sampling from the commercial eel pot fishery will be completed for the Choptank and Potomac rivers. Samples will be collected from both fishery-independent and -dependent surveys to characterize the American eel population in Maryland's portion of the Chesapeake Bay, relative abundance, distribution, size, age, sex determination, and parasite infestation rates will be among information collected by these surveys.

Addendum III Requirements

- * Addendum III requirements implemented under **Monitoring Program**
- ** Addendum III requirements implemented under **Management Program**

Table 1. Instantaneous total mortality rate (Z), natural mortality (M), fishing mortality rate (F), and estimated number (N) age distribution for Chester River (2023–2024), Choptank River (2024), and Sassafras River (2023–2024) American eels.

Tributary	Year	Z	M	F	Estimated N at age based on age-length key											
					1	2	3	4	5	6	7	8	9	10	11	12
Chester River	2023	1.13	0.30	0.83		74	438	499	177	42	13	2	4			
	2024															
Choptank River	2024	0.98	0.38	0.60	14	327	101	33	52	11	1					
Sassafras River	2023	0.28	0.25	0.03		14	239	264	245	170	115	127	75	69	5	1
	2024															

Table 2. The total number sampled (N), mean length (mm), and mean age by sex of American eels for tributaries sampled in 2024 and the previous sampling year, Chester River (2023–2024), Choptank River (2018 and 2024), and Sassafras River (2023–2024).

Tributary	Year	N		Mean Length		Mean Age	
		Female	Male	Female	Male	Female	Male
Chester River	2023	294	318	425	315	4.9	3.4
	2024	277	326	366	319	4.5	4.1
Choptank River	2018	230	152	430	325	3.2	2.4
	2024	326	192	404	312	3.3	2.1
Sassafras River	2023	468	165	465	301	6.4	3.5
	2024	523	143	457	305	6.3	4.1

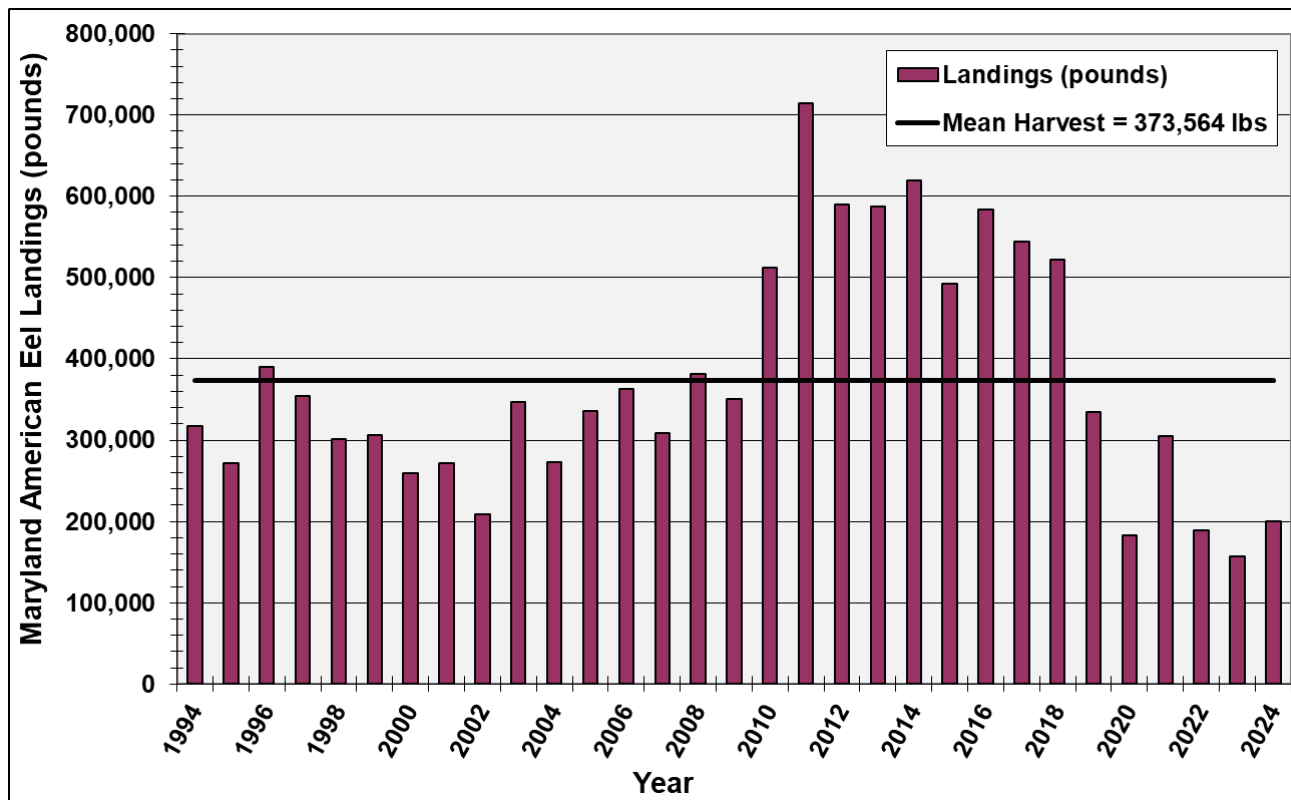
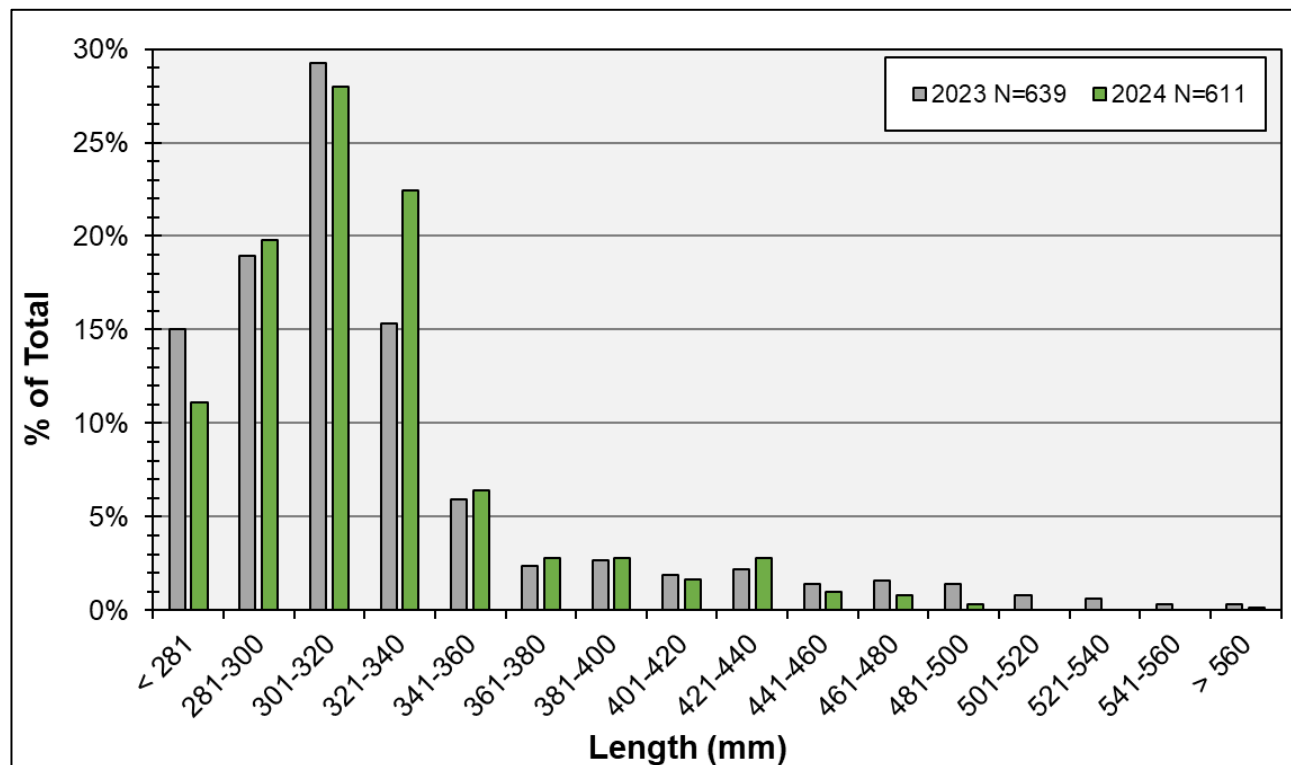
Figure 1. Reported American eel harvest from the Maryland Chesapeake Bay, 1994–2024.**Figure 2. Length distribution of commercially harvested eels from Chester River, 2023–2024.**

Figure 3. Length distribution of commercially harvested eels from Choptank River, 2024.

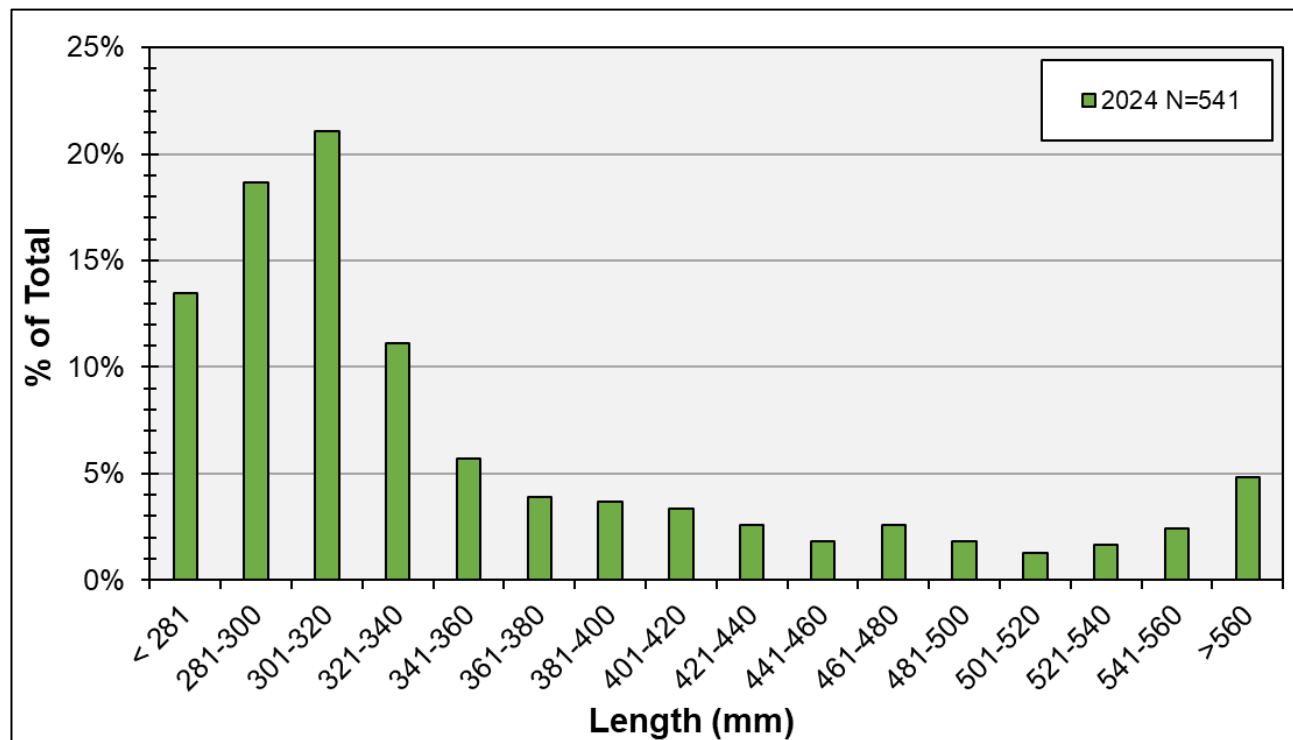


Figure 4. Annual commercial eel pot CPUE (pounds per pot) and effort (eel pots*boat days), 1992–2024.

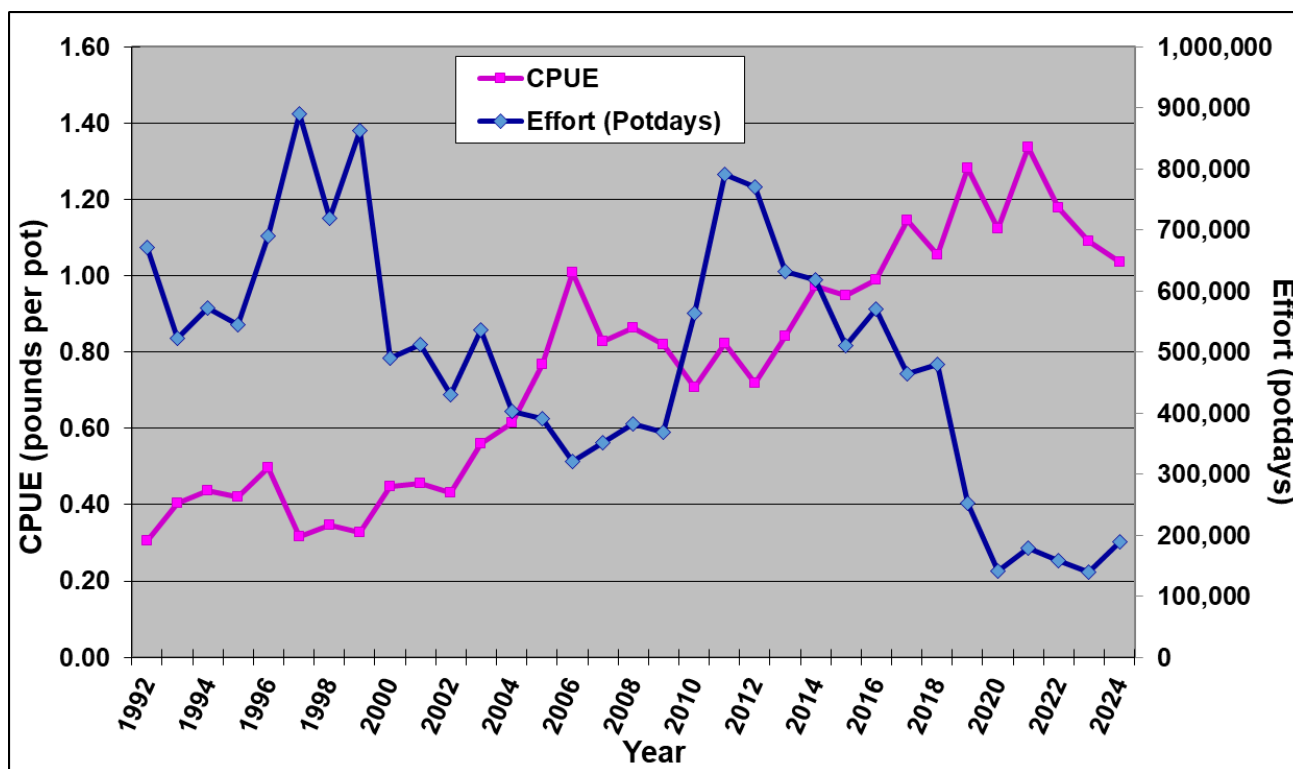


Figure 5. Maryland (Turville Creek) American eel YOY arithmetic mean CPUE index with 90% confidence intervals, 2000–2024.

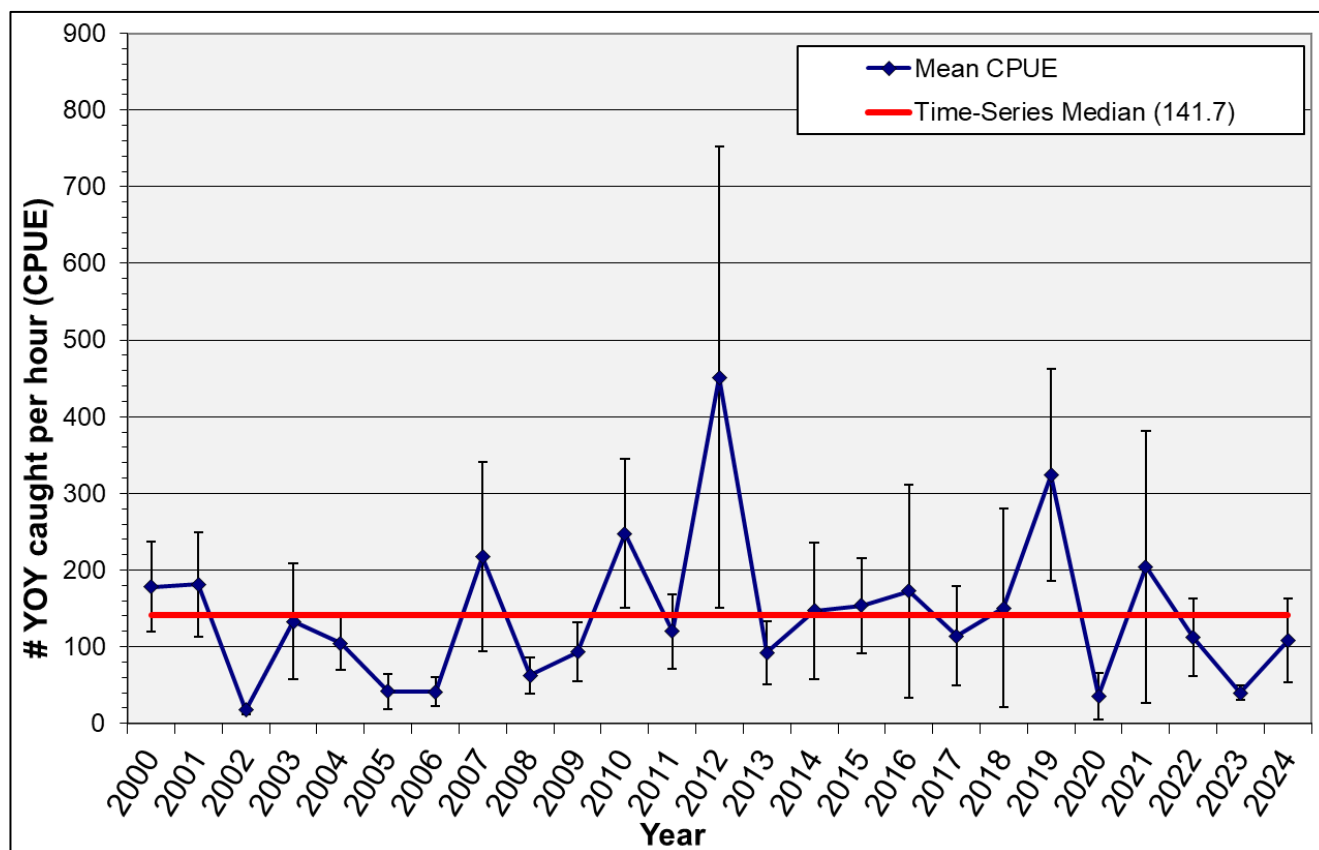


Figure 6. Time series median CPUE, annual mean CPUE, and 95% confidence intervals from the Sassafras River fishery independent eel pot survey, 1998–2000 and 2006–2024.

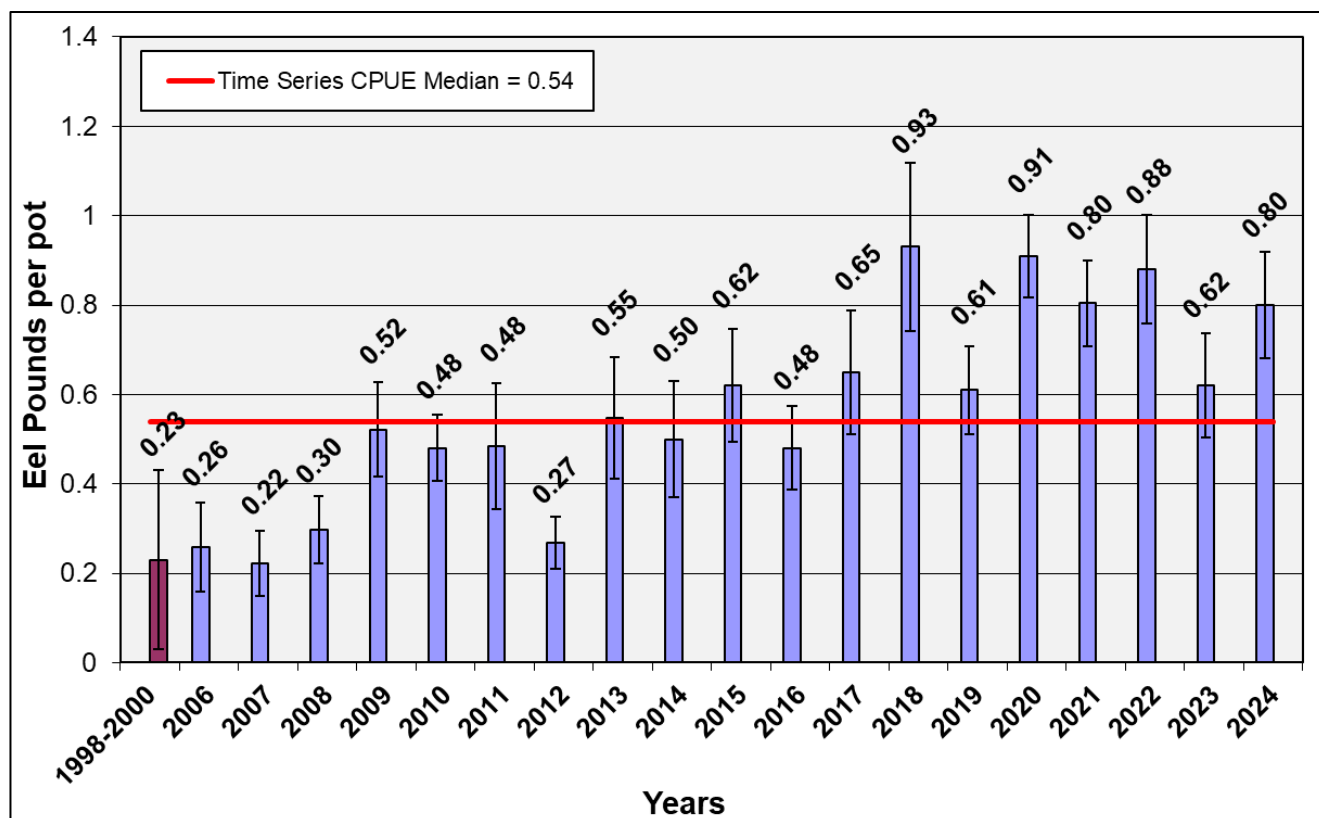
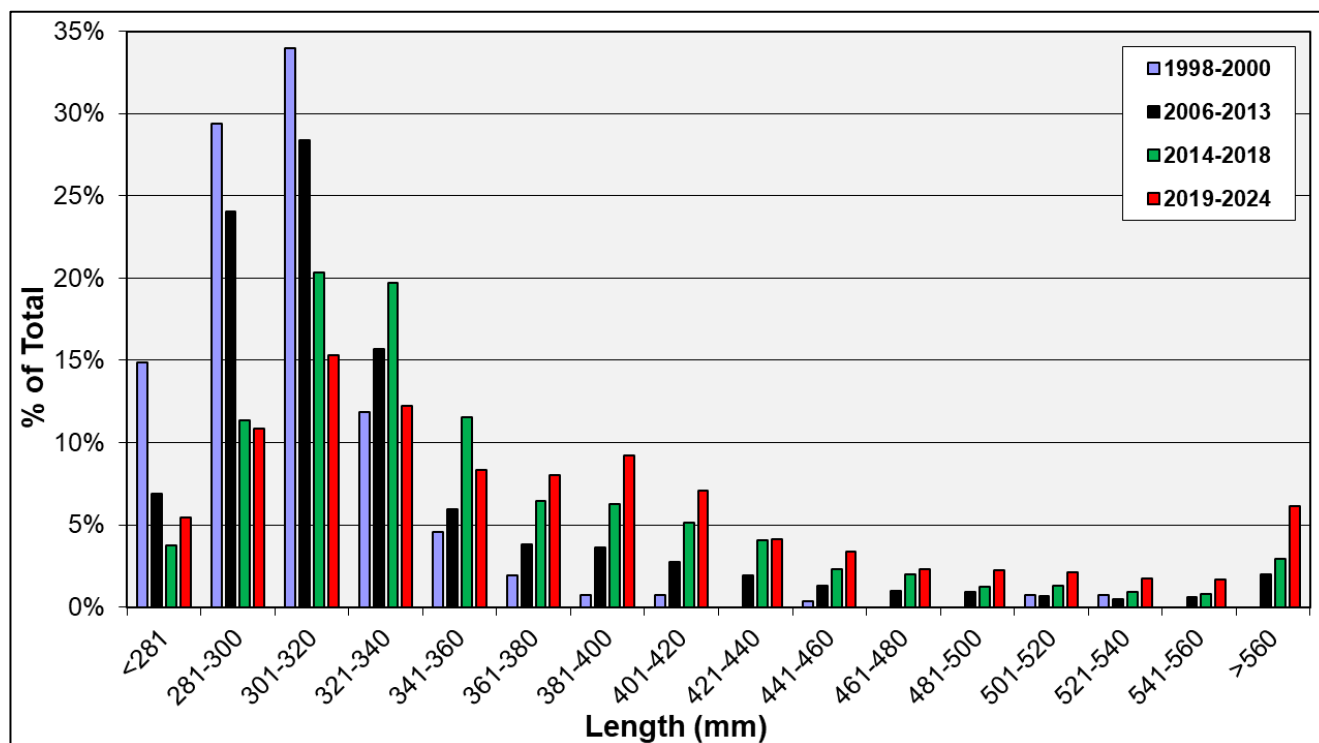


Figure 7. American eel length distributions from the Sassafras River fishery-independent eel pot survey, 1998–2000, 2006–2013, 2014–2018, and 2019–2024.





Wes Moore, Governor
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Maryland Atlantic Croaker (*Micropogonias undulatus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2024

**Prepared by
Harry W. Rickabaugh Jr.
Maryland Department of Natural Resources
Fishing and Boating Services**

June 23, 2025

Table one redacted due to confidential data (6/30/25).

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Report commercial landings, in pounds, for 2024. Please indicate confidential data with red font. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

Maryland's directed commercial fishery landed 456 pounds of Atlantic croaker in 2024 (**Table 1**). 2024 landings are still preliminary, but are not expected to change significantly.

Table 1 redacted due to confidential data.

Recreational Fishery

Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2024.

Maryland landed an estimated 47,923 pounds of Atlantic croaker (PSE = 25.9) in their recreational fishery in 2024. Maryland landed an estimated 143,921 Atlantic croaker (PSE = 26.5) in their recreational fishery in 2024. Maryland released an estimated 3,259,427 Atlantic croaker (PSE = 30.5) in their recreational fishery in 2024. Recreational estimates were downloaded from NOAA Fisheries, Recreational Fisheries Statistics Queries. U.S. Department of Commerce, and retrieved June 6, 2025.

Additional recreational catch information is available through Maryland's Charter Boat Logbook Program, which began in 1993. Maryland charter boat captains are required to maintain daily logs of where they fish, how many fish of each species they harvest, how many they release and how many anglers participated. The 2024 data are preliminary but should not change significantly. Charter captains reported harvesting and releasing 5,565 and 1,248 Atlantic croaker, respectively (Table 2).

Table 2. Charter boat harvest, releases, and total catch from Maryland's Charter Boat Logbook Program in numbers of fish, 2011-2024 (2024 data are preliminary).

