

PROTECTING MIGRATORY FISH SPECIES

Tom Dunlap // James River Association // tdunlap@thejamesriver.org

Brent Hunsinger // Friends of the Rappahannock // brent.hunsinger@riverfriends.org

Chris Moore // Chesapeake Bay Foundation // cmoore@cbf.org

WHY IT MATTERS

Migratory fish species, especially those that move between our fresh waters and the ocean, are of critical economic, ecological, and recreational importance to Virginia. These migratory fish are defined by the need to move to a new environment to reproduce – like an American shad leaving the coastal Atlantic Ocean to spawn in one of the many tributaries of the Chesapeake Bay. During their spawning run, anglers flock to the river to catch the upstream swimmers, and after the eggs hatch, the juvenile fish will mature in our rivers and estuaries before leaving for the ocean. Throughout this process, migratory fish play a vital role in local food webs.

Despite their importance, many of our valued migratory fish species such as river herring, American shad, striped bass, American eel, menhaden, and the endangered Atlantic sturgeon are at risk. Migratory fish species face a growing suite of challenges ranging from reduced water quality, loss of habitat [see page 59], climate change, overharvesting, and increasing surface water withdrawals. As a result, fisheries managers continue to struggle with managing and rebuilding fish populations. The combined effects on these depleted fish populations necessitate prioritizing investment in better understanding the cumulative impacts of these changes on our migratory fish species.

CURRENT LANDSCAPE

Virginia's migratory fish are facing pressure on multiple fronts. Restoring fish stocks will require a concerted effort on a number of issues including protecting water quality and habitat, mitigating water withdrawal impacts, addressing high predation pressures (including from invasive species), and a continued focus on offshore bycatch and habitat access including instream barriers like dams and impoundments. Progress is needed on each of these issues, and it will take a sustained effort to bolster Virginia's fisheries.

Surface water withdrawals can have a tremendous impact on already-depleted migratory fish stocks. As groundwater levels in the **Potomac Aquifer** continue to decline east of Interstate 95 and human populations increase in the same corridor, localities are being forced to look for alternate sources of water to reduce their reliance on groundwater wells. Increasingly they are looking to surface water withdrawals from Virginia's rivers to supply the water needed to meet current and future demands. These municipal surface water withdrawals kill huge quantities of fish

eggs and larvae each year through impingement (organisms being pinned against mesh screens because of strong withdrawal velocity) or entrainment (organisms that go through a facility's water system because mesh size is too large). New withdrawal projects might assess the fish impacts deriving from each intake structure but do not take into account the cumulative impacts from all surface water intakes on migratory fish species in our river systems. Further, many older facilities have little or no technologies or systems in place to prevent impingement or entrainment of aquatic life. Once more, for facilities with large withdrawals, the **Department of Environmental Quality (DEQ)** can enforce federal regulations under §316(b) of the Clean Water Act to protect fish populations, including fragile species needing additional safeguards; however, many significant withdrawals affecting migratory fish, such as the Surry Nuclear Power Station's intake of over 1 billion gallons daily,¹ continue operating without these essential protections.

Fishery managers, recreational anglers, conservation interests, and researchers have long raised concerns about the amount of menhaden harvested in the Chesapeake Bay. In addition, the fishery has been plagued in recent years by a quota exceedance, numerous fish spills that have washed up on area beaches, and the bycatch of highly managed species such as red drum. In 2023, the Virginia General Assembly tasked the **Virginia Institute for Marine Science (VIMS)** with developing plans for studying a host of important issues related to the ecology and economic impact of menhaden on the Commonwealth. After reviewing the outcomes of this work and continued dialogue with stakeholders, the General Assembly did not fund the study during the 2024 General Assembly session.

Unfortunately, improved menhaden fishery management continues to be sidelined by a lack of data specific to the population of menhaden in the Chesapeake Bay. Current data is needed to better gauge the impacts that are taking place from climate change and the menhaden **reduction fishery**.

OPPORTUNITIES

Evaluating the cumulative impacts of all existing and proposed permitted and non-permitted surface water withdrawal intakes on the mortality of fish larvae and eggs would give Virginia the best understanding of what is needed to protect migratory fish. With sufficient funding, the Virginia Institute of Marine Science (VIMS) could appropriately study the cumulative impacts of these projects to inform

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permitting decisions and help fisheries managers better understand the impacts on fish populations. In tandem, DEQ should promptly enforce federal regulations of the **Clean Water Act** for cooling water intakes at power plants and large industrial withdrawals to reduce the ongoing impacts of outdated infrastructure on already imperiled fish populations.

Sufficient funding from the Commonwealth would also allow VIMS and its appropriate partners, such as the Atlantic States Marine Fisheries Commission (ASMFC), to begin work studying issues related to the ecology and economic impact of menhaden to the Commonwealth.

One particularly vulnerable migratory fish species, the American shad, has been managed under a complete fishing moratorium in Virginia for decades. In the James River, American shad have been below 1% of the Bay Program's recovery goal for the species since 2019,² and in 2022 the General Assembly funded the development of a recovery plan for American shad in the James River. The recovery plan, "A Framework for the Recovery of American Shad, *Alosa Sapidissima*, in the James River, Virginia"³ was completed by VIMS and partner experts at the end of 2023. Now, Virginia has a roadmap for the recovery of this important migratory species, and many of the projects and actions identified in this plan could benefit other imperiled migratory fish species in the James River as well.

ENDNOTES

1. Virginia Department of Environmental Quality surface water withdrawal reporting data, requested 2023.
2. Virginia Institute of Marine Science, "Monitoring Data," https://www.vims.edu/research/units/programs/american_shad/results/Monitoring_data.
3. VIMS, "A Framework for the Recovery of American Shad (*Alosa sapidissima*) in the James River, Virginia," (November 2023). <https://rga.lis.virginia.gov/Published/2023/RD587/PDF>.

TOP TAKEAWAYS

Many of our valued migratory fish species such as river herring, American shad, menhaden, and the endangered Atlantic sturgeon face a growing suite of challenges ranging from reduced water quality, loss of habitat, overharvesting, and both unprotected and increased surface water withdrawals.

With additional funding, VIMS can conduct a comprehensive menhaden stock assessment and model the cumulative impacts of existing and proposed permitted and non-permitted surface water withdrawal intakes to inform future decisions to protect migratory fish species and surface water intake permitting decisions.

Funding the recovery and restoration projects identified in the James River American Shad Recovery Plan (\$2.7M) would directly improve conditions for American shad and other migratory fish across the James River Watershed.