Year	Harvest (# of fish)	Releases (# of fish)	Total Catch (# of fish)
2011	132,498	383	132,881
2012	113,470	43	113,513
2013	93,155	142	93,297
2014	81,188	1,199	82,387
2015	36,495	106	36,601
2016	12,210	299	12,509
2017	2,926	31	2,957
2018	689	1	690
2019	995	756	1,751
2020	1,203	3,664	4,867
2021	3,671	233	3,904
2022	1,806	259	2,065
2023	2,115	5,613	7,728
2024	5,565	1,248	6,813

III. Fishery Monitoring Program

a. Summarize fishery dependent monitoring programs including bycatch monitoring programs.

Department of Natural Resources biologists sampled commercial pound nets in Maryland's portion of Chesapeake Bay from May 29, 2024 through September 9, 2024. Sites were located in the western side of Chesapeake Bay just north of the Potomac River to Point No Point, inside the mouth of the Potomac River, and in the eastern side of Chesapeake Bay near Barren Island. Atlantic croaker mean length from the onboard pound net survey was 189 mm total length in 2024, the lowest value of the 32 year time series. Only 32 Atlantic croaker were encountered during the survey in 2024, the fourth lowest number sampled throughout the time series. Thirty-one of the 32 Atlantic croaker were aged in 2024, with 26% being age zero and age one accounted for 74% of sampled fish. 2024 was the first year in which no age two plus fish were sampled, but low sample size may have led to missed ages and a biased proportion at age for 2024.

b. Summarize fishery independent monitoring and provide a brief review of the results.

In 2013 Maryland began a summer gill net survey on the main stem of the lower Choptank River from an imaginary line extending from Howell Point to Jenkins Creek to the mouth of the river. The survey uses four 30.5m by 1.8m panels of monofilament gill net with 6.4cm, 7.6cm, 8.9cm, and 10.1cm stretch mesh sizes rigged to sink. The section of river sampled was divided into a 457m by 457m block grid. The Choptank River gill net survey was conducted once per week from June 4, 2024 to August 27, 2024, with 52 sets being made over 13 sampling days. Atlantic croaker catches from the Choptank River gill net survey declined through the first three years, 476 fish in 2013, 269 fish in 2014 and 21 fish in 2015.

Atlantic croaker catches have remained low since, with 51 fish being captured in 2024, the fourth highest catch of the 12 year time series.

IV. Management Programs

Summarize any regulatory changes from the previous year or planned regulatory changes for the current year. Please include an update on Addendum III state implementation plans if applicable.

N/A

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.

On July 21, 2024, Maryland Natural Resource Police officers charged a man with possessing 99 undersized Atlantic croaker at a boat ramp in Saint Mary's County Maryland. Undersized fish were returned to the water, but the disposition of the fish was not recorded. The individual faces a fine and fishing license revocation.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Atlantic Menhaden (*Brevoortia Tyrannus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2024

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Service**

July 11, 2025

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

Harry Rickabaugh –301 Marine Academy Drive– Stevensville, Maryland 21666
410-643-6785 ext. 2109 – harry.rickabaugh@maryland.gov – TTY Users Call via the Maryland Relay

I. Request for *de minimis* and relinquishing quota

- a. Maryland does not request *de minimis* status.
- b. Maryland did not relinquish menhaden quota in 2024.

II. Previous calendar year's fishery

Directed Fishery (Complete Worksheet Tab 1)

a. Report commercial landings by year and major gear type in the excel worksheet for the entire landings time series since 1985. Throughout the report, please indicate confidential data with red font. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

Maryland's directed fishery landed 586,388 pounds of Atlantic menhaden in 2024. Directed landings did not exceed Maryland's quota of 5,947,968 pounds. Pound net was the major gear type and accounted for 93% of landings.

b. Include the official dated closure notice for directed commercial fisheries if the TAC (or percentage of TAC) was reached. Attach the official notice as an appendix and indicate the date and reason for closure here.

The directed fishery for Atlantic menhaden was not closed in 2024, since reported landings did not reach Maryland's quota.

c. Indicate if your state participated in a quota transfer (include transaction details). If your state participated in multiple quota transfers, please list each individual transfer in chronological order.

Maryland did not participate in any transfers in 2024.

Incidental Catch Fishery (Complete Worksheet Tab 2)

- a. N/A

Episodic Event Set Aside (Complete Worksheet Tab 3)

- a. N/A

III. Mandatory Monitoring Programs (Complete Worksheet Tab 4 and 5)

a. Summarize reporting programs (e.g., frequency, harvester reporting, dealer reporting, data elements reported)

Maryland uses harvester reporting to monitor and track quota. All fishermen were required to report the quantity of fish landed by area fished, day, gear type, and species, as well as, the amount of gear used, duration the gear was in the water, hours fished and number of crew, using forms returned

monthly to Maryland Department of Natural Resources for all of 2024. Fishermen can also use a voluntary daily electronic reporting system in place of the paper forms. The electronic system includes the same data elements, plus a hail in / hail out and point of landing for each day fished. All pound net fishermen were required to report daily for all of 2024 via text message from a cell phone, an online form, or use the electronic daily reporting system. Required information reported included their menhaden bycatch permit number, whether or not more than one permit holder was onboard, total number of nets fished, soak time of each net fished and quantity of menhaden harvested. Fishermen not using the daily electronic reporting system were still required to file their paper forms.

b. Maryland does not allow purse seining in state waters.

c. Age and length data from the commercial bait harvest.

Indicate the number of age and length samples collected from your commercial bait fishery only. Please identify the number of complete 10-fish collections the samples came from as required in the table below. Also, please specify gear types from which the samples were collected.

- i. One 10-fish sample (age and length) per 300 metric tons landed for bait purposes for ME, NH, MA, RI, CT, NY, NJ, DE**
- ii. One 10-fish sample (age and length) per 200 metric tons landed for bait purposes for MD, PRFC, VA, NC.**

Maryland Department of Natural Resources biologists sampled commercial pound nets once per week in Maryland’s portion of Chesapeake Bay from May 29, 2024, through September 9, 2024, as part of the Summer Migratory Species Project. Sites were located on the western side of Chesapeake Bay near Point No Point, on the eastern side of the Chesapeake Bay near Barren Island and inside the mouth of the Potomac River. Ten to 25 age and length samples were taken at each net and additional lengths were taken to reach at least 50 total measurements per day when available. All measurements were to the nearest millimeter fork length. Additional 10 fish age and length samples were taken by the Striped Bass program once a month from June through November from pound nets set in the Chester River, Potomac River, Patapsco River and in Chesapeake Bay near Rock. In 2024, a total of 21 ten fish samples were collected and two additional samples of less than 10 fish were also taken.

State MD	Total Bait Landings (pounds)	#10-fish samples required	#10-fish samples collected	Age samples collected	Length samples collected	Gear/Comments
2024	586,388	1	21	371	777	Pound net

- d. Indicate that the following mandatory catch and effort data elements are being collected for the pound net fishery.
- i. Total pounds (lbs.) landed per day
 - ii. Number of pound nets fished per day

Note – In order to characterize selectivity of this gear in each state, a goal of collecting five 10-fish samples from pound net landings annually is recommended. Report on any samples collected.

As indicated in section III a. above, Maryland does require pound net fishermen to report catch and effort data daily, including the number of nets fished. All of Maryland's commercial length and age samples were collected from the pound net fishery (see section III c. above for more detail).

e. Indicate if your state is collecting fishery-independent information on Atlantic menhaden through a survey. If so, is the survey collecting age (e.g., scales, otoliths) and length information on samples?

In 2013 Maryland Department of Natural Resources began an independent summer gill net survey, primarily targeting Sciaenid species, on the lower portion of the Choptank River. The survey collected menhaden lengths from 2013 to 2024, and collected and aged scales from 2015 to 2024. Otolith samples were also collected and archived for future analysis from 2017 to 2024. Age samples (paired scales and otoliths) were taken from 64 menhaden in 2024, and 155 were measured to the nearest millimeter fork length. The survey uses four 100 by 6-foot-panels of monofilament gill net rigged to sink. Stretch mesh sizes were 2.5, 3.0, 3.5 and 4.0 inches. Maryland also conducts two juvenile seine surveys, one in Chesapeake Bay and one in the Coastal Bays, that encounter Atlantic menhaden, but these surveys only target young of year fish, so no ages are collected. The Coastal Bays Seine Survey does collect lengths.

IV. Planned management programs for the current calendar year

a. Summarize any changes from previous years. Only indicate deviations from your Amendment 3 implementation plans if any.

N/A

b. Summarize any significant changes to your monitoring programs.

N/A

V. Law Enforcement Reporting Requirements

Identify any law enforcement issues that occurred.

N/A



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Black Drum (*Pogonias cromis*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2024

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

July 10, 2025

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

Harry Rickabaugh – 301 Marine Academy Drive– Stevensville, Maryland 21666
410-643-6785 ext. 2109 – harry.rickabaugh@maryland.gov

I. Request for *de minimis*

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2024.**

Maryland's directed commercial fishery landed 2,340 pounds of black drum in 2024.

Other Fishery Losses

Maryland did not have any reported fish loss events or reported discard information.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2024.**

Maryland recreational anglers harvested an estimated 1,078 black drum (PSE=56.3; MRIP 2025) weighing an estimated 5,554 pounds (PSE=56.3; MRIP 2025) in 2024. Maryland recreational anglers released an estimated 125,510 black drum (PSE 68.6; MRIP 2025) in 2024. All the preceding estimates are not significantly different than zero (MRIP 2025).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2024, charter boat captains reported harvesting 34 black drum with an estimated weight of 490 pounds, and releasing 3 black drum with an estimated weight of 144 pounds.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Black drum are generally encountered in low numbers, but are enumerated and measured to the nearest millimeter when encountered. Only one black drum was encountered in 202n, following the largest number encountered in 2023, with total length of 597 mm.

b. Summarize fishery independent monitoring and provide a brief review of the results:

In addition, in order to update the black drum indicators as established in the 2023 Black Drum Benchmark Stock Assessment, the states in the table below must each supply the listed indices updated with data through 2024. Information on how each of the indices were calculated can be found in the 2023 Black Drum Benchmark Stock Assessment and Peer Review Report, starting on page 42.

State	Survey(s)
New Jersey	New Jersey Ocean Trawl
Delaware	16 ft Trawl and 30 ft Trawl Survey

Maryland	Maryland Coastal Bays Seine Survey
North Carolina	P915 Fishery Independent Gill Net Survey
South Carolina	Trammel Net Survey
Georgia	Georgia Marine Sportfish Population Health Surve (MSPHS) - Trammel Survey

The Maryland Department of Natural Resources has conducted the Coastal Bays Fisheries seine survey in Maryland's Coastal Bays since 1972, sampling with a standardized protocol since 1989. Shore beach seine sampling was conducted at 19 fixed sites once per month in June and September. An annual geometric mean (GM) catch per haul in numbers was generated for standardized years (1989 – 2023). The index utilizes September samples only and is for fish with a mean TL less than 231mm. These limitations were used to avoid high proportion of zero catches in June (95% of samples were in September) and to eliminate age one plus fish from the index. This index is used in the annual indicators established following the last Benchmark assessment. The young of the year index indicates no discernable trend and a high level of variation (Figure 1). The 2024 value fell to zero fish per tow for the first time since 1993. An excel file with index values will accompany this report.

IV. Planned management programs for the current calendar year

- a. Summarize any regulatory changes from the previous year.

Maryland does not plan any regulation changes in 2024.

- b. Please **provide regulatory language that shows you are meeting required management measures**:

The following regulations were in effect throughout 2023.

From the Code of Maryland Regulations: 08.02.05.15.15 Black Drum.

A. Recreational Fishery.

- (1) The daily catch and possession limit per individual is one black drum.
- (2) The daily catch and possession limit per boat is six black drum.
- (3) A person may not catch or possess black drum less than 16 inches in total length.

B. Commercial Fishery.

- (1) Atlantic Ocean.
 - (a) The annual total allowable landings is 1500 pounds.
 - (b) A commercial licensee may not catch or possess black drum less than 16 inches in total length.

(2) Coastal Bays of the Atlantic Ocean and Their Tributaries. Except for purposes of scientific investigation approved by the Department, a commercial licensee may not catch, possess, or sell black drum.

(3) Chesapeake Bay and Its Tidal Tributaries.

(a) A commercial licensee may not catch or possess black drum less than 28 inches in total length.

(b) The daily catch and possession limit is ten black drum per vessel per day, regardless of the number of commercial licensees on board the vessel.

D. Public Notice.

(1) The Secretary may establish or modify catch limits, size limits, and seasons for black drum in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Drum, by issuing a public notice on the Department's website.

(2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.

(3) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected person has a reasonable opportunity to be informed.

(4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.

V. Law Enforcement Reporting Requirements

N/A

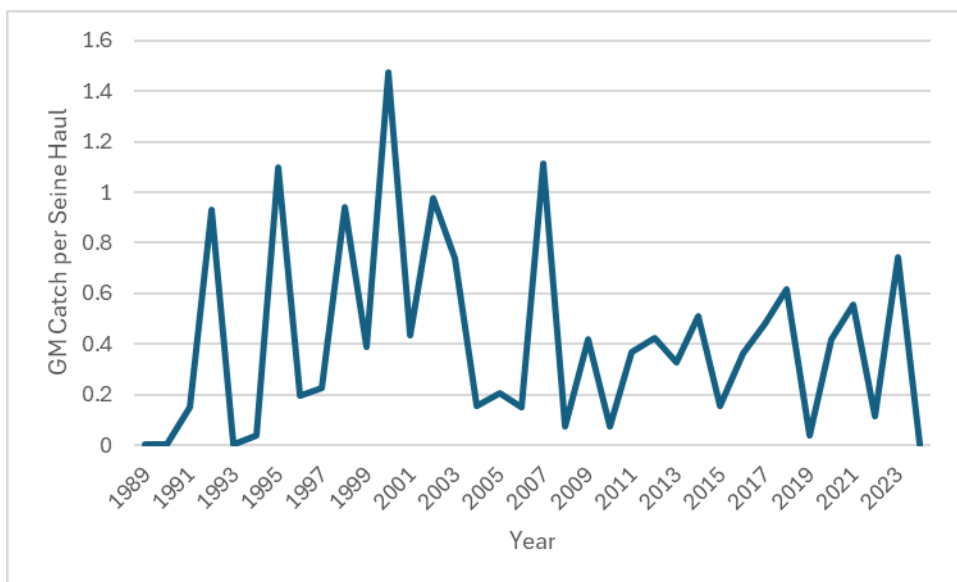


Figure 1. Geometric mean catch of black drum less than 231mm TL per seine haul from Maryland's Coastal Bays Program, utilizing September samples only, 1989-2024.

MRIP 2025, Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division July 2, 2025.



Maryland's 2024 Compliance Report for Black Sea Bass (*Centropristis striata*)
to the Atlantic States Marine Fisheries Commission
June 2025

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
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TTY Users call via the MD Relay

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Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2025

DNR

I. Introduction

Black sea bass were managed as one stock extending from North Carolina to Maine. In Maryland, black sea bass occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge. A Chesapeake Bay and Atlantic coast black sea bass fishery management plan was developed in 1993 by the National Oceanic and Atmospheric Administration (NOAA) Chesapeake Bay Program. Maryland and Virginia have a cooperative management plan for black sea bass within Chesapeake Bay. According to the 2024 operational assessment using data through 2023, the stock was not overfished, and overfishing was not occurring. A complete stock assessment is due in 2025.

Maryland has individual fishing quotas for black sea bass in Atlantic coastal waters including the coastal bays and their tributaries. In 2024, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit.

The recreational fishery is actively pursued in the Atlantic Ocean. Black sea bass recreational management allowed states to set their own regulations using conservation equivalency. Maryland chose to set regulations consistent with a region including Delaware and Virginia. These regulations were consistent with 2024 federal recreational measures.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2024 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to NOAA.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the access point angler intercept survey (APAIS) survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Three independent surveys were conducted in the coastal bays. The Trawl and Beach Seine surveys used a 16 foot otter trawl and a 100 foot bag seine. Black sea bass were collected in 36 of 140 trawls (25.7%) and 6 of 38 beach seines (15.8%). A total of 108 juvenile black sea bass were collected in trawl (69 fish) and beach seine (39 fish) samples. Black sea bass ranked 8 out of 58 species in overall finfish abundance. The trawl and beach seine CPUE was 3.9 fish/hectare and 1.0 fish/haul, respectively. In 2024, the trawl and beach seine relative abundance indices were both equal to the grand means.

The Submerged Aquatic Vegetation Habitat Survey has been conducted since 2015 using a 50 foot bag seine in Sinepuxent Bay. Black sea bass has been the six most abundant species collected over the study period from 2015 to 2024, indicating that juvenile black sea bass use SAV as preferred habitat (Figure 3).

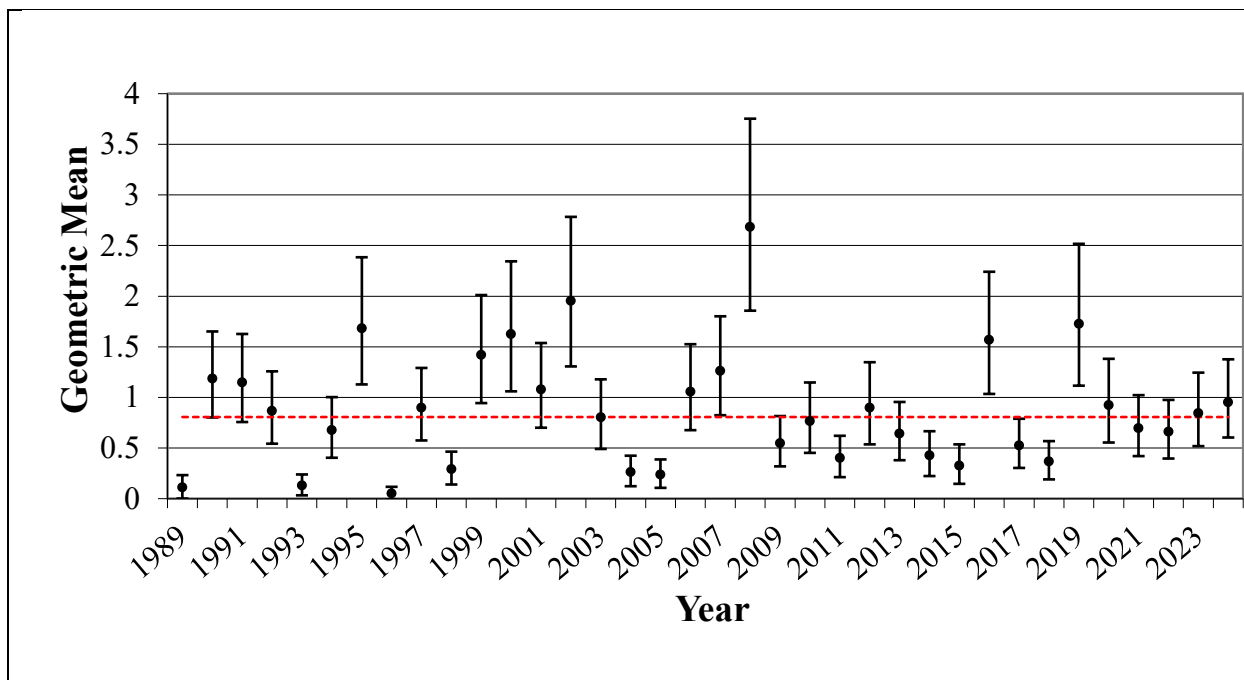


Figure 1. Black sea bass (*Centropristis striata*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2024). Dotted line represents the 1989 - 2024 time series grand mean (n1989 - 2019, 2021 - 2024 = 140/year, n2020 = 120).

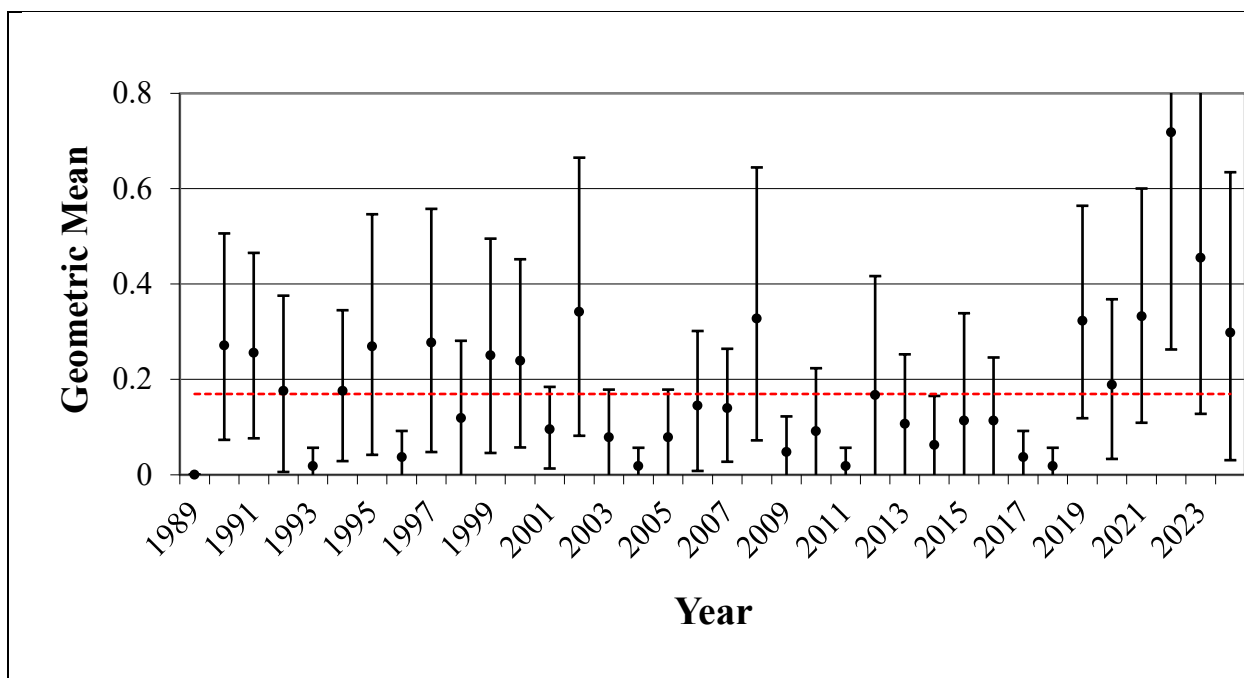


Figure 2. Black sea bass (*Centropristis striata*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2024). Dotted line represents the 1989 - 2024 time series grand mean (n = 38/year).

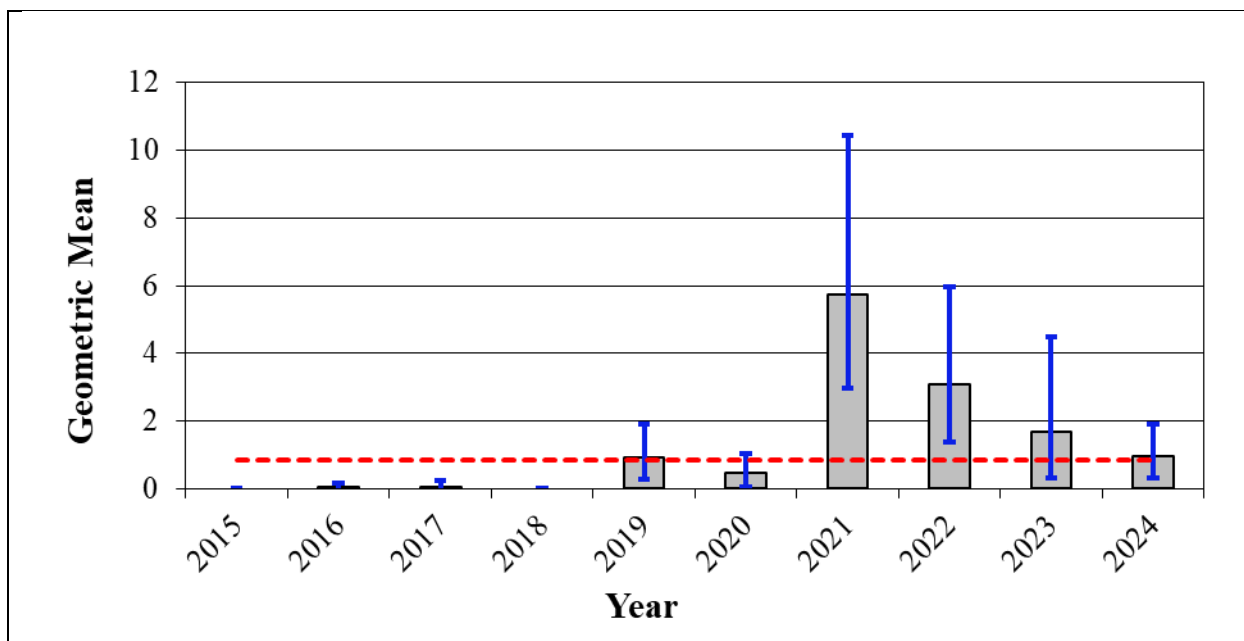


Figure 3. Black sea bass (*Centropristis striata*) Submerged Aquatic Vegetation Habitat Survey beach seine index of relative abundance (geometric mean) with 95% confidence intervals (2015 - 2024). Dotted line represents the 2015 - 2024 time series grand mean (n = 165, average 16/year).

C. Copy of Regulations

Two black sea bass public notices were issued for 2024 fisheries. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx.

PUBLIC NOTICE

The Maryland Department of Natural Resources Fishing and Boating Services 2024 Recreational Black Sea Bass Fishery — Effective 1/1/2024

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the recreational season, catch limit, and minimum size for black sea bass. Effective 12:01 a.m. January 1, 2024:

The season is open May 15, 2024, through September 30, 2024, and then reopens October 10, 2024, through December 31, 2024. It is closed all other dates.

Anglers may keep up to 15 black sea bass per person per day.

The minimum size is 13 inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch black sea bass recreationally.

AUTHORITY Code of Maryland Regulations 08.02.05.21

Josh Kurtz Secretary of Natural Resources

PUBLIC NOTICE

The Maryland Department of Natural Resources Fishing and Boating Services
2024 Commercial Black Sea Bass Quota — Effective 3/19/2024

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the commercial statewide quota for the commercial black sea bass fishery. Effective at 12:01 a.m. March 19, 2024, the annual total allowable landings of black sea bass for Maryland is 523,918 pounds.

WHY THIS IS NECESSARY

This is necessary to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Sea Bass.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch black sea bass commercially.

ADDITIONAL INFORMATION The 2024 quota may be adjusted pending final 2023 landings. If the quota is adjusted a new notice will be issued.

AUTHORITY

Code of Maryland Regulations 08.02.05.21

Josh Kurtz Secretary of Natural Resources

Code of Maryland Regulations [08.02.05.21](#) Black Sea Bass.

A. Recreational. The recreational size limit, catch limit, and season for black sea bass shall be established and may be modified through a public notice issued in accordance with §F of this regulation.

B. Commercial.

(1) Minimum Size. An individual who harvests black sea bass for commercial purposes may not catch or possess a black sea bass less than 11 inches in total length, excluding the tail filament.

(2) Quotas.

(a) Statewide Quota.

(i) The annual total allowable landings of black sea bass for the commercial fishery is set by the Atlantic States Marine Fisheries Commission and shall be published through a public notice issued in accordance with §F of this regulation.

(ii) Any annual overages of the quota will be deducted from the subsequent year's quota.

(b) Quota Allocation.

(i) The total pounds of black sea bass that may be harvested by a black sea bass landing permit holder who applies for a permit for 2011 and subsequent years shall be based on the proportion of the total black sea bass harvest allocated to the permit holder in the previous year.

(ii) In addition to the quota allocation, as described in §B(2)(b)(i) of this regulation, the Department shall reallocate equitably among permit holders the quota of any permit holder who fails to apply for a permit for the following year, or who leaves the fishery without transferring the permit.

(c) A Maryland black sea bass landing permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an individual may not hold more than 20 percent of the total fishery allocation.

(d) An individual who possesses a Maryland black sea bass landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any quota transfers, shall have the overage deducted from the permit allocation for the following year.

(3) Daily Catch Limits. A vessel that does not have an individual on board who possesses a valid Maryland black sea bass landing permit may not catch, possess, or land more than 50 pounds of black sea bass per day.

(4) Black sea bass harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a federally permitted dealer.

C. Licenses and Permits.

(1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land black sea bass.

(2) A vessel which is used to catch, possess, or land black sea bass for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.

(3) A permittee may catch, possess, or land black sea bass for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) A tidal fish licensee shall declare their intent to fish for black sea bass by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared late in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland black sea bass landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Black Sea Bass Landing Permit.

(a) No more than 14 black sea bass landing permits may be issued by the Department. The number of black sea bass landing permits is based on the reported catch and landing records of black sea bass in Maryland during 1996-2001.

(b) The Department may issue a permit to catch and land black sea bass in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

(i) Declared or was eligible to declare, in the previous year, an intent to fish for black sea bass in accordance with §C(4) of this regulation and has not transferred the permit; or

(ii) Received a black sea bass landing permit through a permanent business transfer in accordance with §C(6) of this regulation.

(6) Permanent Transfer of a Landing Permit. The Department may approve a permanent transfer of a Maryland black sea bass landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(7) Temporary transfers of black sea bass landing permits are not permitted.

(8) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland black sea bass landing permit.

(c) An operator may catch, possess, or land black sea bass for commercial purposes on a vessel owned by a permittee and in possession of that permittee's permit.

(9) Regardless of the number of authorized individuals with Maryland black sea bass landing permits on board a federally permitted vessel, no more than two black sea bass quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) Trawls.

(a) Except for an individual landing less than a total of 500 pounds of black sea bass from January 1 through March 31 or 100 pounds of black sea bass from April 1 through December 31, a person may not use a trawl with mesh less than 4-1/2 inch diamond mesh applied throughout the:

(i) Codend for at least 75 continuous meshes forward of the end of the net; or

(ii) Entire net for codends with fewer than 75 meshes.

(b) An individual may not use a roller rig trawl with a roller diameter in excess of 18 inches.

(2) Pots and Traps. A pot or trap used to catch black sea bass shall have:

(a) Two unobstructed escape vents located in the parlor portion of the trap that are each at least a:

(i) 2-1/2 inch diameter circular opening;

(ii) 2 inch by 2 inch square opening; or

(iii) 1-3/8 inch by 5-3/4 inch rectangular opening; and

(b) One panel or door that is a minimum of 3 inches by 6 inches that has hinges and fasteners made of one of the following degradable materials:

(i) Untreated hemp or jute string of 3/16 inch in diameter or less;

(ii) Magnesium alloy fasteners; or

(iii) Ungalvanized, uncoated iron wire of 0.094 inch diameter or smaller.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland black sea bass landing permit shall record the harvest of black sea bass on the permit daily and submit the completed permit to the Department within 14 days from the end of the black sea bass season.

(2) A dealer shall transmit information weekly, or as requested, on each black sea bass transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a black sea bass landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may establish or modify catch limits, size limits, quotas, and seasons for black sea bass in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Black Sea Bass, by issuing a public notice on the Fisheries Service website.

(2) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.

(3) The Secretary shall make a reasonable effort to disseminate a public notice through various other media so that an affected individual has a reasonable opportunity to be informed.

(4) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coastwide quota is harvested and not exceeded.

(5) A violation of the restrictions set by the Secretary in accordance with §F of this regulation is a violation of this regulation.

Table 1. Maryland implementation of the required commercial black sea bass measures as mandated in the ASMFC FMP.

11" minimum size	Yes
4.5" minimum mesh size for entire net or 4.5" diamond mesh in cod end (for large trawl nets)	Yes
Threshold to trigger minimum mesh requirements: (500 lbs for January - March; 100 lbs from April - December)	Yes
2.5" circular escape vents, 2" square escape vent, or 1.375" X 5.75" rectangular escape vent for pots/traps. Two vents required in parlor portion of pot/trap.	Yes
Pot and trap degradable fastener provisions: a) untreated hemp, jute, or cotton string 3/16" (4.8 mm) or smaller; b) magnesium alloy timed float releases or fasteners; c) ungalvanized, uncoated iron wire of 0.094" (2.4mm) or smaller. The opening covered by a panel affixed with degradable fasteners would be required to be at least 3"x 6".	Yes

D. D. Harvest by Gear Type**1. Commercial Landings**

In 2024, there were 14 fishermen that met the minimum requirements to receive a Maryland black sea bass landing permit and the commercial quota was 523,918 pounds. Maryland's preliminary 2024 commercial black sea bass harvest was 332,287 pounds (Table 2; Source: Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

2. Recreational Landings

Maryland's 2024 recreational black sea bass catch was estimated at 152,566 fish (PSE 28.5) with a total weight of 205,481 pounds (PSE 32.5; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 12, 2025).

IV. Planned Management for 2025**A. Summary of Regulations that will be in Effect**

Commercial management measures will remain the same as 2024 with added clarification that quota setting will be by public notice. Recreational management measures will include a 13-inch size limit, a 15 fish creel, The season is open May 15, 2025, through September 30, 2025, and then reopens October 10, 2025, through December 31, 2025. It is closed all other dates.

B. Summary of Monitoring Programs that will be in Effect

Same as 2024, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement Requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Information Program. Accessed May 12, 2025.
nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.

Northeast Fisheries Science Center. 2024. Black Sea bass operational assessment data through 2023. US Dept. Commerce, Northeast Fisheries Center.



Wes Moore
Governor

Josh Kurtz
Secretary

**Maryland 2024 Bluefish (*Pomatomus saltatrix*) Compliance Report
To the
Atlantic States Marine Fisheries Commission**

**CONTAINS CONFIDENTIAL DATA
WHERE INDICATED IN RED**

Prepared by:

Eric Q. Durell

May, 2025

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
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Out of state call: 410-260-8308
TTY Users call via the MD Relay

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Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

I. Introduction

Bluefish (*Pomatomus saltatrix*) are caught in Maryland's Atlantic Ocean and Chesapeake Bay waters. Maryland's recreational and commercial fisheries are open year-round and subject to an 8-inch minimum size limit. Recreational anglers fishing from for-hire boats had a daily creel limit of 5 fish; all other recreational anglers had a creel limit of 3 fish per person per day. Maryland's original 2024 commercial quota was 61,471 pounds. This was later adjusted to 36,471 pounds after a quota transfer that was distributed to Massachusetts, Rhode Island, New York and North Carolina.

II. Request for *de minimis*

N/A

III. Fishery and Management Programs

a.) Per the Biological Monitoring Program implemented through Addendum I, Maryland is exempt from the cooperative otolith collection requirements.

b.) Monitoring

i. Fishery Dependent Monitoring

Fishery dependent sampling for bluefish consists of commercial pound net monitoring by the Chesapeake Bay Finfish Program's Migratory Species Survey. Bluefish encountered in pound nets in 2024 ranged from 219 to 980 mm total length (TL), with an average length of 426 mm TL (n=325). The length frequency distribution was bimodal with peaks at 260 and 580 mm TL. (Figure 1).

ii. Fishery Independent Monitoring

Fishery independent bluefish monitoring consists of seine surveys in the Chesapeake Bay and Atlantic coastal bays. Direct comparisons between the surveys are not possible because of differing gears and sampling methodologies.

The Striped Bass Program's Estuarine Juvenile Finfish Survey is used to develop an annual index of relative abundance for juvenile bluefish that informs the coastal stock assessment. The index is based on select sample sites where bluefish have historically been encountered, and is the geometric mean of the (catch+1) values. The 2024 Chesapeake Bay juvenile bluefish index of 0.03 was unchanged from the previous year and less than the time-series average of 0.2 (Figure 2).

The Atlantic Coastal Bays Program's Seine Survey also develops an index of relative abundance for juvenile bluefish using natural log transformed (catch+1) values. The 2024 Coastal Bays index of 0.31 was the highest since 2018 (Figure 3).

c.) Regulations

i. Maryland bluefish regulations for 2024:

FISHERIES SERVICE 08.02.05.10

.10 Bluefish.

A. Minimum Size. A person may not catch or possess bluefish less than 8 inches in total length.

B. Recreational Catch Limit. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than ten bluefish per day.

C. Commercial Catch Limit. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.

D. General. The Secretary:

(1) May modify catch limits or open or close a season in State waters by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

ii. The recreational daily creel limits were changed by public notice, effective January 1, 2024. Recreational anglers aboard for-hire vessels were allowed 5 fish per day; all others were allowed 3 fish per day (see Appendix A).

iii. FMP Requirements

FMP Requirements Implemented?	YES	NO
Party/Charter Vessels license required*	x	
Commercial Vessels license required*	x	
Commercial Dealers license required*	x	
Recreational Bag Limit of 5 fish for anglers on for-hire boats, 3 fish for all others	x	

*[Maryland Natural Resources Article §4–701](#) establishes licensing requirements for these activities.

d.) Commercial and Recreational Landings

Maryland's original 2024 commercial bluefish quota of 61,471 pounds was adjusted to 36,471 pounds after transferring 25,000 pounds that was distributed to Massachusetts, Rhode Island, New York and North Carolina, pursuant to the Interstate Bluefish Fisheries Management Plan (<https://www.govinfo.gov/content/pkg/FR-2024-07-29/pdf/2024-16639.pdf>).

Maryland's 2024 commercial bluefish harvest was 10,673 pounds (Source: Joseph Myers, ACCSP, personal communication). This was a 39% decrease from the previous year (Table 1, Figure 4) and less than the adjusted quota of 36,471 pounds.

Approximately 55% (by weight) of the commercial harvest was caught in Chesapeake Bay and its tributaries, and 45% was caught on Maryland's Atlantic coast. Pound nets and gill nets accounted for 40% and 33% of the harvest, respectively (Table 1). The majority of the harvest (72%) occurred from September through November (Table 2).

The 2024 Marine Recreational Information Program (MRIP) estimate of Maryland bluefish harvest (Type A+B1) was 250,119 fish, weighing 793,078 pounds (Table 3, Figure 5). This represents a 19% increase in the number of fish, and a 113% increase by weight compared to 2023. (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, May 9, 2025 query).

Most (90%) of the annual recreational harvest occurred during May-August (Table 4). Approximately 41% of the harvest was attributed to shore-based anglers and 40% to anglers on private boats (Table 5). The majority of Maryland harvest (92%) occurred in inland waters (Table 6). The estimated harvest in the Atlantic Ocean (18,839 fish) was the highest observed since 2018 and was attributed almost entirely to shore-based anglers during Wave 3.

The 2024 MRIP estimate of Maryland recreational live discards (Type B2) was 400,800 fish, a 13% decrease from 2023 (Table 3, Figure 6). Like the harvest, most Type B2 discards occurred in inland waters during May-August. However, a large portion of total discards (34%) occurred in the Atlantic during March-June coincident with the high ocean harvest (Source: <https://www.fisheries.noaa.gov/data-tools/recreational-fisheries-statistics-queries>, (May 9, 2025 query).

IV. Planned Management for 2025

- a.) The National Marine Fisheries Service (NMFS) Final Rule issued Atlantic Bluefish Fishery Specifications for 2025 effective January 1, 2025. The coastal commercial bluefish quota for 2025 is 3.03 million pounds. Maryland's 2.38% share of the coastal quota is 72,265 pounds ([Federal Register, Vol. 89, No. 237, pp.99138-99147](https://www.federalregister.gov/documents/2024/07/23/2024-14147),

[December 10, 2024](#)).

- b.) Maryland's recreational bluefish possession limit in 2024 was a temporary change to the standing regulation. To avoid confusion by the public, the Code of Maryland regulation was updated midway through the year to remove the old daily creel limit of 10 fish and now requires recreational rules be established annually by public notice (<https://dsd.maryland.gov/regulations/Pages/08.02.05.10.aspx>).

Recreational creel limits for 2025 were established by public notice, effective January 11. Recreational anglers fishing from shore or private boats can keep up to 3 bluefish per day; recreational anglers fishing from for-hire boats can keep up to 5 fish per day (see Appendix B).

- c.) The Migratory Species Survey, Estuarine Juvenile Finfish Survey, and Coastal Bays Seine Survey will continue in 2025.

V. Law Enforcement Reporting Requirements

None

Table 1. Maryland commercial bluefish landings, in pounds, by gear type.

Year	Gill Net	Pound Net	Hook & Line	Other	Total
2015	[C]	[C]	[C]	[C]	91,105
2016	[C]	[C]	[C]	[C]	66,720
2017	[C]	[C]	[C]	[C]	37,035
2018	[C]	[C]	[C]	[C]	25,717
2019	[C]	[C]	[C]	[C]	22,776
2020	[C]	[C]	[C]	[C]	20,786
2021	[C]	[C]	[C]	[C]	12,228
2022	[C]	[C]	[C]	[C]	10,282
2023	[C]	[C]	[C]	[C]	17,399
2024	[C]	[C]	[C]	[C]	10,673

Table 2. Maryland commercial bluefish landings by month, 2024.

Month	Landings (Pounds)	Percent Landings
January	[C]	[C]
February	[C]	[C]
March	[C]	[C]
April	[C]	[C]
May	[C]	[C]
June	[C]	[C]
July	[C]	[C]
August	[C]	[C]
September	[C]	[C]
October	[C]	[C]
November	[C]	[C]
December	[C]	[C]
Total*	10,673	100.0

* Values may not sum due to rounding

Table 3. MRIP estimates of Maryland recreational bluefish harvest (Type A+B1) and discards (B2).

Year	Harvest (A+B1) numbers of fish	Harvest (A+B1) pounds	Discards (B2) numbers of fish
2015	286,730	453,100	661,676
2016	212,419	304,991	556,307
2017	175,268	332,244	196,418
2018	274,834	493,192	417,810
2019	111,769	154,451	226,968
2020	173,846	214,991	320,368
2021	105,710	117,546	211,239
2022	249,382	223,494	237,374
2023	210,655	373,220	462,370
2024	250,119	793,078	400,800

Table 4. Maryland recreational bluefish harvest (Type A+B1) by MRIP wave, 2024.

Date	Wave	Harvest (numbers of fish)	Percent Harvest
January-February	1	0	
March-April	2	0	
May-June	3	45,876	18.3
July-August	4	178,155	71.2
September-October	5	23,557	9.4
November-December	6	2,531	1.0
Total*		250,119	100.0

* Values may not sum due to rounding

Table 5. Maryland recreational bluefish harvest (Type A+B1) by MRIP mode, 2024.

Mode	Harvest (numbers of fish)	Percent Harvest
Shore	102,486	41.0
Party boats	188	0.1
Charter boats	46,399	18.6
Private/rental boats	101,046	40.4
Total*	250,119	100.0

Table 6. Maryland recreational bluefish harvest (Type A+B1) by MRIP area, 2024.

Area	Harvest (numbers of fish)	Percent Harvest
Ocean (≤ 3 miles offshore)	18,839	7.5
Ocean (> 3 miles offshore)	1,961	0.8
Inland	229,319	91.7
Total*	250,119	100.0

* Values may not sum due to rounding

Figure 1. Length frequency of bluefish from Maryland's Chesapeake Bay pound net survey, June-September, 2024.

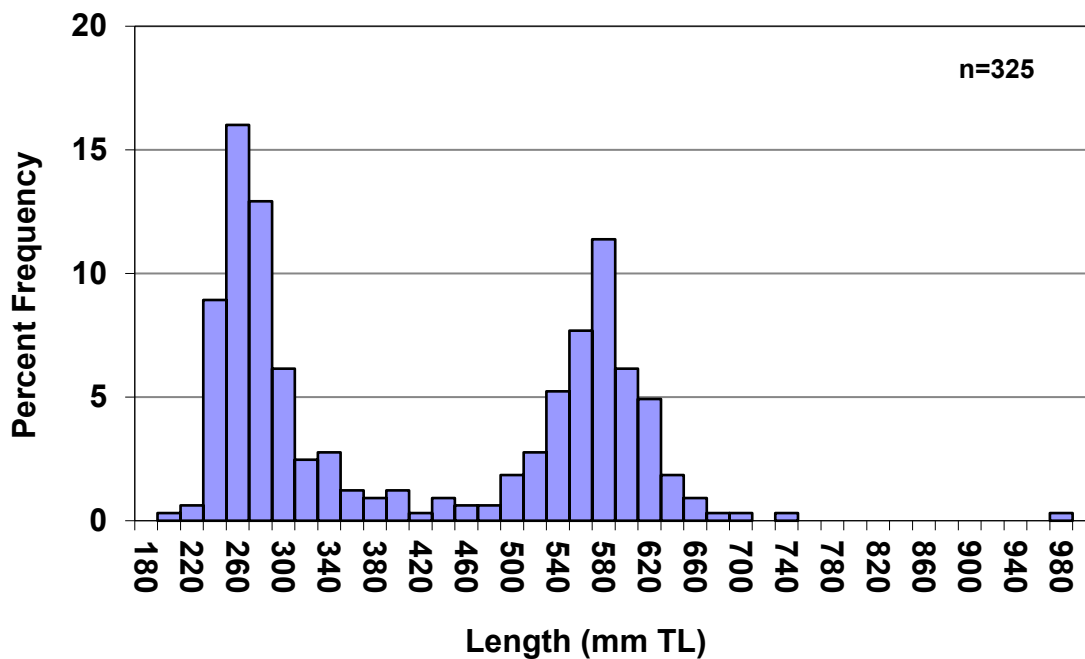


Figure 2. Bluefish juvenile index from Maryland's portion of the Chesapeake Bay.

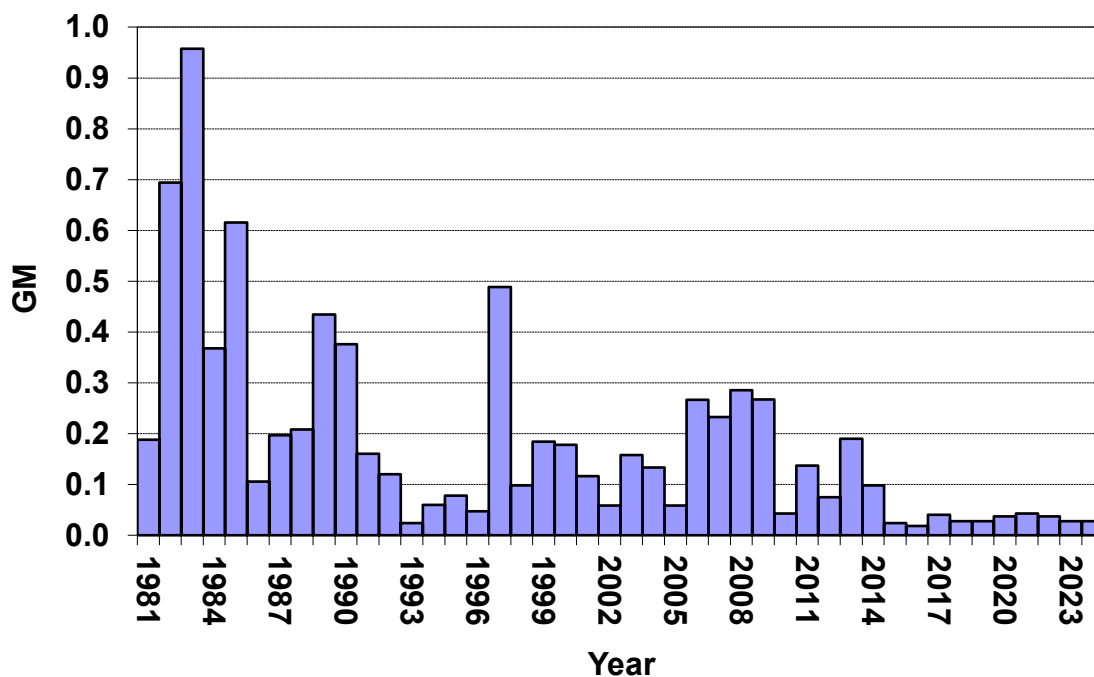


Figure 3. Bluefish juvenile index from Maryland's Coastal Bays seine survey.

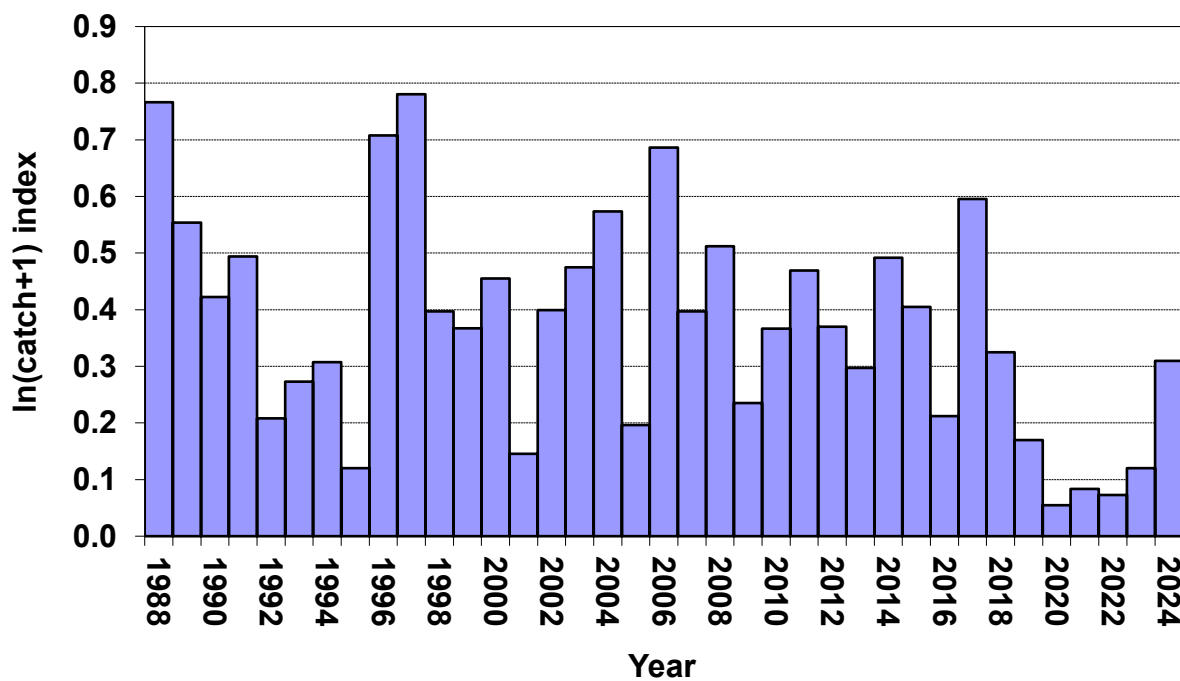


Figure 4. Maryland commercial bluefish landings (Source: Joseph Myers, ACCSP, personal communication).

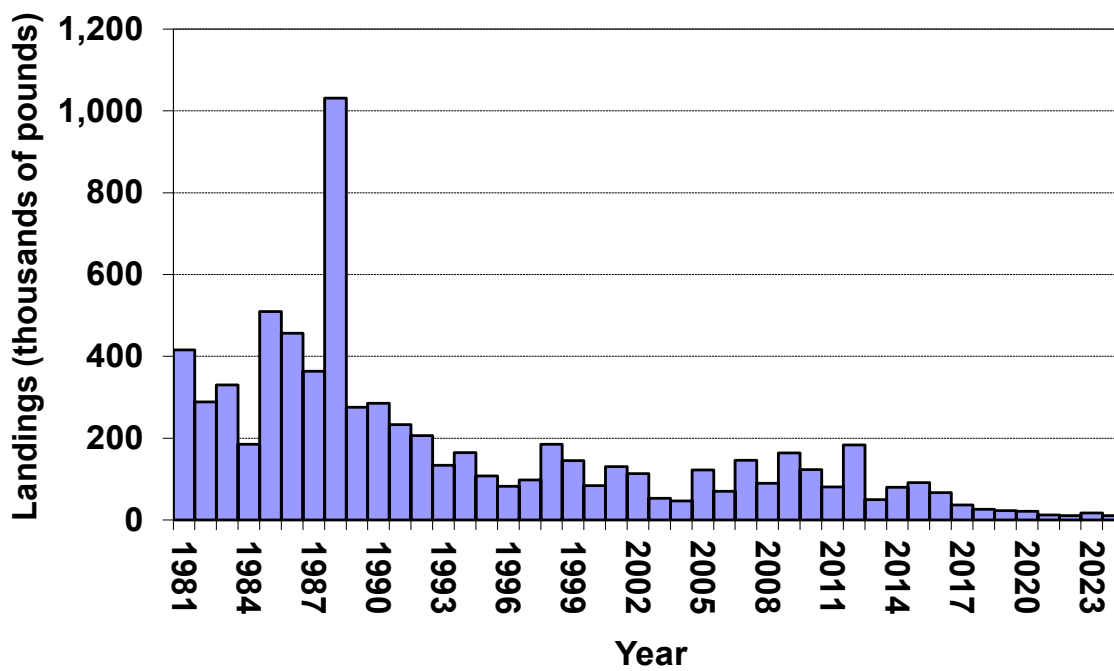


Figure 5. Maryland recreational bluefish harvest, Type A+B1.

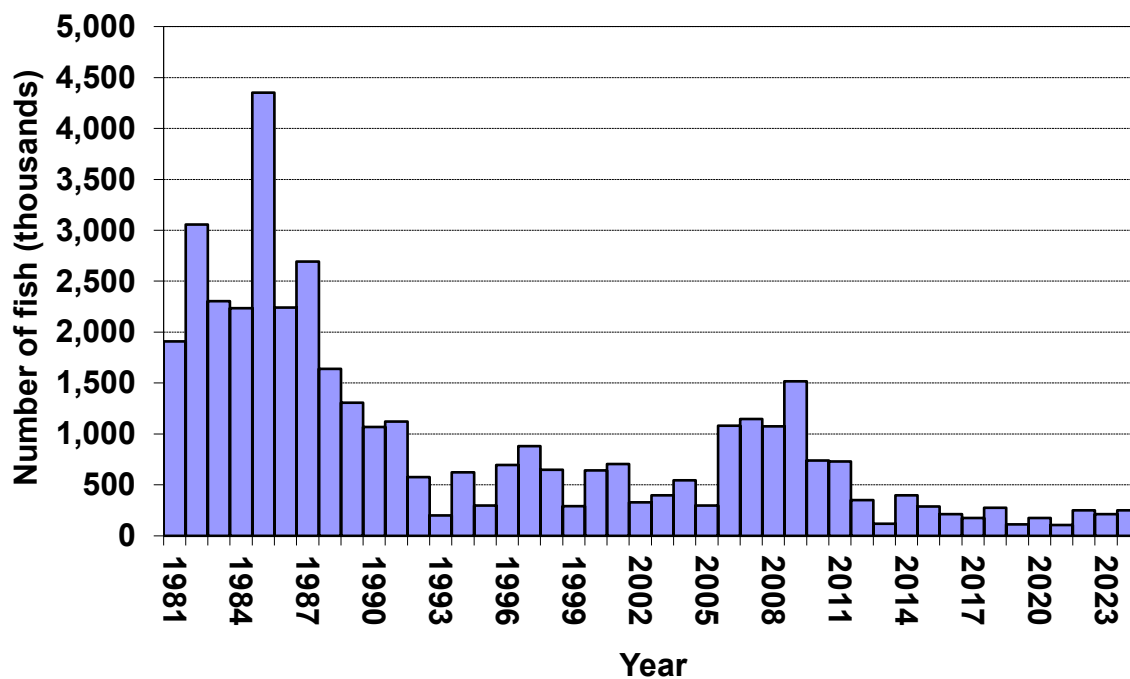
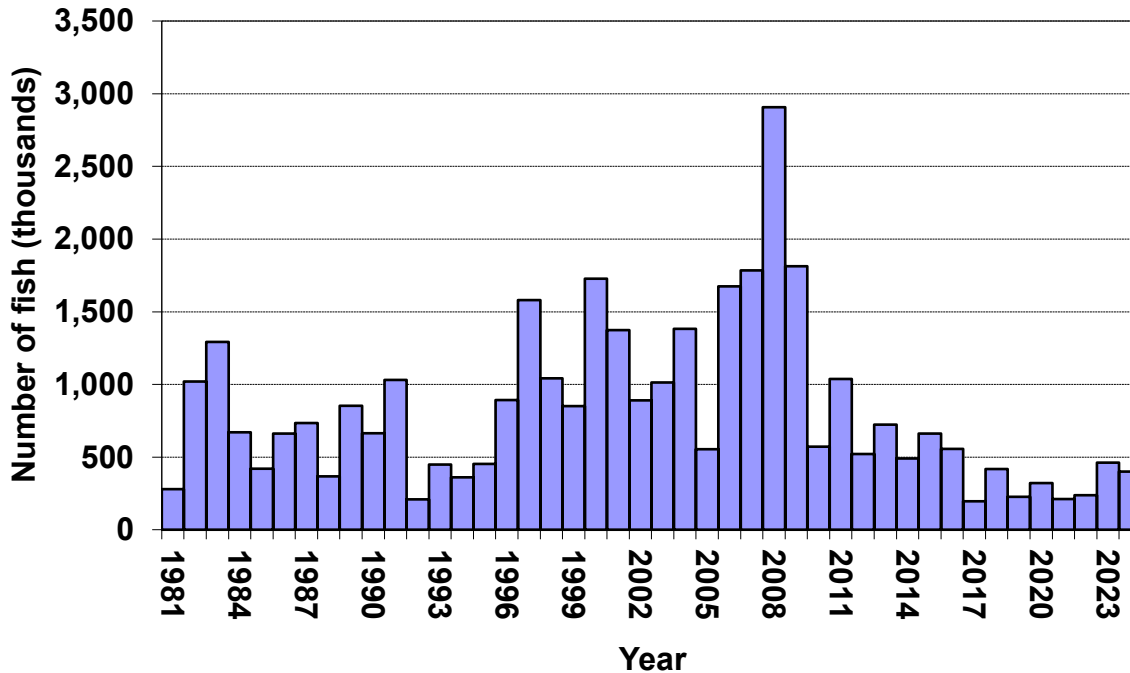


Figure 6. Maryland recreational bluefish live discards, Type B2.



Appendix A.

PUBLIC NOTICE**The Maryland Department of Natural Resources
Fishing and Boating Services*****2024 Recreational Bluefish Catch Limits — Effective 1/1/2024*****WHAT THIS NOTICE DOES**

The Secretary of the Maryland Department of Natural Resources announces changes to the recreational catch limit for bluefish. Effective 12:01 a.m. January 1, 2024:

- Recreational anglers fishing from shore or private boats can keep up to 3 bluefish per person per day.
- Recreational anglers fishing from for-hire boats can keep up to 5 bluefish per person per day.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Interstate Fishery Management Plan for Bluefish.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch bluefish recreationally.

AUTHORITY

Code of Maryland Regulations 08.02.05.10

Josh Kurtz
Secretary of Natural Resources

Appendix B.

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
2025 Recreational Bluefish Fishery — Effective 1/11/2025

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the catch limit, size limit, and season for the 2025 recreational bluefish fishery. Effective 12:01 a.m. January 11, 2025:

- Recreational anglers fishing from shore or private boats can keep up to 3 bluefish per person per day.
- Recreational anglers fishing from for-hire boats can keep up to 5 bluefish per person per day.
- The minimum size is 8 inches.
- There is no closed season.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Interstate Fishery Management Plan for Bluefish.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch bluefish recreationally.

AUTHORITY

Code of Maryland Regulations 08.02.05.10

Josh Kurtz
Secretary of Natural Resources



Maryland's 2024 Horseshoe Crab (*Limulus polyphemus*) Compliance Report
to the Atlantic States Marine Fisheries Commission
July 1, 2025

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

06/2025

DNR

I. Introduction

The Interstate Fishery Management Plan for Horseshoe Crab was approved and adopted by the Atlantic States Marine Fisheries Commission on October 22, 1998. The goal of the fishery management plan is to conserve and protect the horseshoe crab resource for continued use over time by maintaining sustainable levels of spawning stock biomass to ensure its continued role in the ecology of coastal ecosystems. The Maryland harvest limit of 255,980 male only horseshoe crabs has not changed since 2013.

II. Request for *de minimis* status

Not Applicable.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

No fisheries dependent monitoring in 2024.

B. Fishery Independent Monitoring

Since 1989, the department has conducted a beach sein survey in June and September (Figure 1) and a trawl survey April through October (Figure 2).

Horseshoe crabs have demonstrated an increasing trend though this period in the Maryland coastal bays.

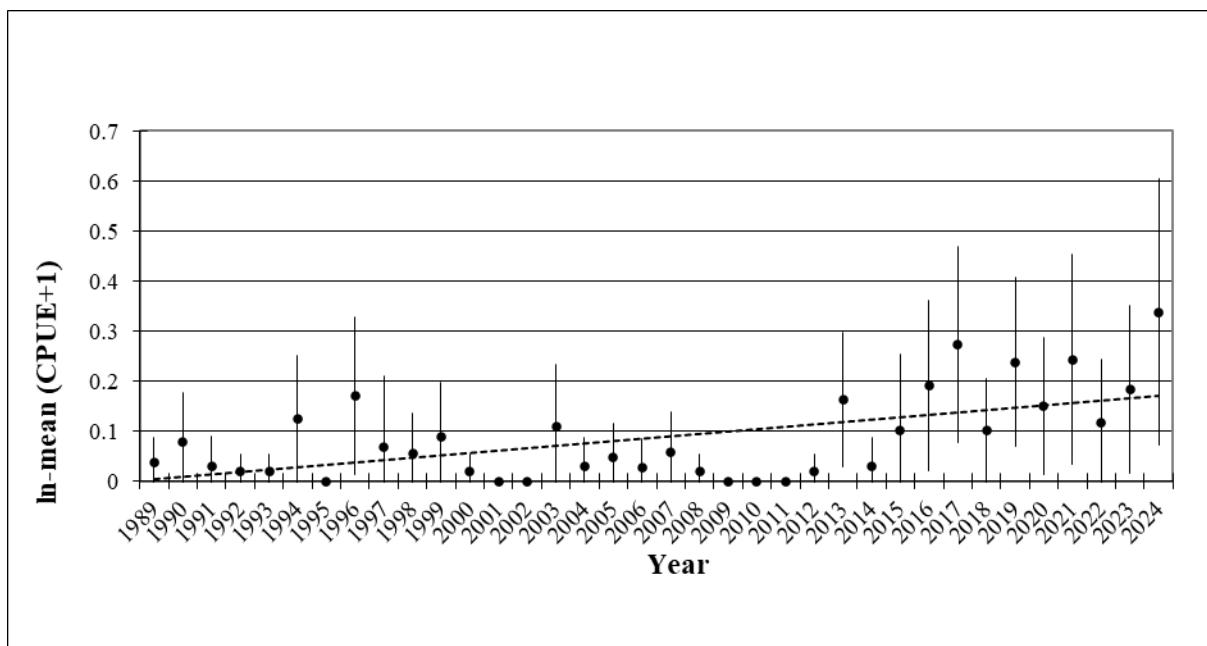


Figure 1. Horseshoe crab beach seine index of relative abundance (log mean) (1989 - 2024).

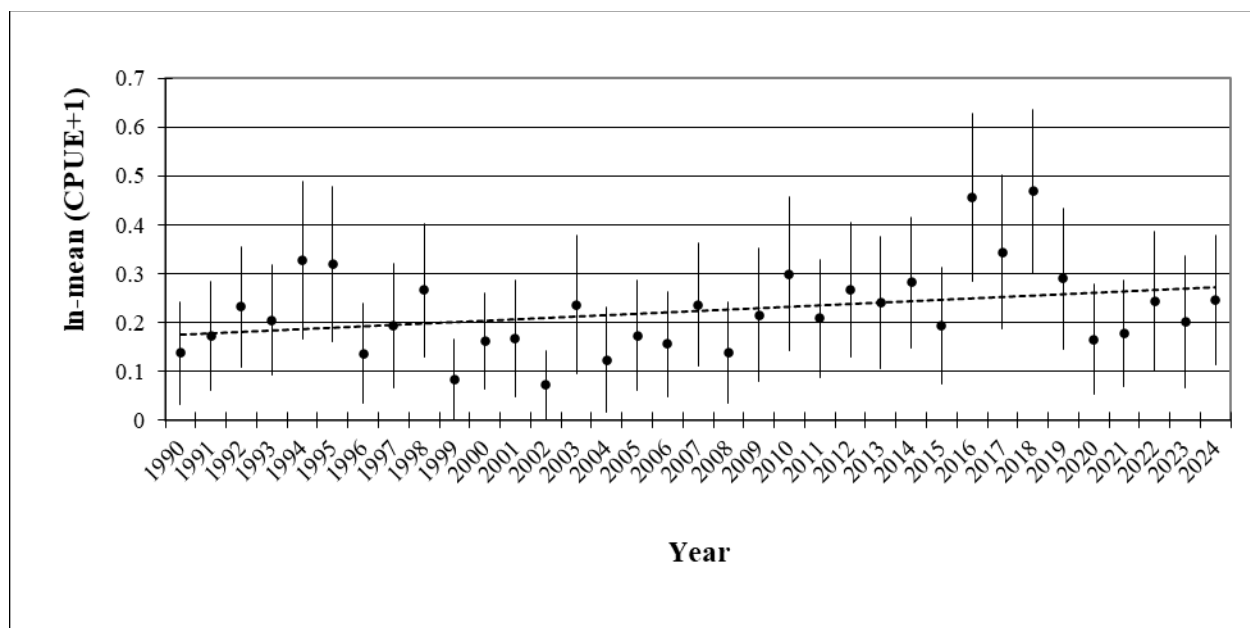


Figure 2. Horseshoe crab beach trawl index of relative abundance (log mean) (1990 - 2024).

The department, working with the Maryland Coastal Bays Program (mdcoastalbays.org/), completed the annual horseshoe crab spawning survey last spring. Indices of spawning activity were developed and included in the annual spawning report from the Maryland Coastal Bays Program (mdcoastalbays.org/the-programs/outreach/horseshoe-crab-surveys/). Since the 2023 survey CPUE indices have been lower than previous years and we are monitoring this to see if a rebound occurs.

Table 1. Maryland Horseshoe Crab Spawning Survey CPUE 2009 - 2024.			
Year	# of surveys	total # of crabs	CPUE
2009	63	21,846	346.8
2010	47	23,438	498.7
2011	58	23,105	398.4
2012	60	21,127	352.1
2013	83	31,873	384.0
2014	66	35,278	534.5
2015	30	14,238	474.6
2016	31	9,095	293.4
2017	30	14,544	484.8
2018	41	22,140	540.0
2019	45	6,663	148.1
2020	42	12,228	291.1
2021	46	14,036	305.1
2022	67	28,625	427.2
2023	63	4,282	68.0
2024	44	6,811	154.8

C. Previous Year's Fishery and Management Program

Bait Fishery

There are two classes of horseshoe crab harvesters, permitted and non-permitted. Ten horseshoe crab permits were issued in 2024. All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. Permit holders were required to report weekly numbers landed by sex, area of harvest and gear type. Non-permit holders were restricted to no more than 25 male horseshoe crabs per day during an open season and were required to report this information using the department's monthly commercial logbooks.

Maryland's horseshoe crab fishery was governed by the Code of Maryland Regulations 08.02.10.01 ([Appendix A](#)). A public notice was issued to set the quota, season and catch limits (dnr.maryland.gov/fisheries/Documents/Public_Notices/PN_CommercialHorseshoeCrabFishery_2024.pdf).

PUBLIC NOTICE
The Maryland Department of Natural Resources
Fishing and Boating Services
Commercial Horseshoe Crab Fishery — Effective 5/1/2024

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces the quota, season, and catch limits for the 2024 — 2025 commercial horseshoe crab fishery.

QUOTA

The annual total allowable landings of male horseshoe crabs for the commercial fishery is 255,980. There is no female harvest permitted.

SEASON AND CATCH LIMITS

1. An individual may not land more than 25 male horseshoe crabs unless they are in possession of a valid horseshoe crab landing permit.
2. A permittee shall harvest horseshoe crabs according to the tier specified on their horseshoe crab landing permit.

Male Horseshoe Crab Season and Daily Limits by Permit Type						
Date	Area Open to Harvest	Permit Type				
		No Permit	Tier 1	Tier 2	Tier 3	Tier 4
May 1, 2024, through July 7, 2024	Atlantic Ocean between 1 and 3 miles from the coast Maryland's coastal bays and their tidal tributaries	25	150	150	150	150
July 8, 2024, through November 30, 2024	All Maryland waters	25	150	200	1500	2500
December 1, 2024, through April 30, 2025	Closed	No Harvest Allowed				

WHY THIS IS NECESSARY

This is necessary to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crabs.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch horseshoe crabs commercially.

EFFECTIVE TIME AND DATE

This notice is effective at 12:01 a.m. May 1, 2024.

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. In 2024, three companies obtained and utilized a scientific collection permit. There were four commercial harvesters that collected horseshoe crabs for the three biomedical companies. There were two primary dealers that handled, packed and shipped the biomedical horseshoe crabs therefore the biomedical collection data on the state level was confidential.

Scientific and Educational Research

The University of Maryland's Center for Environmental Science Institute of Marine and Environmental Technology (IMET) lab hatched a small number of horseshoe crab eggs and experimented with raising the juvenile horseshoe crabs.

D. Harvest by Gear Type

Commercial Landings

In 2024, Maryland's horseshoe crab bait fishery reported a harvest of 74,353 male horseshoe crabs. The quota was 225,980 ([Appendix B](#)). A conversion of 2.12 pounds per male crab is used to calculate total pounds. Horseshoe crabs were mostly harvested by bottom trawls, with a small number coming from gill nets. Landings data were compiled from Maryland commercial finfish logbook data and Maryland horseshoe crab permit data as of May 20, 2025.

Table 2. Summary of Maryland's preliminary 2016 - 2024 Horseshoe Crab Bait Fishery Landings. Source: Maryland commercial logbooks and permit cards.

Harvest Category	Year						
	2018	2019	2020	2021	2022	2023	2024
Number Males	66,647	145,907	61,165	181,040	84,627	186,466	74,353
Total Pounds	141,291	309,323	129,670	383,814	179,410	395,308	164,320

Biomedical data

Data from three biomedical companies, four harvesters, and two transporters/packing houses were summarized in Table 3.

Table 3. Horseshoe Crab Biomedical Collection Reporting Worksheet Summary, Fishing Year 2024.

Biomedical Company/ies: Maryland combined collections				
	Male	Female	Sex Unidentifiable	Total
Number of horseshoe crabs rejected onboard vessel due to mortality	662	6,455		1317
Number of horseshoe crabs transported to bleeding facility	223,342	186,618		409,960
Number horseshoe crabs rejected at bleeding facility due to mortality	1,420	1,925		3,345
Number of horseshoe crabs bled	222,940	172,789		395,729
Number of horseshoe crabs found dead at time of release	1,245	1,902		3,147
Number of bled horseshoe crabs that entered the bait fishery after bleeding	0	0		0

Recreational Landings

There were no recreational landings of horseshoe crabs.

Progress in Implementing Habitat Recommendations

There were no habitat recommendations for the plan. Department staff, collaborating with the Maryland Coastal Bays Program and Worcester County, continues to work on cooperative projects that display how shore stabilization can be achieved with soft shorelines, creating, or protecting horseshoe crabs spawning habitat.

IV. A. Planned management programs for the current calendar year.

The current harvest limit is 255,980 male horseshoe crabs with no female harvest. Regulations and monitoring comply with Addendum III and are detailed in the plan specific monitoring program requirements.

Monthly reporting of all harvest (including, but not limited to: bait fisheries, bycatch, biomedical industry, and scientific and educational research).

Bait Fisheries

All persons who catch or land horseshoe crabs in Maryland are required to report their catch and landing information on the forms provided by the department. In 1998, the department established a horseshoe crab landing permit and issued permits to individuals who landed horseshoe crabs in Maryland during 1996 ([Appendix C](#)). This requirement will continue in 2025.

Biomedical Industry

Maryland requires all persons who collect horseshoe crabs for scientific research, including the biomedical industry, to obtain a scientific collection permit and report the number of animals collected annually. Maryland requires a reporting form to follow each batch of horseshoe crabs collected for biomedical use, from the time of capture through the time of release. This form is returned to the department and reviewed by a staff biologist. The reporting forms are examined for completeness and for information on horseshoe crabs rejected at all stages of the bleeding process. This monitoring will continue in 2025.

Scientific and Educational Research

The department is restarting a program where newly hatched horseshoe crabs are supplied to the classrooms of elementary schools to raise and learn about the ecological role and needs of horseshoe crabs. IMET will continue with research of raising horseshoe crabs in captivity, and Anne Arundel community college will hold a small number of horseshoe crabs to look at DNA as a marker for horseshoe crab fidelity to spawning areas.

Identify horseshoe crab mortality associated with the biomedical industry up to the point of release.

Biomedical companies will track mortality at each stage of the collection, bleeding, and return to sea process. They report the number bled by month and sex to the department at the end of each year. A biologist periodically examines biomedical facilities.

Certify that horseshoe crabs collected for biomedical use are not used for other purposes.

The Maryland scientific collection permit required all horseshoe crabs collected for limulus amoebocyte lysate production, to be returned alive to the waters from which they were collected within 48 hours of collection. In 2004, regulation changes allowed the use of bait crabs for blood collection and the return of these crabs to the bait fishery. In 2024, no horseshoe crabs were bled and then returned to the bait fishery in Maryland.

Continue existing benthic sampling programs. States with juvenile trawl surveys should include these data in annual monitoring reports.

The department will continue to collect horseshoe crab data from Maryland's Trawl and Beach Seine surveys. Data will be collected monthly from April to October with a 16 foot otter trawl and in June and September with a 100 foot beach seine.

Implement a pilot program to survey horseshoe crab eggs in New Jersey and Delaware by the 1999 spawning season.

This component was not mandatory for Maryland.

A coordinated tagging program should be implemented by the Tagging Subcommittee. Two laboratories participated in the U.S Fish and Wildlife Service coast-wide tagging program using horseshoe crabs collected and released in Maryland waters.

Implement a pilot program to survey horseshoe crab spawning in New Jersey, Delaware, and Maryland by the 1999 horseshoe crab spawning season.

Please reference the next section.

Identify potential horseshoe crab spawning and nursery habitat.

Since 2002, the Maryland Coastal Bays Program, part of the National Estuary Program, has coordinated a volunteer horseshoe crab spawning survey in the Maryland coastal bays. The department assisted the Maryland Coastal Bays Program with conducting the survey, which is a continuation of preliminary work done by the state beginning in 1998. The survey results show variation in areas where the horseshoe crabs spawn and the timing. Volunteers collect temperatures during the surveys to better understand the horseshoe crab spawning behavior in Maryland's coastal bays. This survey will be continued in 2025.

V. Law Enforcement Requirements

Not Applicable

APPENDIX A

Maryland's 2023 Horseshoe Crab Regulations

COMAR [08.02.10.01](https://dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx) (dsd.maryland.gov/regulations/Pages/08.02.10.01.aspx)

A. Quota.

(1) The annual total allowable landings of horseshoe crabs for the commercial fishery shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

(2) Any annual overages in the fishery will be deducted from the total fishery allotment for the following year.

B. Seasons. The season for harvesting horseshoe crabs shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

C. Time Restrictions. A person may not catch or land horseshoe crabs on Saturday or Sunday.

D. Catch Limits.

(1) A person that does not possess a valid Maryland horseshoe crab landing permit may not catch, possess, or land more than 25 horseshoe crabs per day.

(2) An individual may not catch or possess female horseshoe crabs.

(3) The catch limit for individuals in possession of a valid horseshoe crab landing permit shall be established and may be modified through a public notice issued in accordance with §G of this regulation.

E. Horseshoe Crab Landing Permit.

(1) No more than ten horseshoe crab landing permits may be issued by the Department. The number of horseshoe crab landing permits is based on the reported catch and landing records of horseshoe crabs in Maryland during 1996.

(2) The Department may issue a permit to catch and land horseshoe crabs in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, and:

(a) Declared or was eligible to declare, in the previous year, an intent to fish for horseshoe crabs in accordance with this section and has not transferred the permit; or

(b) Received a horseshoe crab landing permit through a permanent business transfer in accordance with §E(6) of this regulation.

(3) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for horseshoe crabs by May 1 of each year.

(b) A tidal fish licensee who has not declared by May 1 of the current year, and who has not declared by the May 1 deadline in any of the 3 preceding years, may apply until May 14 of the current year, or the next business day if May 14 occurs on a weekend, to the Director of Fisheries Service, provided the licensee shows good reason why the application should be processed.

(c) An exception to the May 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the registration time period established in this subsection.

(4) The daily catch limits shall be printed on the horseshoe crab landing permit.

(5) A permittee shall possess the horseshoe crab landing permit when engaged in permitted activities.

(6) Transfer of a Landing Permit.

(a) The Department may approve the permanent or temporary transfer of a landing permit to a person who applies to the Department requesting the transfer on forms provided by the Department.

(b) At the end of the specified temporary transfer time period the permit automatically returns to the original permittee.

(7) A horseshoe crab landing permit may only be transferred to a person who:

(a) Is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland; and

(b) Is not currently a permit holder.

(8) Regardless of the number of authorized individuals with Maryland horseshoe crab permits on board any one vessel, no more than two horseshoe crab quotas may be harvested from one vessel per trip.

F. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a horseshoe crab landing permit shall record the harvest of horseshoe crabs on the permit daily and submit the completed permit to the Department in the time frame specified on the form.

(2) The Department may deny an application for a horseshoe crab landing permit for failing to comply with §F(1) of this regulation during the previous season.

G. General.

(1) A person authorized to catch and release horseshoe crabs for purposes of scientific research:

(a) Shall return within 48 hours the live horseshoe crabs to the waters from which the horseshoe crabs were taken; and

- (b) Is exempt from §§A—E of this regulation.
- (2) A person who purchases horseshoe crabs for purposes of scientific research may:
 - (a) Return the horseshoe crabs to the harvester for use or sale as bait;
 - (b) Return or sell the horseshoe crabs to a bait dealer; or
 - (c) Return the horseshoe crabs live to tidal waters.
- (3) The Secretary may establish or modify catch limits, quotas, and seasons for horseshoe crabs in order to implement the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Horseshoe Crab by issuing a public notice on the Fisheries Service website.
- (4) The public notice shall state its effective hour and date and shall be published on the Fisheries Service website at least 48 hours in advance of the effective hour and date.
- (5) The Secretary shall make a reasonable effort to disseminate a public notice issued under this section through various other media so that an affected individual has a reasonable opportunity to be informed.
- (6) A violation of the restrictions set by the Secretary in accordance with §G of this regulation is a violation of this regulation.

APPENDIX B

Summary of Maryland's 2024 Horseshoe Crab Bait Fishery

1. 2024 QUOTA

- 255,980 Horseshoe Crabs

2. 2024 HARVEST

- Total: 74,353 HSCs/ 164,320 pounds (2.12 lbs. per male horseshoe crab)
- Percent of MD quota: 29%

3. NUMBER OF FISHERMEN

- Permittees: 10
- Trawl (7), Gill net (3)

4. SEX RATIO OF HARVEST

- Female: 0%
- Male: 100%

5. AREA OF HARVEST

- Chesapeake Bay: <1%
- Atlantic Ocean and coastal bays: 100%

6. METHOD OF HARVEST

- Trawl Net 92.0%
- Gill Net 8.0%

7. MONTHLY HARVEST

Month	Number of Males
April	
May	211
June	5,253
July	12,731
August	43,630
September	5,494
October	5,483
November	1,551
Total	74,353

APPENDIX C
Example of a 2024 Horseshoe Crab Landing Permit

MAY			
I.	<u>WEEK 1</u>		
II.	<u>(5/1/24 TO 5/2/24)</u>		
III.	<u>MARYLAND DEPARTMENT OF NATURAL RESOURCES</u>		
IV.	<u>FISHING AND BOATING SERVICES</u>		
2024 HORSESHOE CRAB LANDING PERMIT MAXIMUM DAILY ALLOWABLE LANDING LIMIT: 150 HORSESHOE CRABS			
V.	<u>FISHERIES SERVICES</u>		
NAME STREET CITY, STATE ZIP			
		LICENSE # 99999	
AREAS OF HARVEST		VI. <u>GEAR USED</u>	
A = Chesapeake Bay B = Coastal Bays C = Ocean, < 1 Mile	D = Ocean, 1 – 3 Miles E = Ocean, 3 – 12 Miles F = Ocean, 12+ Miles	1 = Trawl 2 = Gill Net, Drift 3 = Gill Net, Anchor	4 = Pound/Fyke Net 5 = Hand 6 = Other, Specify
DATE	# OF FEMALES	# OF MALES	# NOT SEXED
AREA OF HARVEST	GEAR USED	SEAFOOD DEALER #	
5/1/2024			
5/2/2024			

RETURN WITHIN 3 DAYS AFTER THE WEEK IS OVER TO:

Maryland Department of Natural Resources
Fishing and Boating Services B-2
Attn: Horseshoe Crab Monitoring
580 Taylor Avenue
Annapolis, MD 21401
Fax #: 410.260.8279
Attn: Chris Jones, Horseshoe Crab Monitoring

INSTRUCTIONS TO PERMITTEE

- 1) Your name, address, license number, permit number, and daily maximum allowable landing limit appears in the top section of this permit.
- 2) Write the number of female and male horseshoe crabs in the **NUMBER OF FEMALE** and **NUMBER OF MALE** space.
- 3) Write the number of horseshoe crabs, which were not sexed in the **NUMBER NOT SEXED** space.
- 4) Write the area of harvest using the letter codes on top of the permit in the **AREA OF HARVEST** space.
- 5) Write the gear used to harvest the horseshoe crabs using the numeric codes on the top of the permit in the **GEAR USED** space.
- 6) If horseshoe crabs are sold to a seafood dealer, write the dealer's ID number in the **SEAFOOD DEALER'S ID NUMBER** space.
- 7) You are responsible for the accuracy of any and all information recorded on this permit.
- 8) You must return this permit to the Department of Natural Resources (address and fax number below) within 3 days after the week is over. Failure to do so, **even if "0" horseshoe crabs are landed**, could result in the revoking of your permit.

VII. HORSESHOE CRAB TAG RECAPTURES

Tag Number	Date Recovered	HSC Kept/Released	Tag Kept/Mailed/Disposed

If you need additional information or have questions please call:
Chris Jones 410.260.8343 or 800.620.8DNR x.8343



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Red Drum (*Sciaenops ocellatus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2024

Prepared by

Matthew B. Jargowsky

Maryland Department of Natural Resources
Fishing and Boating Services

May 14, 2025

Red Drum Compliance Report Template
Due Date: July 1
States/Jurisdictions: New Jersey – Florida

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

Maryland's commercial fishery landed 1,005 pounds of red drum in 2024 (2024 data are preliminary; Figure 1).

Recreational Fishery

Maryland landed 136,387 lbs. of red drum in their recreational fishery in 2024 (PSE = 38.1). Maryland landed 42,527 red drum in their recreational fishery in 2024 (PSE = 39.5; Figure 2). Maryland released 358,323 red drum in their recreational fishery in 2024 (PSE = 38.4; Figure 3).

All of the preceding recreational estimates were downloaded from the MRIP website. (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division).

Licensed charter boat captains in Maryland are required to keep log books of their clients' catch. Log books from 2024 indicate 329 red drum were caught, 131 of which were harvested (Figure 4). Charter boat red drum catches were reported every year from 1993–2024, except for 1996.

III. Fishery Monitoring Program

- a. Summarize fishery dependent monitoring programs including bycatch monitoring programs.

Maryland conducted weekly monitoring of commercial pound nets in Maryland's portion of the Chesapeake Bay from May 29, 2024, through September 9, 2024, and then sporadic monitoring through November 18, 2024. Ninety-seven red drum were measured in 2024, averaging 620 millimeters TL and ranging from 352 to 1250 millimeters TL (Figure 5).

- b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland does not conduct fishery independent monitoring for red drum.

IV. Management Programs

- a. Summarize any regulatory changes from the previous year or planned changes for the current year. States with a commercial landings cap, please report any overages and the payback schedule.

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

08.02.05.16

.16 Red Drum.

Commercial

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a commercial licensee may not catch or possess red drum less than 18 inches in total length or greater than 25 inches in total length.
- A commercial licensee may not catch or possess more than five red drum per day.

Recreational

- Notwithstanding Natural Resources Article, 4-734, Annotated Code of Maryland, a person may not catch or possess red drum less than 18 inches in total length or greater than 27 inches in total length.
- A person may not catch or possess more than one red drum per day.

V. Law Enforcement Reporting Requirements

Please include in this section any major law enforcement issues related to red drum that occurred in the previous calendar year.

N/A

Figure 1. Commercial red drum landings reported to Maryland DNR, 1981–2024.

Table 1 redacted due to confidential data.

Figure 2. MRIP harvest estimates for red drum in Maryland, 1981–2024.

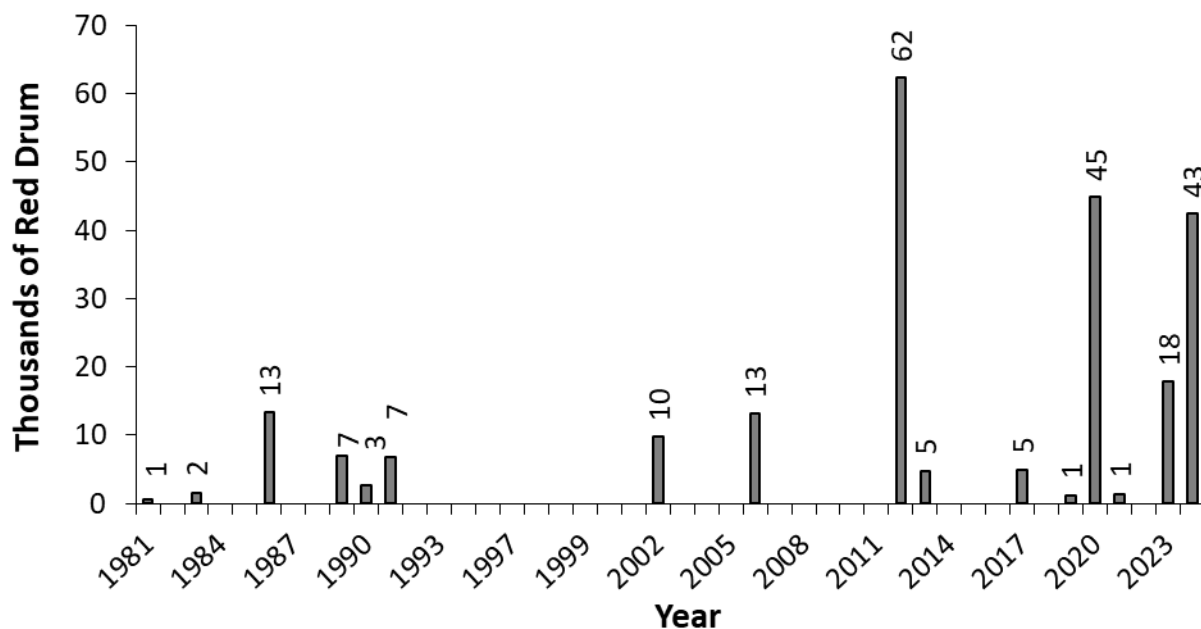


Figure 3. MRIP release estimates for red drum in Maryland, 1981–2024.

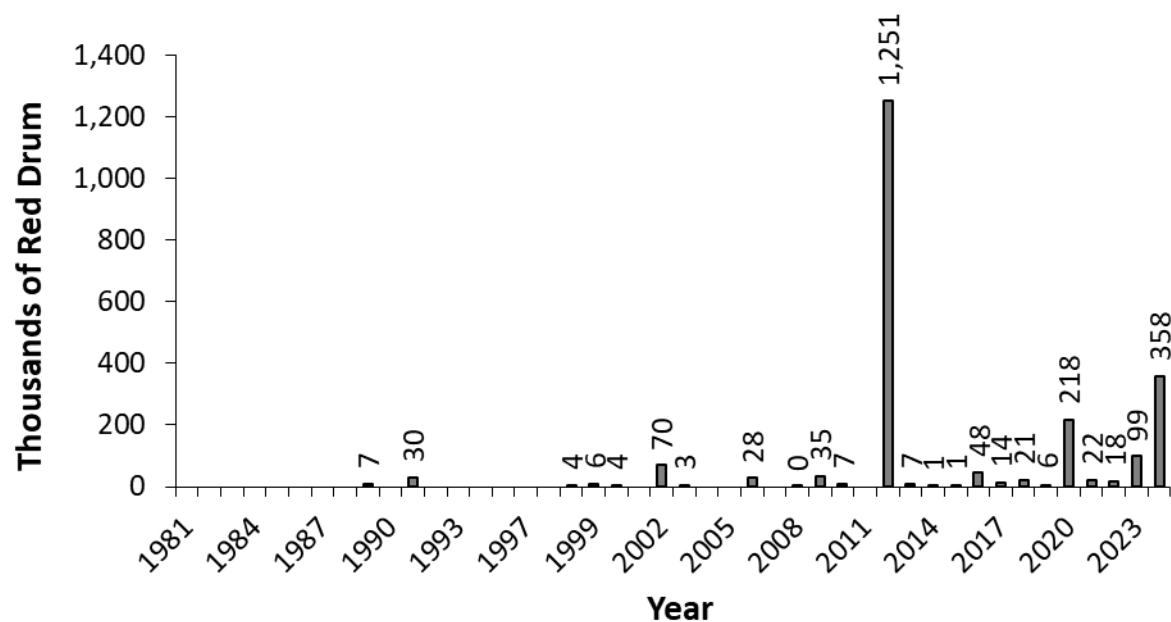


Figure 4. Red drum harvest and releases reported from Maryland's charter boat fishery in numbers, 1993–2024.

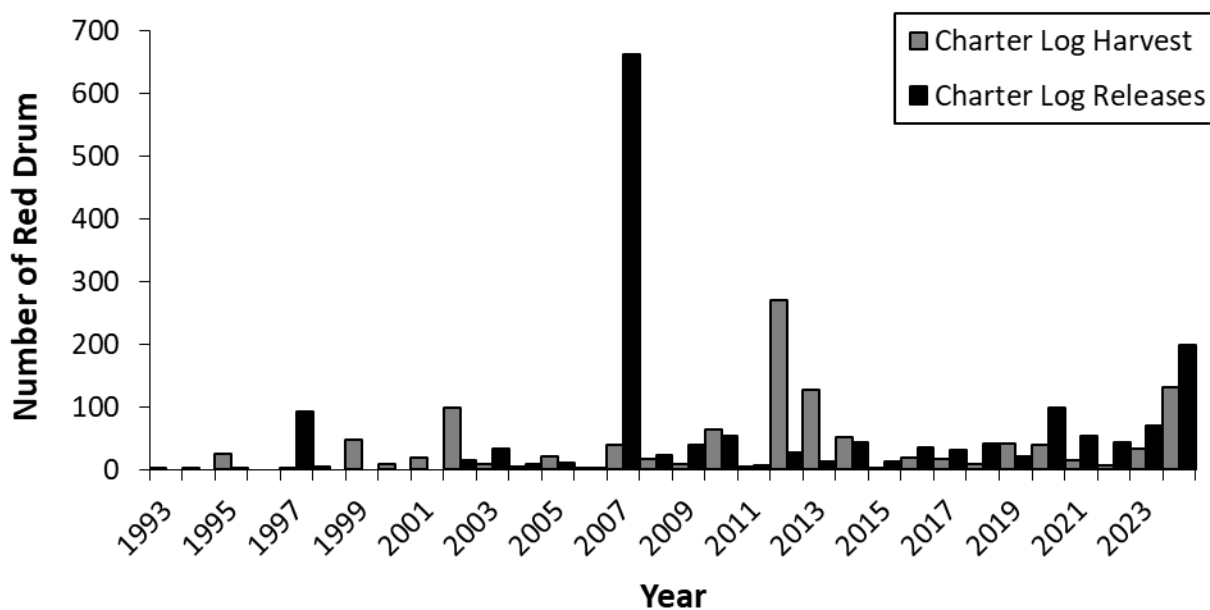
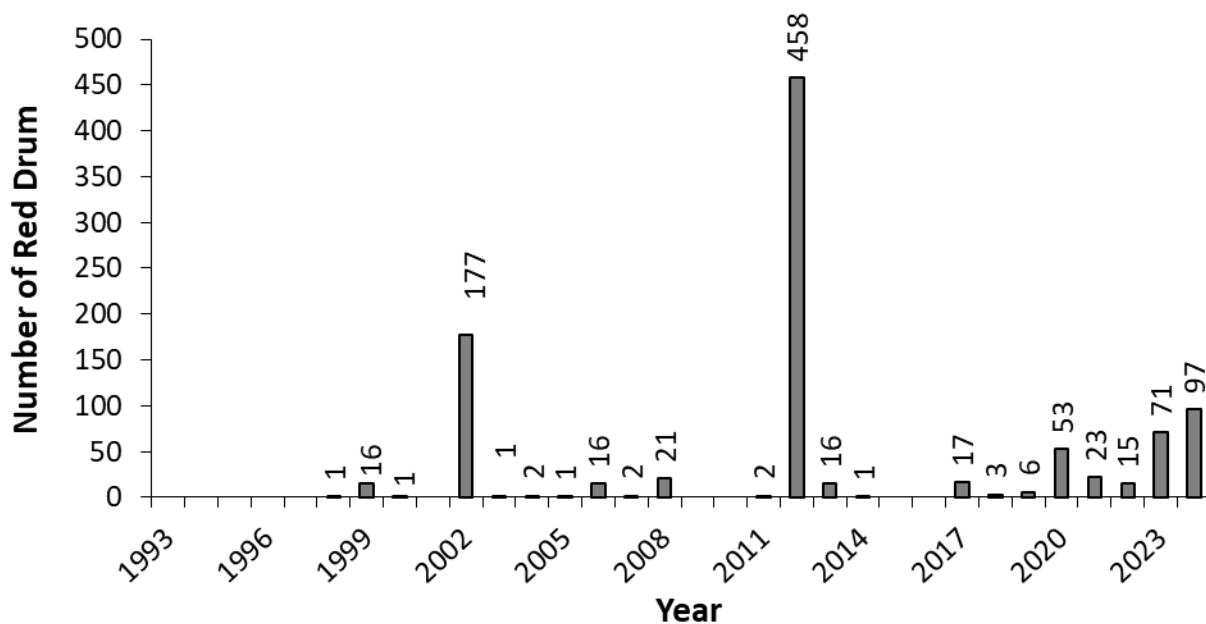


Figure 5. Red drum caught in commercial pound nets monitored by Maryland DNR biologists, 1993–2024.





Maryland's 2024 Scup (*Stenotomus chrysops*) Compliance Report to the
Atlantic States Marine Fisheries Commission
June 2025

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

This program receives Federal financial assistance from the U.S. Fish and Wildlife Service. Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, or disability.

If you believe that you have been discriminated against in any program, activity, or facility, or if you need more information, please write to:

Office of Fair Practice
Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2025

DNR

I. Introduction

The recreational (35 percent) and commercial (65 percent) scup allocations were updated with the approval of Amendment 22 (September 2022). These changes were effective January 2023. The 2023 management track stock assessment indicated the stock is not overfished nor experiencing overfishing. Spawning stock biomass estimated at 436 million pounds in 2022 is over two times the target of 173 million pounds. A new stock assessment is scheduled for 2025.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Programs

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2024 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by the Maryland Fishing and Boating Services via weekly reports of dealer transactions to the National Oceanic and Atmospheric Administration.

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating Services has managed the Access Point Angler Intercept Survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Maryland has conducted juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. A total of 140 trawls and 38 beach seine hauls were conducted annually. In 2024, zero scup were collected by trawl or beach seine.

Regulations

One scup public notice was issued in 2024. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx

PUBLIC NOTICE

The Maryland Department of Natural Resources Fishing and Boating Services Modifications to the 2024 Recreational Scup Fishery — Effective 2/26/2024

WHAT THIS NOTICE DOES

The Secretary of the Maryland Department of Natural Resources announces modifications to the recreational scup fishery for the Atlantic Ocean, its coastal bays, and their tributaries. This notice supersedes all notices effective prior to February 26, 2024, affecting the 2024 recreational scup fishery. Effective 12:01 a.m. February 26, 2024:

- An individual may not catch or possess more than 30 scup per day.
- The recreational minimum size for scup is nine inches.

WHY THIS IS NECESSARY

This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan.

https://asmfc.org/files/SFlounderScupBSB_Board_MtgSummary_Feb2024.pdf.

WHO THIS NOTICE AFFECTS

This applies to all individuals who catch scup recreationally. AUTHORITY Code of Maryland Regulations 08.02.05.22 Josh Kurtz Secretary of Natural Resources

Code of Maryland Regulations

A. Minimum Size.

- (1) Recreational. A recreational angler may not catch or possess a scup less than 9 inches in total length.
- (2) Commercial. A commercial tidal fish licensee may not catch or possess scup less than 9 inches in total length.

B. Commercial Gear Restrictions.

- (1) Trawls.
 - (a) Except for a person landing less than a total of 500 pounds of scup from November 1 through April 30 or 100 pounds of scup from May 1 through October 31, a person may not use a trawl with:
 - (i) Mesh less than 5 inch stretched mesh size;
 - (ii) More than 25 meshes in the codend with more than 100 continuous meshes of 5 inch mesh forward of the codend; or
 - (iii) Mesh size less than 5 inches throughout the trawl net for trawl nets with codends less than 125 meshes.
 - (b) A person may not use a roller rig trawl with a roller diameter in excess of 18 inches to catch scup.
- (2) Pots and Traps. A pot or trap used to catch scup shall have:
 - (a) An escape vent of at least a:
 - (i) 3.1 inch diameter round opening, or
 - (ii) 2.25 inch square opening; and
 - (b) Hinges or fasteners on one panel or door made of one of the following degradable

materials:

- (i) Untreated hemp or jute string of 3/16 inch in diameter or smaller,
- (ii) Magnesium alloy fasteners, or
- (iii) Ungalvanized or uncoated iron wire of 0.062 inch in diameter or smaller.

C. Catch Limits.

- (1) Commercial Catch Limits. A coastwide quota and daily catch limit to be shared by Atlantic states will be established and published by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.
- (2) A commercial tidal fish licensee may not catch, possess, or land more pounds of scup daily than as set forth in §C(1) of this regulation.
- (3) Recreational Catch Limits. An individual may not catch or possess more than 30 scup per day.

D. General.

- (1) The Secretary may modify or set a season or catch limit by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.
- (2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Table 1. State compliance with the required commercial measures as mandated in the FMP

Has the state implemented the required measure?	
9" minimum size	Yes
5.0" minimum diamond mesh	Yes
Threshold to trigger minimum mesh requirements: (1,000 lbs 10/1 – 4/14, 2,000 lbs from 4/15-6/15, 200 lbs from 6/16 to 9/30)	More restrictive
3.1" circular escape vents, 2.25" square escape vent, or rectangular escape vent of equivalent size.	Yes

Harvest

Commercial Fishery

Maryland's 2024 preliminary commercial scup harvest was 93,175 pounds harvested by otter trawl and pot (Table 2; Source: Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

Recreational Fishery

Maryland's 2024 recreational scup harvest was estimated at 151 fish (PSE 57.2) with a combined weight of 214 pounds (PSE 58.1); National Marine Fisheries Service, Fisheries Statistics and Economics Division, Personal communication, May 12, 2025).

IV. Planned Management for 2025

A. Summary of Regulations that will be in Effect

Commercial management measures will remain the same as in 2024. The recreational minimum size will remain at 9 inches and the catch limit was decreased to 30 fish in 2024.

B. Summary of Monitoring Programs that will be in Effect

Same as 2024, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics and Economics Division. Marine Recreational Fisheries Statistical Survey. Accessed on May 12, 2025.

<https://www.st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index>.

Northeast Fisheries Science Center. 6-05-23. Scup 2023 Management Stock Assessment Report.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland's 2024 Compliance Report:

American Shad (*Alosa sapidissima*)

Hickory Shad (*Alosa mediocris*)

Alewife Herring (*Alosa pseudoharengus*)

Blueback Herring (*Alosa aestivalis*)

Submitted to
Atlantic States Marine Fisheries Commission

Prepared by

Matthew B. Jargowsky
Maryland Department of Natural Resources
Fishing and Boating Services

matthew.jargowsky@maryland.gov

5/14/2025

American Shad

I. Introduction

Fishery independent surveys for the Susquehanna River and Potomac River spawning stocks were conducted as usual and juvenile abundance surveys were completed in all locations. Fishery dependent monitoring of the recreational catch and release fishery was assessed using statewide voluntary angler logbooks and a roving creel survey at Conowingo Dam. Maryland's Nanticoke River spawning stock survey ended in 2021 due to a lack of cooperating watermen; however, the spawning stock survey and mortality estimate requirements from Amendment 3 are still fulfilled through Delaware's spawning stock survey.

II. Request for *de minimis*, where applicable.

NA

III. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	American Shad Losses		
	Number of fish	Weight (lbs) ³	Mean Weight (lbs)
Commercial TOTAL	4,200	8,400	NA
Directed landings	0	0	
Estuarine/State waters bycatch ¹	4,200	8,400	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Non-harvest TOTAL	328	656	NA
Fish passage mortality ²	328	656	
Brood stock capture	0	0	
Research losses	0	0	
TOTAL LOSSES	4,528	9,056	NA

¹ Extrapolated from American shad observed mortalities from pound nets in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

² Includes turbine mortality, lift mortality, trap and transport mortality, holding mortality and those sacrificed for otoliths at Conowingo Dam.

³ Reported weights were calculated by multiplying the number of fish by an estimated 2 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational harvest, catch and release only
Landings	NA	
Harvest Composition	NA	
Effort	Y	Monitored via voluntary catch and release angler logbooks and a roving creel survey
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (Susquehanna River/upper Chesapeake Bay)	Y	
Spawning stock survey (Nanticoke River)	NA	Requirement fulfilled through Delaware's spawning stock survey
Spawning stock survey (Potomac River)	Y	
Calculation of mortality and/or survival estimates (Susquehanna River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (Nanticoke River)	NA	Requirement fulfilled through Delaware's spawning stock survey
Calculation of mortality and/or survival estimates (Potomac River)	Y	
Juvenile abundance survey(s)	Y	
Hatchery evaluation	Y	

C. Sustainability Evaluation

NA

IV. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

V. Progress in implementing habitat recommendations

The Maryland Department of Natural Resources' (DNR) Fish Passage Program (FPP) continues to prioritize the removal of stream barriers that inhibit aquatic organism migrations. To date, most of the blockages to American Shad in Maryland have fish ladders or have been removed. The removal of Bloede Dam in 2019 was deemed a huge success. There have yet to be quantifiable benefits to American shad, though river herring have been detected upstream of the dam removal site, but the removal is an important milestone in the program as they continue to push for more dam removals in Maryland. The FPP is also in discussions with Maryland Department of the Environment (MDE) Dam Safety about how to increase coordination between DNR/MDE to further dam removals with anticipation of infrastructure grants. The FPP is also seeking opportunities for more dam removals through a Mitigation Banking Tool that is being developed by the United States Army Corps of Engineers. Lastly, the FPP has several smaller dam removals in the works now to benefit river herring, which may also tangentially benefit American shad. Plans to improve fish passage at Conowingo Dam were also initiated as part of the 2021 FERC license, but these plans are currently on hold after the U.S. Court of Appeals vacated the license due to issues surrounding a water quality certification.

A. Habitat protection and restoration

The Maryland DNR completed an update to the ASMFC American shad habitat plan, which was approved by the board at the February 2021 meeting. Spawning and rearing habitat estimates were updated with input from the Maryland DNR Fisheries Habitat and Ecosystem Program. The plan identified that the major impediments to American shad recovery in Maryland are hydroelectric dams on the Susquehanna River and habitat degradation associated with watershed development. New information pertaining to the impacts of water withdrawals, channelization, dredging, competition and predation were also added to the habitat plan.

B. Land Use

Maryland DNR Land Acquisition and Planning works to conserve land resources and ecosystems that serve vital ecological, economical and recreational needs for Maryland citizens through a number of programs. As of March 12, 2025, approximately 1.88 million acres of land in Maryland have been protected through the purchase and donation of conservation easements and fee-simple acquisitions.

Hickory Shad

VI. Introduction

Hickory shad spawning stock data was collected by the Maryland DNR Fish Health and Hatcheries Program (FHHP) in 2024. An index of abundance for hickory shad in the upper Chesapeake Bay was calculated using data from fishery-independent gill nets targeting striped bass. Fishery dependent monitoring of the recreational catch and release fishery in the upper Chesapeake Bay was assessed using statewide voluntary angler logbooks and a roving creel survey.

VII. Request for *de minimis*, where applicable.

NA

VIII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Hickory Shad Losses		
	Number of fish	Weight (lbs) ¹	Mean Weight (lbs)
Commercial TOTAL	0	0	NA
Directed landings	0	0	
Estuarine/State waters bycatch	Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown	
Recreational TOTAL	0	0	NA
Directed harvest	0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown	
Other TOTAL	0	0	NA
Fish passage mortality	0	0	
Brood stock capture	0	0	
Research losses	0	0	
TOTAL LOSSES	0	0	NA

¹ Reported weights were calculated by multiplying the number of fish by an estimated 1 pound per fish.

B. Completion of Monitoring

Required Monitoring Components	Additional comments
<i>Fishery-Dependent Monitoring</i>	
Commercial Fishery	No commercial fishery.
Landings	NA
Harvest Composition	NA
Effort	NA
Recreational Fishery	No recreational fishery. Catch and release only
Landings	NA
Harvest Composition	NA
Effort	Monitored via voluntary catch and release angler logbooks and a roving creel survey
<i>Fishery-Independent Monitoring</i>	
Spawning stock survey (upper Chesapeake Bay)	CPUE was examined from this survey
Calculation of mortality and/or survival estimates (lower Susquehanna River)	Length, age, sex composition, repeat spawning and mortality of hickory shad was examined from this survey

IX. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

NA

River Herring

X. Introduction

Fishery independent monitoring of the alewife and blueback herring spawning stocks in the North East River (upper Chesapeake Bay tributary) and the juvenile abundance survey were completed as usual. A new experimental spawning stock survey was designed for the Choptank River. This new survey was conducted for the first time in 2025.

XI. Request for *de minimis*, where applicable.

NA

XII. Previous calendar year's fishery and management program

A. Harvest and Losses

Harvest/Method	Alewife Losses			Blueback Herring Losses		
	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)	Number of fish	Weight (lbs) ⁴	Mean Weight (lbs)
Commercial TOTAL¹	0	0	NA	0	0	NA
Directed landings	0	0		0	0	
Estuarine/State waters bycatch ²	Unknown	Unknown		Unknown	Unknown	
Federal waters bycatch	Unknown	Unknown		Unknown	Unknown	
Recreational TOTAL	0	0	NA	0	0	NA
Directed harvest	0	0		0	0	
Non-directed (poaching, hook & release, etc.)	Unknown	Unknown		Unknown	Unknown	
Other TOTAL	80	50	NA	45	25	NA
Fish passage mortality ³	Unknown	Unknown		Unknown	Unknown	
Brood stock capture	0	0		0	0	
Research losses	80	50		40	25	
TOTAL LOSSES	80	50	NA	40	25	NA

¹ Commercial landings are collectively reported as river herring. Landings were split between species.

² There is no mechanism for commercial fishermen to report river herring bycatch mortality under the current reporting system.

³ No turbine mortality estimates are available for river herring.

⁴ Reported weights were calculated by multiplying the number of fish by an estimated 0.5 pounds per fish.

B. Completion of Required Monitoring

Required Monitoring Components	Completed? (Y/N/NA)	Comments
<i>Fishery-Dependent Monitoring</i>		
Commercial Fishery	NA	No commercial fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
Recreational Fishery	NA	No recreational fishery.
Landings	NA	
Harvest Composition	NA	
Effort	NA	
<i>Fishery-Independent Monitoring</i>		
Spawning stock survey (North East River/upper Chesapeake Bay)	Y	
Calculation of mortality and/or survival estimates (North East River/upper Chesapeake Bay)	Y	
Juvenile abundance survey	Y	
Hatchery evaluation	NA	

C. Sustainability Evaluation

NA

XIII. Planned management programs for the current calendar year**A. Summarize regulations that will be in effect**

NA

B. Summarize changes to monitoring programs

River herring were sampled with gill nets in the Choptank River in 2025 once per week from early-March through early-May as part of the new experimental spawning stock survey. Sampling protocols mirrored those of the North East River spawning stock survey. Enough alewife and blueback herring were collected for the creation of indices of relative abundance and to estimate mortality. These estimates will be provided in next year's compliance report. The results from the first year of sampling will be evaluated this fall to determine if any modifications to the sampling protocols should be made moving forward.

APPENDICES TO COMPLIANCE REPORT

Appendix A. Fishery Information

I. American Shad

A. Commercial Fishery

i. Characterization of Fishery

The American shad commercial fishery closed in 1980, and the ocean intercept fishery closed in 2005.

ii. Characterization of Directed Harvest

No commercial data have been collected from commercial fisheries since the closure of the ocean intercept fishery in 2005.

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

American shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries. Commercial fishermen are permitted a 2 fish per day allowance of dead American shad for personal use (no sale is permitted). Release mortality of American shad from this fishery can be high.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report American shad as bycatch under the current reporting system; funding and staffing constraints are also factors. Bycatch mortality reported in the harvest and losses table was extrapolated from American shad observed pound net mortalities in the upper Chesapeake Bay. This estimate was formulated in the 1990's and has not been updated, so it may not reflect current bycatch mortality of American shad.

2. Estimate of composition (length and/or age)

Limited length and age samples were collected from American shad encountered as bycatch in Nanticoke River commercial fisheries up until 2021. These data should not be considered representative of statewide bycatch composition.

B. Recreational Fishery

i. Characterization of the Fishery

Maryland has permitted a catch and release sport fishery since the closure of the recreational American shad fishery in 1980. American shad anglers are interviewed during the spawning run through a roving creel survey below the Conowingo Dam on the Susquehanna River which provides catch in numbers and hours spent fishing. Shad fisheries throughout Maryland are also characterized through a volunteer logbook survey in which anglers report daily effort and catches.

ii. Characterization of Directed Harvest

Directed recreational harvest of American shad has not been permitted in state waters since 1980.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Total recreational release mortality remains unknown, but the impact of the recreational fishery appears negligible on the recovery of the upper Chesapeake Bay stock.

1. Estimate and method of estimation

A catch and release study was conducted at the Conowingo Dam in 1997 (Lukacovic 1998), and mortality of American shad in the study was 0.97% ($n = 309$). The total catch of American shad from a creel survey in the lower Susquehanna River (Normandeau Associates, Inc. 2011) was 14,831 fish. Using these studies, total recreational release mortality in the lower Susquehanna River can be estimated as 144 American shad per year.

C. Other losses

i. Characterization of Other Losses

1. Research Losses

NA

2. Turbine Mortality

There are two fish lifts operating at the Conowingo Dam, the most downstream dam on the Susquehanna River. All mortality associated with the Conowingo Dam and its fish lifts are included in the fish passage mortality section of the harvest and losses table (III.A). From 1982 to 1996, fish lifted at Conowingo Dam were transported upstream of the four downstream hydroelectric dams on the Susquehanna River. In 1997, the transportation of fish upstream began to be phased out in favor of volitional passage. With volitional passage, fish were emptied from the fish lift into a raceway, which directed fish past a viewing window and into the pool above the dam. In 2001, with all four downstream hydroelectric dams now having fish passage, volitional passage became the only method of upstream passage. In 2021, to prevent the upstream passage of invasive species, American shad and river herring collected in the fish lifts were sorted out for the purposes of upstream transportation. In 2024, 1,911 American shad were successfully transported upstream of the York Haven Dam and 451 were successfully transported upstream of the Safe Harbor Dam. Of the 2,362 American shad that were transported upstream, it was estimated that 963 fish would attempt to emigrate back through the turbines at the Conowingo Dam (based on turbine mortality estimates for the York Haven Dam, Safe Harbor Dam and Holtwood Dam). From that approximation of American shad, the total Conowingo Dam turbine mortality was estimated to be 241. An additional 52 American shad were sacrificed for life history information and an additional 35 fish were either lift, holding or transport mortalities.

3. Hatchery Propagation

No American shad were removed from waters under the jurisdiction of Maryland for Maryland DNR American shad propagation in 2024.

II. Hickory Shad

A. Commercial Fishery

i. Characterization of Fishery

Maryland's hickory shad commercial fishery closed in 1981.

ii. Characterization of Directed Harvest

1. Landings

NA

2. Catch Composition

NA

3. Estimation of Effort

NA

iii. Characterization of Other Losses

Hickory shad are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the upper Chesapeake Bay and various Maryland tributaries.

1. Estimate and method of estimation

Bycatch monitoring does not occur in Maryland because there is no mechanism for fishermen to report hickory shad as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. Estimate of composition (length and/or age)

There are no data available to estimate composition.

B. Recreational Fishery

i. Characterization of the Fishery

Hickory shad are targeted for recreational catch and release fishing in several tributaries of the Chesapeake Bay. Specifically, there is a significant catch and release fishery for hickory shad in the lower Susquehanna River and its tributaries. A roving creel survey below Conowingo dam provides catch in numbers and hours spent fishing for hickory shad for each participating angler. Similar information is collected statewide through a voluntary logbook survey.

ii. Characterization of Directed Harvest

Recreational harvest of hickory shad has not been permitted in Maryland waters since 1981.

1. Landings and method of estimation

NA

2. Estimation of effort or annual CPUE from a subsample

NA

iii. Characterization of Other Losses

Based on limited catch and release mortality rate estimates, recreational fishing mortality appears to be minimal (Lukacovic and Pieper 1998).

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of hickory shad due to practices such as poaching or hook and release.

C. Other losses

- i. **Characterization of Other Losses**

1. **Research Losses**

Hickory shad from the Choptank and Patapsco Rivers are subsampled for otolith examination by the Maryland DNR FHHP.

2. **Turbine Mortality**

Turbine mortality is not a significant source of hickory shad mortality. Since 1991, fewer than 100 hickory shad have been passed upstream of the Conowingo Dam.

3. **Hatchery Propagation**

Adult hickory shad collected by the FHHP with electrofishing gear near Lapidum on the Lower Susquehanna River are sacrificed as broodstock for stocking the Patapsco River and to a lesser extent, the Patuxent River.

III. River Herring

A. Commercial Fishery

- i. **Characterization of Fishery**

The river herring commercial fishery closed on 26 December 2011.

- ii. **Characterization of Directed Harvest**

Commercial harvest of river herring is not permitted in Maryland.

1. **Landings**

NA

2. **Catch Composition**

NA

3. **Estimation of Effort**

NA

iii. **Characterization of Other Losses**

River herring are captured as bycatch primarily in the spring pound and fyke net commercial fishery targeting perch and catfish species. This fishery occurs in the Chesapeake Bay and various Maryland tributaries. Maryland was monitoring this fishery in the Nanticoke River prior to the moratorium on river herring, and following the moratorium continued to sample river herring from this fishery until 2021.

1. **Estimate and method of estimation**

No data are available to estimate statewide bycatch of river herring in commercial fisheries. There is no mechanism for fishermen to report river herring as bycatch under the current reporting system; funding and staffing constraints are also factors.

2. **Estimate of composition (length and/or age)**

River herring encountered as bycatch in Nanticoke River commercial fisheries were subsampled for length, sex and age from 1989 to 2021.

B. **Recreational Fishery**

i. **Characterization of the Fishery**

A recreational catch and release fishery for river herring is permitted in Maryland, though targeting of river herring is not a common practice. Therefore, mortality due to these catches is considered insignificant.

ii. **Characterization of Directed Harvest**

Directed recreational harvest of river herring is not permitted in Maryland.

1. **Landings and method of estimation**

NA

2. **Estimation of effort or annual CPUE from a subsample**

NA

iii. **Characterization of Other Losses**

The Maryland DNR conducts a roving creel survey in the Susquehanna River. This survey indicates that river herring are not specifically targeted by recreational anglers in the upper Chesapeake Bay. Therefore, hook and line release mortality is considered to be negligible.

1. **Estimate and method of estimation**

No data are available to accurately estimate potential mortality of river herring due to practices such as poaching or hook and release.

C. Other losses

i. Characterization of Other Losses

1. Research Losses

Beginning in 2016, Maryland DNR staff began sacrificing a subsample of river herring from each monitored system to collect otolith samples. Otoliths were recommended as the preferred ageing structure by the most recent river herring stock assessment. These samples will be aged when time allows for training and processing of the structures.

2. Turbine Mortality

Turbine mortality rates for river herring at the Conowingo Dam are unknown, but are likely not a significant source of mortality. Since 2004, a yearly average of less than 200 river herring have passed upstream of the Conowingo dam, so very few fish are exposed to turbines during downstream migration. In 2024, 14 alewife and 54 blueback herring were successfully transported upstream of Conowingo Dam.

3. Hatchery Propagation

River herring are not currently removed from waters under the jurisdiction of Maryland for hatchery propagation.

IV. Protected Species (Atlantic sturgeon) bycatch estimates

Atlantic sturgeon bycatch has been zero since the closure of American shad (1980 Chesapeake Bay, 2005 ocean intercept), hickory shad (1981) and river herring (2011) fisheries.

I. Copy of Fishery Regulations for Previous Fishing Year

08.02.05.05

.05 American Shad.

A. Prohibition of Catching, Possession, or Sale of American Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any American shad or any parts of American shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch American shad in cooperation with a scientific investigation of the Department and cooperating persons having a valid scientific collecting permit, including permitted shad egg hatching in approved devices. This person may sell live American shad to the scientific investigation.

(b) The incidental catching of American shad by fishing gear set for other species of fish will not be deemed a violation of this section if the American shad is returned to the water.

(c) Not more than two American shad may be possessed for personal consumption if the shad were found dead when fishing gear operated for other species was retrieved from the water.

B. Possession or Sale of American Shad Lawfully Taken in Another Jurisdiction.

(1) The provisions of §A, of this regulation, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer for sale, or shipment of American shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity demonstrates by substantial evidence that the American shad were lawfully taken and lawfully removed from another jurisdiction.

(2) The requirements of "substantial evidence" as used in §B(1), of this regulation, shall be satisfied by a bill of sale which identifies the American shad as originating from waters not under Maryland jurisdiction.

C. Effective Period of These Sections. On the basis of study findings and interpretations, the Secretary shall annually determine whether the provisions of §A, of this regulation, shall remain in force. At the same time, if those provisions are to remain in force, he shall determine what, if any, changes are necessary.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.05.htm>)

08.02.05.06

.06 Hickory Shad.

A. Prohibition of Catching, Possession, or Sale of Hickory Shad; Exceptions.

(1) A person may not catch, offer for sale, purchase, or possess any hickory shad or any parts of hickory shad, including roe, caught in Maryland waters except as permitted here.

(2) Exceptions.

(a) A person may catch hickory shad in cooperation with a scientific investigation of the Department.

(b) The incidental catching of hickory shad by fishing gear set for other species will not be considered a violation of this section if the hickory shad is returned to the water.

B. Possession or Sale of Hickory Shad Lawfully Taken in Another Jurisdiction. The provisions of §A, above, do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of hickory shad which were caught in waters not under Maryland jurisdiction, if the person engaging in the activity possesses a bill of sale which identifies the hickory shad as originating from waters not under Maryland jurisdiction.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.06.htm>)

08.02.05.09

.09 River Herring.

A. Definition.

(1) In this regulation, the following term has the meaning indicated.

(2) Term Defined. "River herring" means both alewife herring (*Alosa pseudoharengus*) and blueback herring (*Alosa aestivalis*).

B. An individual may not possess river herring within the jurisdiction of Maryland.

C. Exceptions. The provisions of §B of this regulation do not prohibit the entry into the State, or possession, transportation, exportation, processing, sale, offer of sale, or shipment of river herring which were legally caught in waters not under jurisdiction of Maryland, if the person engaging in the activity possesses a bill of sale which identifies the river herring as originating from waters not under jurisdiction of Maryland.

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.05.09.htm>)

In 2015, Maryland Department of Natural Resources Regulations and Policy staff noticed statewide general non-tidal regulations that addressed river herring had been overlooked when the fishery was closed in 2011. These regulations have been updated to state that there is no open season for river herring in non-tidal waters and a daily creel limit of zero. This regulation was proposed in 2015 and became effective in 2016.

08.02.11.04

.04 Statewide General Regulations.

A. Open Seasons, Creel, Possession, and Size Limits on Game and Fresh Water Fish in Nontidal Waters. Except as otherwise provided in this chapter for specific areas, the following apply Statewide:

(1) Open Seasons.

<i>Species</i>	<i>Open Season</i>
(i) Herring	No open season

(2) Creel and Possession Limits.

	<i>Daily Creel</i>	<i>Possession</i>
(j) Herring (Blueback and Alewife)	closed season — none permitted	

SOURCE: COMAR (<http://www.dsd.state.md.us/comar/comarhtml/08/08.02.11.04.htm>)

II. Copy of Fishery Regulations for Current Fishing Year
NA

III. Law Enforcement Reporting Requirements
NA

Appendix B. Required Fishery-Independent Monitoring

I. American Shad

A. Description of Requirements

Under Amendment 3, Maryland is required to have the following sampling programs in the Susquehanna River/upper Chesapeake Bay, Nanticoke River (cooperative effort among Maryland and Delaware) and Potomac River (cooperative effort among Maryland, District of Columbia, Potomac River Fisheries Commission and Virginia):

1. Annual spawning stock survey to include passage counts, CPUE or some other abundance index and representative subsamples that describe size, age and sex composition of spawning stock.
2. Calculation of mortality and/or survival estimates where possible
3. JAI: Juvenile abundance survey
4. Hatchery Evaluation (Susquehanna River/upper Chesapeake Bay and Potomac River)

B. Description of Work Performed

i. Juvenile Abundance Survey

American shad juvenile indices were derived from the Maryland DNR Estuarine Juvenile Finfish Survey (EJFS) conducted at fixed stations within the upper Chesapeake Bay, Nanticoke River and Potomac River. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore and the other was fully stretched perpendicular from the beach and swept with the current. Ideally, the area swept was equivalent to a 729 m² quadrant. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two stations from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

American shad spawning stock was sampled by hook and line in the Conowingo Dam tailrace (Susquehanna River/upper Chesapeake Bay). Biological information was collected (fork length, sex and scales for aging) and fish were tagged as part of a mark-recapture population estimate. Observations in the Conowingo Dam fish lifts were used as recaptures. Population size was determined using chapman's modification of the Petersen method, adjusted to incorporate fallback rate and days between tagging and the end of the fish passage season. Relative abundance was calculated as the number of fish caught per hour.

The Potomac River American shad spawning stock survey was conducted as usual. American shad were captured in fishery-independent gill nets

targeting striped bass from early April through mid-May. All American shad were measured and sexed, and scales were removed from a subsample of fish (10 fish/20mm length group/sex) for aging. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.75-, 4.5- and 5.25-inch mesh panels were used as those panels account for 84% of the total American shad catch. Each panel was treated as an individual sampling event.

The Nanticoke River has not been sampled since 2021. Geometric mean (GM) was defined as catch of American shad per number of days the net was fished. From 1988–1995, catches from all pound nets sampled on the Nanticoke River were factored into a measure of relative abundance (GM CPUE). Beginning in 1996, methods were revised to only include data from one pound net (Mill Creek) because it was consistently sampled over the time series; harvest from other pound nets was sporadic. Fyke nets were not included in the calculation because anecdotal evidence from the Nanticoke River suggests that they have a poor success rate in the capture of American shad relative to pound nets, rendering the efforts between the two methods incomparable.

iii. Mortality and/or Survival Estimates

Weighted linear regressions (Maceina and Bettoli 1998) were used to estimate total instantaneous mortalities (Z) of adult American shad sampled by the Susquehanna River/upper Chesapeake Bay spawning stock survey and Potomac River spawning stock survey. Age composition data was used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Maryland DNR FHHP personnel strip spawned American shad from the Potomac River. The resulting offspring were OTC marked and stocked to various rivers. From 1994 to 2024 Maryland DNR has stocked over 67 million American shad in the Choptank River, Patuxent River, Patapsco River, Nanticoke River and Potomac River. Ten to fifteen percent of all the eggs and fry resulting from the use of Potomac River broodstock were restocked as close to the capture site as was feasible. As of 2024, the Patapsco and Choptank Rivers were the primary stocking locations. The percentage of hatchery fish present in these populations was determined annually via juvenile seine surveys.

The Pennsylvania Fish and Boat Commission and the Delaware Division of Fish and Wildlife determine the proportion of hatchery reared juveniles that return as adults to the Susquehanna River and Nanticoke River, respectively.

C. Results

i. Juvenile Indices

1. Index of Abundance

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment

1. Length-Frequency

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

Results provided. Maryland does not conduct a hatchery evaluation on the Potomac River. This was a cooperative task between the Potomac River Fisheries Commission, Maryland, Virginia and the District of Columbia. Another agency besides Maryland may provide this information.

II. Hickory Shad

A. Description of Work Performed

Amendment 1 recommends the monitoring of juvenile hickory shad in the Chesapeake Bay tributaries.

i. Juvenile Abundance Survey

The Maryland DNR EJFS does not collect juvenile hickory shad in significant numbers and therefore juvenile indices are not calculated.

ii. Annual Spawning Stock Surveys

Hickory shad spawning stock data were collected by the Maryland DNR FHHP, who used electrofishing gear to sample hickory shad near Lapidum on the lower Susquehanna River. Maryland DNR staff removed scales, determined sex and measured fork and total length of captured hickory shad. Scales were later read for age and spawning history. Hickory shad were also captured in fishery-independent gill nets targeting striped bass from early April through mid-May in the upper Chesapeake Bay. Relative abundance was determined as the number of fish caught per 1,000 square yards of drift gill net per hour fished. For CPUE analyses, catch from only the 3.0-, 3.75- and 4.5-inch mesh panels were used as those panels account for 95% of the total hickory shad catch. Each panel was treated as an individual sampling event.

iii. Mortality and/or Survival Estimates

Chapman-Robson methodology (1960), with a back-transformation bias correction, were used to estimate total instantaneous mortality (Z) of hickory shad from the lower Susquehanna River. Age composition data were used in the analysis, where the first age-at-full recruitment was the age with the highest frequency and estimates were made only when data was available from three or more age-classes and the sample size of those fish was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

Recent hickory shad stocking efforts have focused primarily on the Patapsco River and to a lesser extent, the Patuxent River. Both adult and juvenile hickory shad may be sacrificed for hatchery evaluation when they are encountered by FHHP surveys.

III. River Herring

A. Description of Requirements

Under Amendment 2, Maryland is required to have the following sampling programs in the upper Chesapeake Bay:

1. Annual spawning stock survey and representative sampling for biological data
2. Calculation of mortality and/or survival estimates
3. JAI: Juvenile abundance survey (GM).

B. Description of Work Performed

i. Juvenile Abundance Survey

Juvenile river herring indices were derived from the Maryland DNR EJFS at fixed stations within the upper Chesapeake Bay and various Chesapeake Bay tributaries. Specifically, a 30.5-m x 1.24-m bagless beach seine of untreated 6.4-mm bar mesh was set by hand. One end was held on shore and the other was fully stretched perpendicular from the beach and swept

with the current. When depths of 1.6-m or greater were encountered, the offshore end was deployed along this depth contour. Each site was swept twice and CPUE was calculated as the number of fish caught per site. Stations where positive catch was <5% (two sites from the Potomac River) were removed from CPUE analyses.

ii. Annual Spawning Stock Surveys

Alewife and blueback herring spawning stocks were assessed with a gill net survey in the North East River, an upper Chesapeake Bay tributary. The gill net was fished at four randomly chosen sites once a week from mid-March through mid-May. The gill net consisted of three different size monofilament mesh panels (2.25-, 2.5- and 2.75-inch stretch mesh) each 100ft wide and 6ft deep. The 2.25-inch mesh panel replaced a 3-inch mesh panel in 2015 because few blueback herring were caught in the 3-inch mesh panel, and there was some indication the smallest blueback size group was not represented in the sample. River herring were measured (fork and total length), scales were removed below the insertion of the dorsal fin and sex was determined (by expression of gonadal products). Scales were read for age and spawning marks. Catch-per-unit-effort (CPUE) was estimated separately for alewife and blueback herring. For alewife, CPUE was calculated for all years using catch from only the 2.5- and 2.75-inch mesh panels (2013 – 2024). For blueback herring, CPUE was calculated from 2015 – 2024 on, using catch from all three mesh panels. Each sampling site was treated as an individual sampling event.

The Nanticoke River has not been sampled since 2021. For CPUE analyses, only catch from fyke nets were used, and CPUE was defined as the number of river herring per net day. In 2024, an error was discovered with the historic GM CPUE estimates for river herring prior to 2004. Specially, estimates prior to 2004 were calculated using pound net data, rather than fyke net data. This mistake went unnoticed as the data used to calculate these estimates were not readily accessible. To rectify this error, all fyke net data were transcribed from databooks into a spreadsheet and reanalyzed.

iii. Mortality and/or Survival Estimates

Poisson log-linear models (Millar 2015) were used to estimate total instantaneous mortality (Z) of adult river herring sampled by the North East River/upper Chesapeake Bay gill net survey. Age composition data were used in the analysis, where the age-at-full recruitment was fixed at 5. Estimates were made only when data was available from three or more age-classes and the sample size of those age-classes was greater than 30 (including first fully-recruited age).

iv. Hatchery Evaluation

NA

C. Results

i. Juvenile Indices

1. Index of Abundance

Results provided

2. Variance

Results provided

ii. Spawning Stock Assessment

1. Length-Frequency

Results provided

2. Age-Frequency

Results provided

3. Sex

Results provided

4. Degree of Repeat Spawning

Results provided

5. Abundance

Results provided

iii. Annual Mortality Rates

Results provided

iv. Hatchery evaluation (%wild vs. hatchery)

NA

LITERATURE CITED

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Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spanish Mackerel (*Scomberomorus maculatus*) Compliance Report to The Atlantic States Marine Fisheries Commission – 2024

Prepared by

Katherine M. Messer

**Maryland Department of Natural Resources
Fishing and Boating Services**

September 2025

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**Katherine M. Messer, Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
(410) 643 – 6785 extension 2121 • www.dnr.maryland.gov • TTY users call via Maryland Relay**

I. Introduction

Maryland had no changes to monitoring or significant changes in harvest for Spanish mackerel in 2024. Maryland's fishery dependent monitoring program in 2024 measured 30 Spanish mackerel, 64 fewer than in 2023. Commercial catch limits and commercial season length were modified for 2024 by public notice. All regulations and the 2024 public notice are listed in III-c below.

II. Request for *de minimis*, where applicable

Maryland does not request *de minimis* status.

III. Previous calendar year's fishery and management programs

a. *Fishery dependent monitoring*

MD DNR does not have a specific monitoring program for Spanish mackerel; however, they typically are encountered in the onboard commercial pound net survey, which was conducted from May 29, 2024, to November 18th, 2024. Thirty Spanish mackerel were measured from the onboard pound net survey in 2024 with fork lengths ranging between 345 – 468 mm and a mean fork length of 400 mm.

b. *Fishery independent monitoring*

MD DNR does not conduct independent monitoring specifically targeting or routinely encountering Spanish mackerel. However, our Choptank River independent gill net survey did encounter two Spanish mackerel in 2024, with a fork length of 330 mm and 406 mm. Twenty-one have been caught in the annual survey, which began in 2013.

c. *Copy of regulations and public notice (2024)*

08.02.05.14 .14 Spanish mackerel

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. An individual may not catch or possess more than 15 Spanish mackerel per day.
- (3) Season. The recreational season for catching Spanish mackerel is January 1 through December 31.
- (4) All Spanish mackerel harvested by a recreational angler shall be landed with the heads and fins attached naturally.

B. Commercial Fishery.

- (1) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a Spanish mackerel less than 14 inches total length.
- (2) Catch Limit. No more than 3,500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.

(3) Season. The commercial season for catching Spanish mackerel is March 1 through the last day of February.

C. General.

(1) The Secretary may modify catch limits or size limits or open or close a season as required by the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for Spanish Mackerel by publishing notice in a daily newspaper of general circulation at least 48 hours in advance of the modification, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

Public notice for 2024

Public notice effective 8/5/2024

WHAT THIS NOTICE DOES

The Secretary of the [Maryland Department of Natural Resources](#) announces:

1. A change to the commercial catch limit for Spanish mackerel; and
2. A change to the commercial season for Spanish mackerel.

NEW CATCH LIMIT

Not more than 500 pounds of Spanish mackerel may be landed per vessel per day or trip, whichever is longer, regardless of the number of licensees on board the vessel.

COMMERCIAL SEASON

The commercial season for Spanish mackerel will close at 12:01 a.m. November 16, 2024. The season will reopen at 12:01 a.m. January 1, 2025, with no additional restrictions.

WHY THIS IS NECESSARY

Commercial landings have reached the commercial quota for the Atlantic migratory group Spanish mackerel northern zone. The northern zone for Atlantic migratory group Spanish mackerel includes federal waters from North Carolina through New York. The commercial harvest of the Atlantic migratory group Spanish mackerel northern zone in federal waters closed July 28, 2024. The Atlantic States Marine Fisheries Commission Fishery Management Plan for Spanish Mackerel allows states to implement a bycatch in state waters. This step must be taken to prevent the quota from being further exceeded, while allowing a minimal bycatch amount of Spanish mackerel to be landed to avoid dead discards.

WHO THIS NOTICE AFFECTS

This closure applies to all individuals who catch Spanish mackerel commercially.

EFFECTIVE DATE

This notice is effective at 12:01 a.m. August 5, 2024, and will remain in effect through and including December 31, 2024.

AUTHORITY

Code of Maryland Regulations [08.02.05.14C](#)

d. *Harvest**Commercial Fishery*

Maryland's directed fishery landed 3,213 pounds of Spanish mackerel in 2024 (landings considered preliminary).

Recreational Fishery

Maryland landed an estimated 71,556 Spanish mackerel weighing 110,105 pounds in the 2024 recreational fishery (MRIP personal communication 9/04/2025). Maryland recreational anglers released 241 Spanish mackerel in their recreational fishery in 2024 (MRIP personal communication 9/04/2025).

IV. Planned management programs for the current calendar year**a. *Regulations and public notice for 2025***

No planned regulations changes for 2025

b. *Regulatory changes from the previous year*

N/A

Reference

MRIP 2025. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division September 04, 2025



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spot (*Leiostomus xanthurus*) Compliance Report to the Atlantic States Marine Fisheries Commission - 2024

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

August 12, 2025

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**Harry Rickabaugh Jr. Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2024.**

Maryland's directed fishery landed 64,710 pounds of spot in 2024.

Recreational Fishery**a. Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2024.**

Maryland recreational anglers landed an estimated 1,621,943 spot (PSE = 23.1; MRIP 2025) weighing an estimated 317,430 pounds (PSE = 20.9; MRIP 2025) in 2024. Maryland recreational anglers released an estimated 3,210,696 spot (PSE = 24.7; MRIP 2025) in 2024.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs**

Maryland conducted an onboard commercial pound net survey on the Potomac River and the Chesapeake Bay, sampling each area once every other week from May 29, 2024, through September 9, 2024. The 2024 spot mean length from the onboard sampling of 182 mm TL was a decrease compared to the 2023 value of 184 mm TL, and was the fourth lowest value of the 32 year time series. Ninety-six percent of spot encountered in the onboard pound net survey in 2024 were between 170 and 209 mm TL, indicating a truncated length frequency distribution. In 2024, 97% of spot sampled from the onboard pound net survey were age one, 1.5% were age zero, and 1.5% were age two (121 ages and 272 lengths).

b. Summarize fishery independent monitoring and provide a brief review of the results.

Maryland conducted a fisheries independent gill net survey on the Choptank River once per week from June 4, 2024, to August 27, 2024. Experimental monofilament gill nets with stretched mesh sizes of 63.5, 76.2, 88.9 and 101.6 millimeters were set at four randomly selected locations within the sampling area each sampling day. Panels for each mesh size were 30.5 m long by 1.8 m deep, and were rigged to sink. Spot geometric mean catch per hour in the Choptank River gill net survey was highest in 2020 - 2022, moderate in 2013, 2014, 2017, 2019, 2023 and 2024, and lowest in 2015, 2016 and 2018. Total annual catch ranged from a low of 109 fish in 2016 to a high of 812 in 2020, with 183 encountered in 2024. Annual length frequency distributions have been variable throughout the survey, with similar distributions in 2013, 2014, 2020, 2022, 2023 and 2024 centered on the 200 mm length group. Bimodal distributions were apparent in 2015 and 2017, and singular peak distributions were centered on the 190 mm TL group in 2016, 2018, 2019 and 2021.

Four juvenile indices (JI) were calculated, two from the Maryland portion of Chesapeake Bay and two from the Maryland coastal bays. Finfish collected by Maryland's Chesapeake Bay Blue Crab Trawl Survey have been enumerated since 1980. However, since some data entry inconsistencies made electronic data files prior to 1989 incomplete for finfish species, only data from 1989 through 2024 were used to generate a Chesapeake Bay spot juvenile index. Fixed sites were sampled once a month from May thru October in six tributaries of the Chesapeake Bay. A 4.9 meter semi-balloon otter trawl was towed for 6 minutes at 4.0-4.8 km/h. A Chesapeake Bay juvenile trawl index was calculated as the geometric mean catch per tow. Spot juvenile trawl index values from 1989-2024 were quite variable. The index values declined from 2012

through 2015 and remained low through 2018, but increased in 2019 and remained above the time series mean from 2020 through 2024, with the 2024 value of 210.3 increasing dramatically to the highest value of the 36-year time series.

The second Chesapeake Bay JI was derived from the Striped Bass Juvenile Seine Survey (JSS). This survey used a 30.5 meter long by 1.2 meter deep beach seine at fixed stations in five areas of Maryland's Chesapeake Bay. The JSS index was calculated as a geometric mean catch per haul. The JSS has permanent and auxiliary sites, only permanent sites were used in index calculations for this report. The survey began in 1954, but sampling frequency was standardized in 1962, so that was the first year used to calculate the JI time series. The 2024 GM catch per haul of 3.82 was the highest value since 1977, and was the third highest value of the time series.

A 4.9-meter semi-balloon otter trawl has been used to sample Maryland's Atlantic coastal bays since 1972. Since 1989, 20 fixed stations have been trawled for six minutes at monthly intervals during April-October. Prior to 1989, monthly effort, tow time and locations sampled varied considerably, therefore, index values were calculated for 1989-2024. The geometric mean catch per hectare of juvenile spot was used as a standardized index of abundance. The 2024 GM of 135.1 spot per hectare increased to the fifth highest value of the 36-year time series, and was well above the time series mean of 10.0 spot per hectare.

The final juvenile index was derived from the coastal bays seine survey, which utilized a 1.8 meter by 30.5 meter seine with a single central bag. Nineteen fixed stations were sampled once a month in June and September, and the corresponding Coastal Seine Index was calculated using all sites to derive an annual geometric mean catch per haul. Sites and sampling frequency were not standardized until 1989, therefore, only 1989-2024 data was used for index calculation. The 2024 coastal bays seine survey GM index value increased to 39.2 spot per haul, was the fifth highest value of the 36-year time series, and above the timeseries mean of 8.8 spot per haul.

IV. Planned management programs for the current calendar year

a. Summarize any regulatory changes from the previous year and provide an update on any planned
N/A

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year.
N/A

Reference

MRIP. 2025. Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division August 11, 2025.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Spotted Seatrout (*Cynoscion nebulosus*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2024

Prepared by

Harry W. Rickabaugh Jr.

**Maryland Department of Natural Resources
Fishing and Boating Services**

July 29, 2025

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

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I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery***Commercial Fishery*****a. Report commercial landings, in pounds, for 2024:**

Maryland's directed fishery landed 1,229 pounds of spotted seatrout in 2024.

Recreational Fishery**Report recreational harvest, in both pounds and numbers of fish, and releases, in numbers of fish, for 2024:**

MRIP estimated that Maryland landed 11,958 (PSE = 78.3, estimate not significantly different than zero) spotted seatrout weighing 30,975 pounds (PSE = 68.1, estimate not significantly different than zero) in the 2024 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 7/16/2025).

Maryland recreational anglers released an estimated 149,758 (PSE = 42.2) spotted seatrout in the 2024 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 7/16/2025).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2024 charter boat captains reported harvesting 70 spotted seatrout with an estimated weight of 157 pounds. They reported releasing 42 spotted seatrout with an estimated weight of 118 pounds in 2024.

III. Fishery Monitoring Programs**a. Summarize fishery dependent monitoring programs:**

Maryland has conducted an onboard commercial pound net survey since 1993. Spotted seatrout are sporadically encountered in low numbers, but are enumerated and measured to the nearest millimeter total length (TL) when encountered. Thirteen spotted seatrout were measured in 2024, with a mean length of 523 mm TL.

b. Summarize fishery independent monitoring and provide a brief review of the results:

Maryland conducted no fishery independent monitoring directed at spotted seatrout in 2024. A low number of juvenile spotted seatrout are encountered in the coastal bays seine survey and the Chesapeake Bay blue crab trawl survey as bycatch, indicating the species utilizes these areas as nursery habitat. Annual spotted seatrout catch for the coastal bays survey ranged from 0-39 fish, with zero catch in eight of the 36 years surveyed, and 11 being caught in 2024. The Chesapeake Bay blue crab trawl survey caught no spotted seatrout in seven of 36 years but did have six years of higher catch (2000 = 71, 2001 = 90, 2009 = 139, 2013 = 139, 2014 = 98 and 2020 = 71), potentially indicating stronger years of recruitment. Sixteen spotted seatrout were caught in 2024.

IV. Planned management programs for the current calendar year**a. Summarize any regulatory changes from the previous year:**

N/A

b. Please provide regulatory language that shows you are meeting the following required management measures:

Commercial

12" TL minimum size limit

Recreational

12" TL minimum size limit

Maryland's spotted seatrout and weakfish regulations are combined in state regulation, hence the inclusion of weakfish in the following text. Language pertaining to spotted seatrout is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

V. Law Enforcement Reporting Requirements

Please include in this section any law enforcement issues that occurred in the previous calendar year:

There were no law enforcement issues in 2024.



Wes Moore
Governor

Josh Kurtz
Secretary

Maryland Striped Bass (*Morone saxatilis*) Compliance Report
On the 2024 Fishing Year
to the
Atlantic States Marine Fisheries Commission

COMMERCIAL LANDINGS DATA ARE PRELIMINARY
This report will be updated when final landings data are available

Prepared by

Eric Q. Durell

Fishing and Boating Services
Maryland Department of Natural Resources
June, 2025

This program receives Federal financial assistance from the Department of the Interior - US FWS Under Title VI of the 1964 Civil Rights Act, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972, the U.S. Department of the Interior prohibits discrimination on the basis of race, color, national origin, age, sex, or disability.

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Department of Natural Resources
580 Taylor Ave., C-3
Annapolis MD 21401
Telephone: (410)260-8058
Email: ndc.dnr@maryland.gov

Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

2025 Atlantic Striped Bass Compliance Report for Maryland

Throughout this report, please indicate **confidential data with red font**. Unless indicated, all data will be assumed non-confidential, and will be included in the public report.

I. Request for *de minimis*.

Maryland does not request *de minimis* status.

II. Report 2024 fishery regulations (complete respective tab in the Compliance Workbook).

2024 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 29
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31
Susquehanna Flats	N/A	N/A	Closed; No catch and release	Apr 1-May 31
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-May 15
Chesapeake Bay	19-24" TL	1/person/day all modes	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day all modes	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day all modes	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-31" TL	1/person/day all modes	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-Dec 31

2025 Atlantic Striped Bass Compliance Report for Maryland

2024 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,344,216 pounds*	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 29, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31; common pool select days only
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 29, Dec 1-31; common pool select days only
Atlantic Ocean: gill net and trawl	24" TL min	none	82,857 pounds**	Jan 1-May 31, Oct 1-Dec 31

*The Chesapeake Bay quota of 1,445,394 pounds was already allocated to permit holders when Addendum II reductions were made. Any overage will be subtracted from the 2025 quota.

**The Atlantic quota of 89,094 pounds was already allocated to permit holders when Addendum II reductions were made. Any overage will be subtracted from the 2025 quota.

Recreational Filleting Regulation:

Source: Annotated Code of Maryland

(<https://dsd.maryland.gov/regulations/Pages/08.02.15.12.aspx>)

FISHERIES SERVICE 08.02.05.12 (Excerpted)

C. Filleting Striped Bass.

- (1) *Except as provided in §C(2) of this regulation, a person may only land striped bass dockside as a whole fish.*
- (2) *A licensed charter boat captain or mate may fillet striped bass taken on a vessel displaying a current commercial charter boat decal under the following conditions:*
 - (a) *A striped bass carcass may not be mutilated to the extent that the total length or species of fish cannot be determined;*
 - (b) *An individual may not possess more than two fillets per legal fish on board a vessel;*
 - (c) *All striped bass carcasses:*

2025 Atlantic Striped Bass Compliance Report for Maryland

(i) Shall be retained, unmixed with any other material, in a separate container readily available for inspection until the vessel has docked and all passengers from that trip have left the vessel and the dock area; and

(ii) Are included in the possession limit; and

(d) All striped bass carcasses from any previous trip shall be disposed of before any person begins to fish on a subsequent trip.

III. Report 2025 fishery regulations (complete respective tab in the Compliance Workbook).

2025 Recreational Measures

Fishery/Region	Size Limit	Bag Limit	Gear/Fishery Restrictions	Open Seasons
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Jan 1-Feb 28
Susquehanna Flats	N/A	N/A	Catch and Release only; circle hooks when bait fishing	Jan 1-Mar 31
Chesapeake Bay	N/A	N/A	Catch and Release only; geographic restrictions apply; circle hooks when bait fishing	Mar 1-Mar 31
Susquehanna Flats	N/A	N/A	Closed; No catch and release	Apr 1-May 31
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	Apr 1-May 15
Chesapeake Bay	19-24" TL	1/person/day	Geographic restrictions apply; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	May 16-May 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	June 1-July 15
Chesapeake Bay and tributaries	N/A	N/A	All areas closed; No catch and release	July 16-July 31
Chesapeake Bay and tributaries	19-24" TL	1/person/day	All Bay and tributaries open; circle hooks if chumming, live-lining, or bait fishing and targeting striped bass	Aug 1-Dec 10
Chesapeake Bay and tributaries	N/A	N/A	Catch and Release only	Dec 11-Dec 31
Atlantic Ocean, Coastal Bays, and tributaries	28-31" TL	1/person/day	Circle hooks if chumming, live-lining, or bait fishing and targeting striped bass; EEZ closed	Jan 1-Dec 31

2025 Atlantic Striped Bass Compliance Report for Maryland

2025 Commercial Measures

Gear/Region	Size Limit	Trip Limit	Quota	Open Seasons
Chesapeake Bay: pound net	18-36" TL	none for ITQ	1,344,216 pounds*	June 1-Dec 31
Chesapeake Bay: haul seine	18-36" TL	none for ITQ		Jan1-Feb 28, June 1-Dec 31
Chesapeake Bay: hook and line	18-36" TL	none for ITQ; common pool 250 lbs/license/week		June 1-Dec 31;
Chesapeake Bay: gill net	18-36" TL	none for ITQ; common pool 300 lbs/license/week		Jan1-Feb 28, Dec 1-31;
Atlantic Ocean: gill net and trawl	24" TL min	none	77,017 pounds**	Jan 1-May 31, Oct 1-Dec 31

*Preliminary (December 2024) harvest data indicated that the 2024 Chesapeake Bay quota would not be exceeded so the 2025 quota was allocated in full to permit holders. If final 2024 harvest shows an overage, the 2026 quota will be adjusted accordingly.

**Preliminary (December 2024) harvest data indicated that the 2024 Atlantic quota would be exceeded by 5,840 pounds. The original 2025 quota of 82,857 pounds was adjusted to account for this preliminary 2024 overage. If final 2024 harvest data shows a greater overage, the 2026 quota will be adjusted accordingly.

IV. Previous calendar year's fishery (2024)

A. Commercial Fishery (complete all applicable tabs in Compliance Workbook)

COMMERCIAL LANDINGS DATA ARE PRELIMINARY (March 2025)

This report will be updated when final landings data are available

Coastal Commercial Landings:

In 2024, Maryland's Atlantic coast fishery landed 4,052 fish weighing 88,857 pounds. Coastal commercial landings exceeded the state's quota of 82,857 pounds by 6,000 pounds (7%). The major gear type was gill net. Mean fish weight was 21.9 pounds; mean fish length was 39.5 inches (1,003 mm) TL; mean fish scale age was 11.

Chesapeake Bay Commercial Landings:

In 2024, the Chesapeake Bay commercial fishery landed 292,227 fish weighing 1,350,247 pounds. Commercial landings exceeded the state's quota of 1,344,216 pounds by 6,031 pounds (0.4%). Major gear types were gill nets (50%) and pound nets (45%), followed by hook and line (5%). Mean fish weight was 4.4 pounds; mean fish length was 21.8 inches (553 mm) TL; mean fish scale age was 5.

2025 Atlantic Striped Bass Compliance Report for Maryland

Estimate of commercial effort and CPUE:

In 2024, total commercial effort by striped bass permit holders was estimated at 2,345 days, which was less than 2023 (3,131 days). Commercial CPUE in 2024 was 126 fish per day, greater than the 2023 CPUE of 92 fish per day. Commercial CPUE in 2024 was 614 pounds per day, compared to 448 pounds per day in 2023.

Estimate other commercial fish loss (e.g., bycatch, poaching, personal consumption):

N/A

Summarize results of commercial harvest tagging program in 2024: **PRELIMINARY (12/1/2024)**

Commercial harvest tags are affixed at the point of harvest. In 2024, 442,100 commercial tags were issued to 805 participants, and 252,300 tags were reported used. Numbers of tags returned, reported missing, or unaccounted for are unknown at this time. Commercial licensees are required to return unused tags to the Department each year to allow a thorough audit of tag use. This audit has been delayed by staffing issues.

B. Recreational Fishery (complete all applicable tabs in Compliance Workbook)

Indicate MRIP query date: 5/14/2025 Final Estimates

Coastal recreational harvest (A+B1) and live releases (B2):

The estimate of total recreational landings (A+B1) on Maryland's Atlantic coast in 2024 was effectively 0. MRIP query results indicate "no records match your query parameters". This is a decrease compared to 2023.

Total recreational releases (B2) on Maryland's Atlantic coast in 2024 were estimated at 9,551 fish. This is a 77% decrease compared to 2023.

Chesapeake Bay recreational harvest (A+B1) and live releases (B2):

Total recreational landings (A+B1) in Maryland's Chesapeake Bay in 2024 were estimated at 232,610 fish weighing 833,124 pounds. This is a 54% decrease in numbers of fish and a 62% decrease by weight compared to 2023. Mean harvested fish weight was 3.6 pounds (based on MRIP); mean fish length was 21.1 inches (536 mm) TL; mean fish scale age was 5.

Total recreational releases (B2) in Maryland's Chesapeake Bay in 2024 were estimated at 2,263,512 fish. This is a 28% decrease compared to 2023.

2025 Atlantic Striped Bass Compliance Report for Maryland

Chesapeake Bay Spring migrant harvest estimate:

Spring season dates and size limits are now designed to avoid the harvest of migrant fish to the extent possible. Therefore, MD proposes to discontinue migrant harvest reporting for the 2025 fishing year.

In 2024, Maryland's Chesapeake Bay spring migrant harvest was 146 fish (50 fish by charter boats; 96 fish by private anglers). This is an 85% decrease compared to 2023. The estimated total weight of the migrant harvest was 659 pounds. Mean fish weight was 4.5 pounds and mean fish length was 22.9 inches (581 mm) TL.

V. Mandatory Monitoring Programs (complete applicable tabs in Compliance Workbook)

Juvenile Abundance Index (JAI) Surveys:

Maryland's 2024 JAI is GM=1.06, which is greater than 2023 (0.57).

Spawning Stock Biomass (SSB) Index Surveys:

Maryland's 2024 SSB index is 393, which is a decrease compared to 2023 (448).

Striped Bass Tagging Program results:

In 2024, Maryland tagged and released 572 striped bass; 18 striped bass recaptures were reported.

Summarize any survey/monitoring programs changes for current year (2025):

N/A

VI. Identify common striped bass violations that occurred in 2024. Quantitative information is optional. Identify any new or emerging enforcement issues:

The most common striped bass violations in 2024 were recreational size limit, catch limit, season, and closed area violations. Recreational violations far outnumbered commercial violations. (source: Jacob Holtz, Program Manager, Regulatory and Legislative Review Division, personal communication).



Maryland's 2024 Compliance Report for Summer Flounder (*Paralichthys dentatus*)
to the Atlantic States Marine Fisheries Commission

June 2025

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
580 Taylor Ave.
Annapolis, MD 21401
dnr.maryland.gov
Toll free in Maryland: 877-620-8305
Out of state call: 410-260-8305
TTY Users call via the MD Relay

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Office of Civil Rights Director
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05/2025

DNR

I. Introduction

Summer flounder were managed as one stock extending from North Carolina to Maine. In Maryland, summer flounder occupied waters where the salinity was greater than 10 parts per thousand including the Atlantic Ocean, coastal bays, and the Chesapeake Bay south of the Bay Bridge.

The commercial fishery operated under Addendum 21 (December 2021), which established quota allocation of summer flounder between the states. Under the new allocation system, when the coastwide commercial summer flounder quota is 9.55 million pounds or less, the quota will be distributed according to the existing (Amendment 4) allocations. In years when the coastwide quota exceeds 9.55 million pounds, the first 9.55 million pounds will be distributed based on the existing allocations. The additional quota, above 9.55 million pounds, will be distributed in equal shares to all states, except Maine, Delaware, and New Hampshire, which would split one percent of the additional quota. The total percentage allocated annually to each state will depend on how much additional quota beyond 9.55 million pounds, if any, is available in any given year.

II. Request for *De Minimis*

De minimis status is not requested.

III. Previous Year's Fishery and Management Program

A. Fishery Dependent Monitoring

The Maryland Department of Natural Resources collected trip-level commercial landings data during 2024 from both harvesters and primary buyers, consistent with the standards of the Atlantic Coastal Cooperative Statistics Program. The Maryland commercial quota was monitored by Maryland Fishing and Boating Services via weekly reports of dealer transactions to National Oceanic and Atmospheric Administration (NOAA).

Recreational catch and effort were monitored via the Marine Recreational Information Program (MRIP). Maryland Fishing and Boating services has managed the access point angler intercept survey (APAIS) survey which collects the information for MRIP since March of 2016.

B. Fishery Independent Monitoring

Maryland has conducted juvenile finfish Trawl and Beach Seine surveys in the coastal bays since 1972. In 2024, Summer flounder were collected in 39 of 140 trawls (27.9%) and 18 of 38 beach seines (47.4%). A total of 404 summer flounder were collected in trawl (132 fish) and beach seine (272 fish) samples. Summer flounder ranked 6 out of 58 species in overall finfish abundance. The trawl and beach seine CPUE was 7.5 fish/ha and 7.2 fish/haul, respectively. The 2024 trawl relative abundance index was below the grand mean while the beach seine index was equal to the grand mean (Figures 1 - 2). Since 2016, summer flounder were more abundant in the shallower beach seine sites rather than the deeper trawl sites as previously observed (Figure 3).

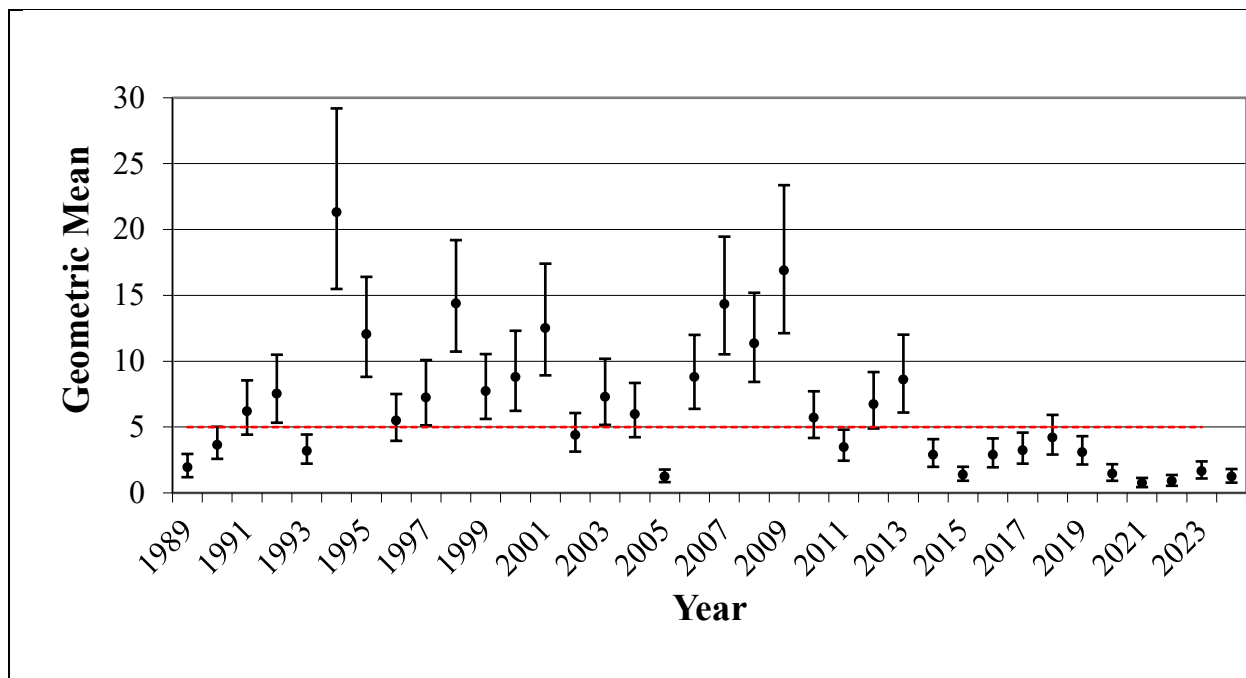


Figure 1. Summer flounder (*Paralichthys dentatus*) trawl index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2024). Dotted line represents the 1989 - 2024 time series grand mean ($n_{1989 - 2019, 2021 - 2023} = 140/\text{year}$, $n_{2020} = 120$).

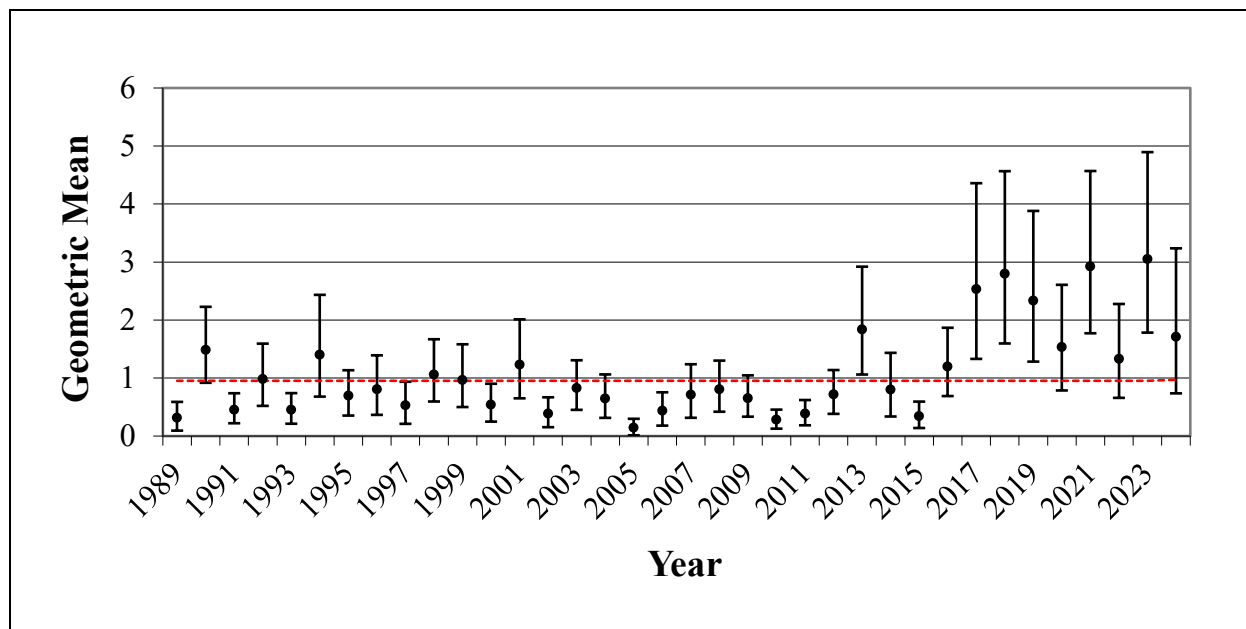


Figure 2. Summer flounder (*Paralichthys dentatus*) beach seine index of relative abundance (geometric mean) with 95% confidence intervals (1989 - 2024). Dotted line represents the 1989 - 2024 time series grand mean ($n = 38/\text{year}$).

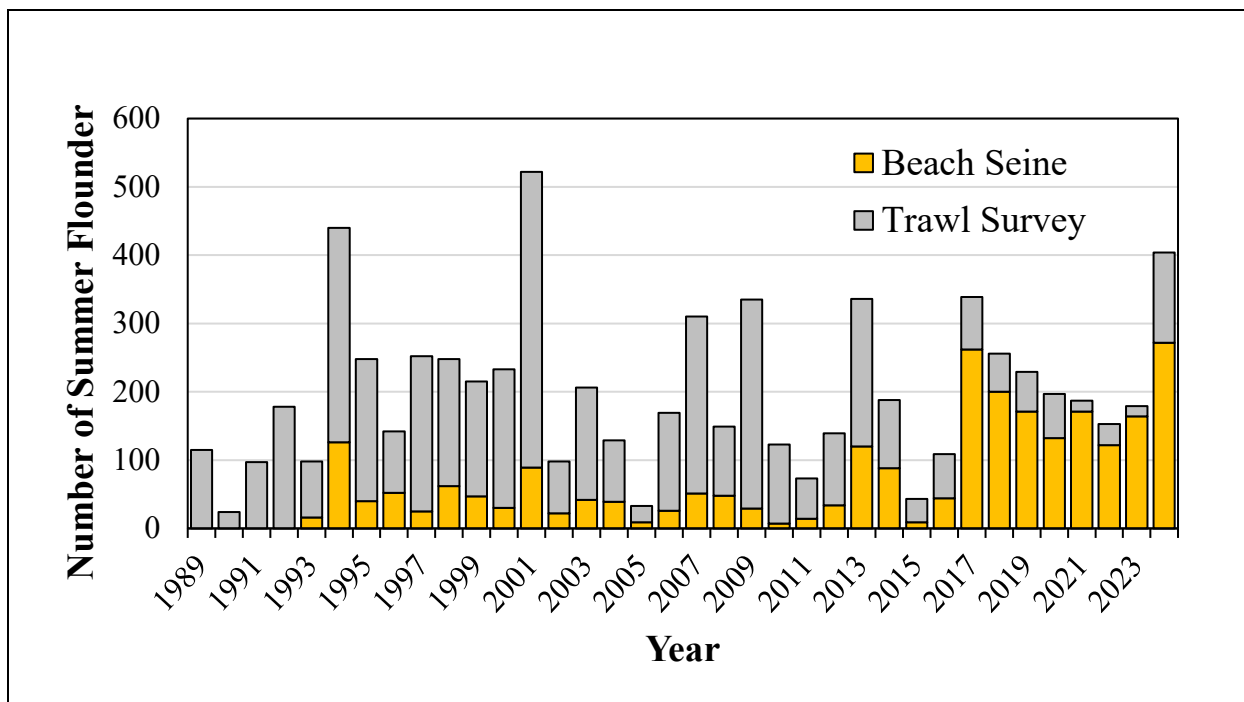


Figure 3. Summer flounder (*Paralichthys dentatus*) relative abundance shift toward shallow water in June.

C. Regulations

One summer flounder public notice was issued for 2024. Public notices are available online at https://dnr.maryland.gov/fisheries/pages/pub_notices.aspx.

PUBLIC NOTICE

The Maryland Department of Natural Resources Fishing and Boating Services Modifications to the 2024 Summer Flounder Fishery — Effective 3/1/2024

WHAT THIS NOTICE DOES The Secretary of the Maryland Department of Natural Resources announces modifications to the 2024 summer flounder fishery.

This notice supersedes all notices effective prior to March 1, 2024, affecting the 2024 summer flounder fishery.

Effective 12:01 a.m. March 1, 2024: SEASON The season is open January 1, 2024 – December 31, 2024

RECREATIONAL MINIMUM SIZE

- January 1, 2024 – May 31, 2024: 16 inches
- June 1, 2024 – December 31, 2024: 17-1/2 inches

RECREATIONAL CATCH LIMIT 4 fish/person/day

COMMERCIAL MINIMUM SIZE

- Hook and Line: January 1, 2024 – May 31, 2024: 16 inches
June 1, 2024 – December 31, 2024: 17 1/2 inches
- Gear other than Hook and Line: 14 inches

WHY THIS IS NECESSARY This action is necessary to implement the Atlantic States Marine Fisheries Commission's Summer Flounder, Scup, and Black Sea Bass Fishery Management Plan. https://asmfc.org/files/SFlounderScupBSB_Board_MtgSummary_Feb2024.pdf.

WHO THIS NOTICE AFFECTS This applies to all individuals who catch summer flounder recreationally or commercially.

EFFECTIVE TIME AND DATE This notice is effective at 12:01 a.m. March 1, 2024.

AUTHORITY Code of Maryland Regulations 08.02.05.12

Josh Kurtz Secretary of Natural Resources

Code of Maryland Regulations 08.02.05.12

<https://dsd.maryland.gov/regulations/Pages/08.02.05.12.aspx>

A. Recreational Fishery.

- (1) Minimum Size. An individual may not catch or possess summer flounder less than:
 - (a) 16 inches total length in the Atlantic Ocean, its coastal bays, and their tributaries; and in the Chesapeake Bay and its tidal tributaries.
 - (2) Catch Limits. An individual may not catch or possess more than four summer flounder per day in the Atlantic Ocean and coastal bays, and in the Chesapeake Bay and its tidal tributaries.
 - (3) The recreational season was open from January 1 through December 31 in 2023.

B. Commercial Fishery.

(1) Quotas.

(a) The annual commercial quota for Maryland is established by the National Marine Fisheries Service and the Atlantic States Marine Fisheries Commission.

(b) The annual commercial quota is divided into an allocation for:

- (i) The Atlantic Ocean, its coastal bays, and their tributaries;
- (ii) The Chesapeake Bay and its tidal tributaries;
- (iii) The Potomac River; and
- (iv) The harvest of summer flounder provided for in §B(3)(a) and

(4) of this regulation.

(c) The annual commercial quota and allocations are subject to downward adjustment action if there are overages in the previous year's landings.

(d) Equal individual allocations shall be established for the portion of the annual commercial quota provided for in §B(1)(b)(i) of this regulation and allocated by permit to an individual that meets the requirements set forth in §C(5) of this regulation.

(e) An individual who possesses a Maryland summer flounder landing permit in accordance with §C of this regulation and lands more than the assigned permit allocation, including any

quota transfers, shall have the overage deducted from the permit allocation for the following year.

(f) A Maryland summer flounder permit holder (permittee) may annually transfer up to 100 percent of the permittee's individual quota to another permittee upon notification of and approval by the Department. However, an

individual may not hold more than 29 percent of the allocation for the total fishery.

(2) Minimum Size. An individual licensed to catch fish for commercial purposes may not catch or possess a summer flounder less than:

(a) The size limit set forth in §A(1) of this regulation if caught by hook and line; or

(b) 14 inches total length if caught by gear other than hook and line.

(3) Daily Catch Limits. An individual licensed to catch fish for commercial purposes may not catch, possess, or land more than:

(a) 100 pounds of summer flounder per day from the Atlantic Ocean, its coastal bays, and their tributaries unless in possession of a Maryland summer flounder landing permit; and

(b) 50 pounds of summer flounder per day from the Chesapeake Bay and its tidal tributaries.

(4) An individual licensed to catch fish for commercial purposes may not:

(a) Transfer summer flounder from one vessel to another vessel; or

(b) Land more than 5 percent by:

(i) Number of summer flounder under 14 inches as part of the daily limit for flounder caught by gear other than hook and line; or

(ii) Weight of summer flounder in excess of the daily catch limits established in §B(3) of this regulation.

(5) Summer flounder harvested for commercial purposes from Maryland waters of the Atlantic Ocean or from the waters of the Exclusive Economic Zone (EEZ) and landed in Maryland shall be sold to a dealer with a federal permit.

C. Licenses and Permits.

(1) A person shall be licensed to fish for commercial purposes in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, in order to catch, possess, or land summer flounder.

(2) A vessel which is used to catch, possess, or land summer flounder for commercial purposes from the waters of the Exclusive Economic Zone (EEZ) of the Atlantic Ocean shall be permitted by the National Marine Fisheries Service in accordance with 50 CFR §648.4.

(3) A permittee may catch, possess, or land summer flounder for commercial purposes on a vessel other than the vessel declared on the permittee's permit if in possession of the permit issued to the permittee, and the undeclared vessel is permitted by the National Marine Fisheries Service.

(4) Declaration.

(a) Tidal fish licensees shall declare their intent to fish for summer flounder by August 31 of each year.

(b) A tidal fish licensee who has not declared by August 31 of the current year, and who has not declared by the August 31 deadline in any of the 3 preceding years, may apply until September 14 of the current year, or the next business day if September 14 occurs on a weekend, to the Director of Fisheries Service provided the licensee shows good reason why the application should be processed.

(c) An exception to the September 14 deadline will be considered only for an individual who can provide satisfactory documentation of a physical or mental incapacity that prevented that individual from meeting the declaration time period established in this subsection.

(d) The federally registered name or the State registration numbers of the permitted vessels owned by the permittee shall be indicated at the time of application for the permit and declared on the Maryland summer flounder landing permit.

(e) Any change in vessel ownership shall be reported to the Department so that a revised permit card may be issued.

(5) Summer Flounder Landing Permit.

(a) No more than seven summer flounder landing permits may be issued by the Department. The number of summer flounder landing permits is based on the reported catch and landing records of summer flounder in Maryland during 1998—2003.

(b) The Department may issue a permit to catch and land summer flounder in Maryland to a person who is licensed in accordance with Natural Resources Article, §4-701, Annotated Code of Maryland, owns or has a share of ownership in a federally permitted vessel, and:

(i) Declared or was eligible to declare, in the previous year, an intent to fish for summer flounder in accordance with §C(4) of this regulation in the previous year and has not transferred the permit; or

(ii) Received a summer flounder landing permit through a permanent business transfer in accordance with §C(7) of this regulation.

(6) Operators.

(a) An operator means an individual who is not a permittee and acts as an agent of a permittee.

(b) The name of the vessel on which the operator is working shall be declared on the Maryland summer flounder landing permit.

(c) An operator may catch, possess, or land summer flounder for commercial purposes on a vessel owned by a permittee if they are in possession of that permittee's permit.

(7) Permanent Transfer of a Landing Permit. The Department may approve the permanent transfer of a Maryland Summer Flounder landing permit to an individual who applies to the Department requesting the transfer on forms provided by the Department.

(8) Temporary transfers of summer flounder landing permits are not permitted.

(9) Regardless of the number of authorized individuals with Maryland summer flounder landing permits on board any one federally permitted vessel, no more than two summer flounder quotas may be fished from one vessel per trip.

D. Gear Restrictions.

(1) A person who catches summer flounder for commercial purposes may not use a trawl net with stretched mesh size of less than 6 inches square or 5-1/2 inches diamond applied throughout the net, including the body, extensions, and cod end.

(2) For the purposes of measuring the required mesh sizes, at least 20 meshes shall be measured, of which:

(a) At least 12 meshes shall measure the minimum size or larger; and

(b) The remaining meshes may not measure more than 1/4 inch less than the minimum mesh size.

E. Reporting and Penalties.

(1) In addition to the requirements of Natural Resources Article, §4-206, Annotated Code of Maryland, an individual in possession of a Maryland summer flounder landing permit shall record the harvest of summer flounder on the permit daily and submit the completed permit to the Department within 14 days from the end of the summer flounder season.

(2) A dealer shall transmit information weekly, or as requested, on each summer flounder transaction through the Department-approved reporting system.

(3) The Department may withhold quota allocation for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

(4) The Department may deny an application for a summer flounder landing permit for failing to comply with §E(1) of this regulation during the previous season.

F. General.

(1) The Secretary may modify catch limits, size limits, quotas, or open or close a season in order to comply with species management through the Atlantic States Marine Fisheries Commission Interstate Fishery Management Plan for summer flounder, by publishing notice on the Fisheries Service website at least 48 hours in advance, stating the effective hour and date.

(2) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.

(3) The Department shall make a reasonable effort to modify quotas to ensure that the Maryland portion of the coast-wide quota is harvested and not exceeded.

Table 1. State implemented commercial measures as mandated in the Atlantic State Marine Fisheries Commission (ASMFC) Summer Flounder FMP.

14" minimum size	Yes
5.5" diamond or 6" square minimum mesh	Yes
5.5" mesh beyond the cod end, for the entire net	Yes
Threshold to trigger minimum mesh size requirements: (200 lbs 11/1 - 4/30; 100 lbs from 5/1 - 10/31)	More restrictive
Prohibition of transfers at sea	Yes

D. Harvest by Gear Type

1. Commercial Landings

Maryland's 2024 commercial quota was 179,233 pounds. Maryland's commercial quota is allocated to the Atlantic coastal waters, the Chesapeake Bay, and the Potomac River. The Potomac River quota is set aside from both Maryland and Virginia by agreement. Maryland established individual fishing quotas for the Atlantic coastal waters including the coastal bays, and their tributaries. The individual fishing quota system assigns a specific quota per fisherman and allows fishermen to plan and manage the fishing business for best economic yield. In 2024, there were seven permitted summer flounder harvesters in Maryland. There is additional Maryland quota not allocated to individual fishing quotas to allow for minimal bycatch on the coast and in the Chesapeake Bay. The preliminary Maryland commercial harvest in 2024 was 175,434 pounds (Table 2; Maryland Commercial Logbooks).

Table 2 removed due to confidential data.

2. Recreational Landings

Maryland's 2024 recreational catch of summer flounder was estimated at 5,553 fish (PSE 29.6) with an estimated total weight of 34,296 pounds (PSE 33.0; Personal Communication from the National Marine Fisheries Service, Fisheries Statistics Division. Accessed May 13, 2025). These landings are extremely low compared to recent years. On the ground verification indicates that it was a low year for harvest.

IV. Planned Management for 2025

A. Summary of Regulations that will be in Effect

Commercial and recreational management measures will remain the same as in 2024.

COMMERCIAL MINIMUM SIZE • Hook and Line: January 1, 2024 – May 31, 2024: 16 inches to June 1, 2024 – December 31, 2024: 17 1/2 inches • Gear other than Hook and Line: 14 inches.

Recreational measures will include a 16-inch minimum size, a four fish creel, from January 1 until May 31 and a four fish creel and a 17.5-inch minimum size from June 1 until December 31.

B. Summary of Monitoring Programs that will be in Effect

Same as 2024, described above.

C. Highlights of Changes from the Previous Year

None

V. Law Enforcement requirements

Not Applicable

References

National Marine Fisheries Service, Fisheries Statistics Division. Personal Communication. Marine Recreational Information Program. Accessed on May 13, 2025. st.nmfs.noaa.gov/recreational-fisheries/access-data/run-a-data-query/queries/index.



Maryland's 2025 (Fishing Year 2024) Tautog (*Tautoga onitis*) Compliance Report
to the
Atlantic States Marine Fisheries Commission
May 1, 2025

Wes Moore
Governor

Josh Kurtz
Secretary

Fishing and Boating Services
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Office of Civil Rights Director
Dept. of Interior
1849 C Street, NW
Washington, D.C., 20240

05/2025

DNR

I. **Introduction**

Maryland was considered *de minimis* in 2024. There were no changes to the tautog season, size limit or creel regulations from the previous year, which applied to both recreational and commercial fisheries. The requirement to tag commercial fish was implemented July 16, 2020. Regulations for 2025 will remain the same as 2024. Preliminary 2024 commercial harvest reports indicated that [C] pounds of tautog were landed in Maryland. The National Oceanic and Atmospheric Administration preliminary 2024 Marine Recreational Information Program has determined a total recreational harvest estimate for 2024 was 14,156 (PSE 37.8; numbers of fish; A+B1). There were no significant changes in monitoring in 2024. A total of 202 tautog were collected and aged by opercula which ranged from three to 17 years old.

II. **Request for *de minimis*, where applicable.**

Maryland qualifies for *de minimis* status and requests that status at this time.

III. **Previous calendar year's fishery and management program**

a. **Activity and results of fishery dependent monitoring.**

Length, sex, and opercula were collected from 202 tautog in April, May, and December. Biological samples were obtained from seven dockside trips (81%) and one at sea charter trip (19%). Those samples combined represented the range of fish lengths commonly caught in the recreational fishery in Maryland. Age data was determined on 200 tautog.

b. **Activity and results of fishery independent monitoring.**

Juveniles of many finfish species are annually sampled by the department's Trawl and Beach Seine surveys. In 2024, two tautog were captured in 140 trawls and zero tautog were captured in 36 beach seines. Juvenile tautogs prefer submerged aquatic vegetation habitat, which was not adequately sampled during the trawl and beach seine surveys. The department's annual Submerged Aquatic Vegetation Habitat Survey captured 102 juvenile tautog ($\bar{x}$ length = 71 mm) in 16 beach seine hauls resulting in 6.4 fish/haul within vegetated habitat. The geometric mean was 5.33 fish/haul (Figure 1).

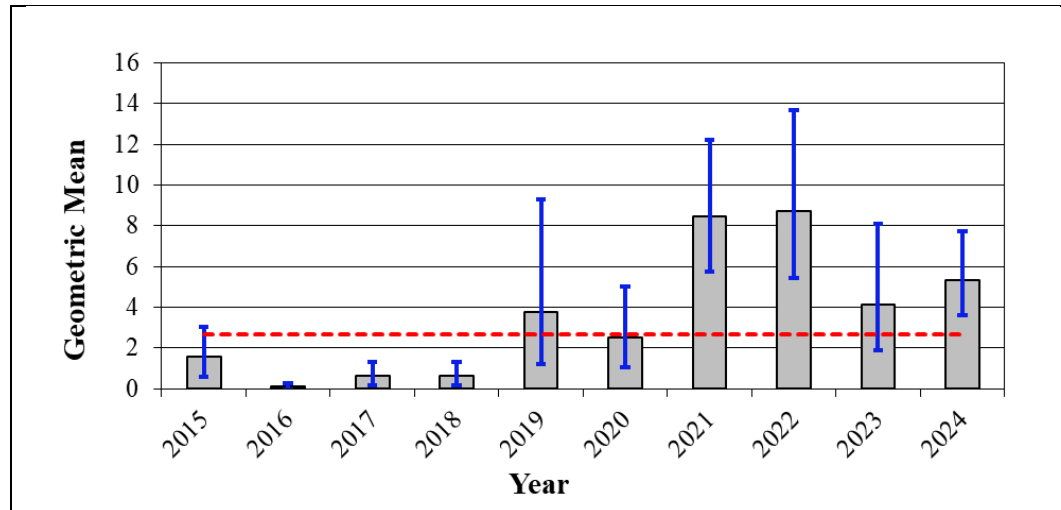


Figure 1. Tautog SAV Habitat Survey beach seine index of relative abundance (geometric mean) with 95% confidence intervals (2015 - 2024). Dotted line represents the 2015 - 2024 time series grand mean (n = 165, average 16/year).

c. Copy of regulations that were in effect, including a reference to the specific compliance criteria as mandated in the FMP.

The Code of Maryland Regulations pertaining to tautog (section 08.02.05.20) were online at dsd.maryland.gov/regulations/Pages/08.02.05.20.aspx

.20 Tautog.

A. An individual may not catch or possess:

- (1) A tautog less than 16 inches total length; and
- (2) A tautog from May 16 through June 30.

B. Season and Creel Limit.

- (1) From July 1 through October 31, an individual may not catch and possess more than two tautog per day.
- (2) From November 1 through May 15 of the following year, an individual may not catch and possess more than four tautog per day.

C. Commercial Gear and Tagging Requirements.

- (1) A pot or trap used to catch tautog shall have hinges or fasteners on one panel or door made of one of the following degradable materials:
 - (a) Untreated hemp or jute string of 3/16 inch in diameter or smaller;
 - (b) Magnesium alloy timed float releases (pop-up devices) or similar magnesium alloy fasteners; or
 - (c) Ungalvanized or uncoated iron wire of 0.094 inch in diameter or smaller.

- (2) Before removing any tautog caught for commercial purposes from a boat or removing a boat from the water, a person shall affix a tag supplied by the Department to the cheek bone of the tautog.

(3) Tags:

- (a) Shall be supplied by the Department;
- (b) Are not transferrable;
- (c) Expire at the end of each calendar year;

- (d) May not be reused, defaced, modified, or counterfeited;
- (e) Shall be securely affixed to a whole tautog or accompany fillets until sale to the final consumer; and
- (f) Shall only be used by the commercial tidal fish licensee to whom they were assigned.
- (4) A licensee shall return unused tags to the Department not later than February 15 of each year.
- (5) Tautog caught for commercial purposes shall be landed in the state that is identified on the tag.

D. General.

- (1) The Secretary may modify catch limits or size limits or open or close a season in order to implement the Atlantic States Marine Fisheries Commission Fishery Management Plan for Tautog by issuing a public notice on the Department's website.
- (2) The public notice shall state its effective hour and date and shall be published on the Department's website at least 48 hours in advance of the effective hour and date.
- (3) The Secretary shall make reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.
- (4) A violation of the restrictions set by the Secretary in accordance with this section is a violation of this regulation.
- (5) An individual may not sell or purchase a commercially caught tautog, alive or dead, that has not been tagged in accordance with this regulation.

d. Harvest broken down by commercial (by gear type where applicable) and recreational, and non-harvest losses (when available).

1. Commercial Landings:

The Maryland Department of Natural Resources and the Atlantic Coastal Cooperative Statistics Program Data Warehouse indicated that [C] pounds of tautog were landed in Maryland during the 2024 calendar year (Table 1).

Table 1 removed due to confidential data.

2. Recreational Landings:

The National Oceanic and Atmospheric Administration preliminary 2024 Marine Recreational Information Program has determined a total recreational harvest estimate for 14,156 (PSE 37.8; numbers of fish; A+B1) as of April 4, 2025.

e. Review of progress in implementing habitat recommendations.

The Department's annual Submerged Aquatic Vegetation Habitat Survey documented juvenile tautog abundance in Sinepuxent Bay. These results document important habitat that supports sustainable tautog recruitment.

IV. Planned management programs for the current calendar year

a. Summarize regulations that will be in effect. (Copy of current regulations if different from III c.) Highlight any changes from the previous year.

The recreational and commercial fishing [regulations](#) for 2025 will remain the same as 2024.

b. Summarize monitoring programs that will be performed.

The Department will continue to monitor tautog juvenile relative abundance with the Trawl, Beach Seine, and the Submerged Aquatic Vegetation Habitat surveys.

V. Plan specific requirements

a. States are required to collect and report commercial and recreational catch estimates, a suitable time series of fisheries independent indices of abundance as determined by the Tautog Technical Committee, and 200 aged length samples per state within the range of lengths commonly caught by the fisheries.

Table 2. Summary of Maryland tautog compliance data. Maryland was *de minimis* in 2024 and was not required to conduct commercial market, directed fisheries, or ventless trap survey work.

Source	Lengths	Ages
Commercial Fishery Market Sampling	0	0
Recreational Fishery Sampling	202	200
Directed Pot and Rod & Reel Sampling	0	0
Resource Assessment Trawl Survey	2	0
Ventless Trap Survey	0	0
Other: Coastal Bays Beach Seine Survey	0	0
Other: Submerged Aquatic Vegetation Habitat Survey	102	0

b. Commercial Harvest Tagging Program- States are required to implement the commercial tagging program starting in 2020. States must annually describe the biological metric used to allocate tags, report the number of tag violations (if possible), and complete the table below.

The State of Maryland purchased 100 tautog tags for fishing year 2024. Our biological metric was based on our 16-inch minimum size and the previous landings over the last three years (2020-2024).

Table 3. Commercial Harvest Tagging Program.

State	MA	RI	CT	NY (LIS)	NY (south shore)	NJ	DE	MD	VA
Quota (if applicable)								N/A	
Maximum Commercial Harvest per Region								N/A	
Avg. Commercial Weight (pounds)								6.6	
Number of Participants								C	
Number of Tags Issued								C	

Number of Tags Returned								C	
Number of Tags Used								C	
Tags Reported Lost								0	
Tags Reported Damaged								0	
Number of Tags Unaccounted for								0	

VI. Law Enforcement Reporting Requirements.

No plan specific requirement.



Wes Moore, Governor
Aruna Miller, Lt. Governor
Josh Kurtz, Secretary
David Goshorn, Deputy Secretary

Maryland Weakfish (*Cynoscion regalis*) Compliance Report to the Atlantic States Marine Fisheries Commission – 2024

Prepared by

Harry W. Rickabaugh Jr.

**Fisheries and Boating Services
Maryland Department of Natural Resources**

July 29, 2025

The facilities and services of the Maryland Department of Natural Resources are available to all without regard to race, color, religion, sex, sexual orientation, age, national origin, or physical or mental disability. This document is available in alternative format upon request.

**Matapeake Terminal 301 Marine Academy Drive Stevensville, MD 21666
(410) 643 – 6776 extension 2109 • www.dnr.maryland.gov · TTY users call via
Maryland Relay**

I. Request for *de minimis*, where applicable.

Maryland does not request *de minimis* status.

II. Previous calendar year's fishery

Commercial Fishery

a. Report commercial landings, including any reported bycatch, in pounds, for 2024.

Maryland's directed fishery landed 977 pounds of weakfish in 2024.

Maryland commercial fishermen reported landing weakfish on 93 trips, with zero trips equaling 100 pounds of weakfish in 2024.

No commercial fishing trips in Maryland exceeded 100 pounds of weakfish in 2024.

Recreational Fishery

a. Report recreational harvest, in both pounds and numbers of fish, and releases in numbers of fish for 2024.

Maryland landed an estimated 494 weakfish (PSE = 99.6, value not significantly different than zero) weighing 599 pounds (PSE = 99.6, value not significantly different than zero) in the 2024 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 7/16/2025).

Maryland recreational anglers released an estimated 7,006 weakfish (PSE = 77.6, value not significantly different than zero) in the 2024 recreational fishery (Personal communication from the National Marine Fisheries Service, Fisheries Statistics Division, 7/16/2025).

Maryland requires charter boat captains to maintain a daily log of the number of fish harvested and released by species. The captain also estimates the poundage of fish caught. In 2024, charter boat captains reported harvesting 29 weakfish with an estimated weight of 47 pounds. They reported releasing 18 weakfish weighing an estimated 39 pounds in 2024.

III. Fishery Monitoring Programs

a. Fishery Dependent Programs

Addendum I to Amendment 4 requires non *de minimis* states to collect 6 individual fish lengths for each metric ton of weakfish landed commercially and 3 individual fish ages for each metric ton of total weakfish landed. Based on *de minimis* requests in the 2024 FMP Review (and subsequent approval by the Board), the following states must submit this data: RI, CT, NY, NJ, DE, MD, VA, NC, and SC.

Maryland collected six weakfish lengths and six weakfish ages from the Atlantic Ocean gill net and trawl commercial fisheries. All of the fish were collected from a single fish house sampling trip in which the fish from both gears had already been mixed together. Maryland met the three length samples required, and met the two age samples required, based on landings reported in Section II above.

b. Fishery Independent Programs

Many states provide YOY indices (RI, CT, NY, NJ, DE, MD, VA, NC, FL) and/or Age 0+ or 1+ indices (CT, NJ, DE, NC, GA, FL) of relative abundance for weakfish. If your state collects this data from a trawl survey please indicate the relative abundance of weakfish in 2024 (i.e., fish/tow or kg/tow).

Maryland provides a young of the year (YOY) index for weakfish from its Coastal Bays Trawl Survey, and the 2024 geometric mean catch per hectare was 0.20 weakfish. The 2024 value was declined compared to the 2023 value of 1.06 fish per tow, and remained below the 36-year time series mean of 1.60 fish per hectare.

Maryland also provides a YOY index for weakfish from the Chesapeake Bay Blue Crab Trawl Survey, and the 2024 geometric mean catch per tow was 0.732. The 2024 value decreased compared to 2023, and was well below the 36-year time series mean of 2.39 fish per tow.

IV. Management Program

a. Summarize any regulatory changes from the previous year:

N/A

b. Law Enforcement

There were no law enforcement issues.

c. Please provide regulatory language that shows you are meeting management measures stipulated in Addendum IV:

- **1 fish creel limit in the recreational fishery**
- **100 lbs landings limit, per vessel, per day or trip (whichever is the longer period of time) in the directed commercial fishery**
- **100 lbs bycatch limit per vessel, per day or trip (whichever is the longer period of time) for all non-directed fisheries**
- **100 fish allowance in the finfish trawl fishery for undersized fish (less than 12 inches total length)**

Maryland's weakfish and spotted sea trout regulations are combined in state regulation, hence the inclusion of spotted sea trout in the following text. Language pertaining to weakfish is underlined.

From the Code of Maryland Regulations: 08.02.05.13.13 Weakfish and Spotted Sea Trout.

A. Minimum Size.

(1) A recreational angler may not catch or possess spotted sea trout less than 14 inches in total length.

(2) A recreational angler may not catch or possess weakfish less than 13 inches in total length.

(3) A person licensed to catch fish for commercial purposes may not catch or possess spotted sea trout less than 14 inches in total length.

(4) A person licensed to catch fish for commercial purposes may not catch or possess weakfish less than 12 inches in total length.

B. Recreational Catch Limits. Except for a person licensed to catch finfish for sale, a person may not catch or possess more than one weakfish and four spotted sea trout per day.

C. Commercial Harvest of Weakfish.

(1) Atlantic Ocean, Its Coastal Bays, and Their Tidal Tributaries.

(a) A person may not catch, possess, or land more than 100 pounds of weakfish per day or trip, whichever is longer;

(b) The weight of the weakfish may not exceed the weight of the catch of the other species on board the vessel; and

(c) Harvest of weakfish with hook and line is prohibited.

(2) Chesapeake Bay and Its Tidal Tributaries.

(a) Hook and Line.

(i) The open commercial season for harvesting weakfish with hook and line is August 1 through September 30.

(ii) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(iii) No bycatch of weakfish is permitted outside of the open commercial season.

(b) All Other Gears.

(i) A person may not catch, possess, or land more than 50 pounds of weakfish per day or trip, whichever is longer.

(ii) The weight of the weakfish catch may not exceed the weight of the catch of the other species on board the vessel.

D. Commercial Harvest of Spotted Sea Trout. A person may not catch, possess, or land more than 150 pounds of spotted sea trout per day or trip, whichever is longer.

E. Net Mesh Size Restrictions.

(1) Trawls. A person may not use a trawl with mesh less than 3-3/8 inches square or 3-3/4 inches diamond stretched mesh size to catch weakfish or spotted sea trout.

(2) Gill Nets. A person may not use a gill net with stretched mesh size less than 3 inches to catch weakfish or spotted sea trout.

F. Public Notice. The Secretary:

(1) May modify, open, or close a season by publishing notice in a daily newspaper of general circulation at least 48 hours in advance, stating the effective hour and date; and

(2) Shall make a reasonable effort to disseminate public notice through various other media so that an affected person has reasonable opportunity to be informed.