

CHESAPEAKE

BAY JOURNAL

October 2026

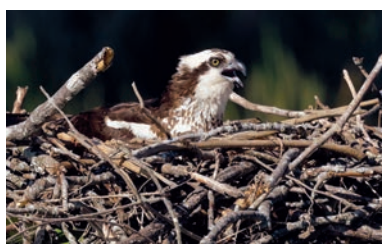
Volume 36 Number 7

Independent environmental news for the Chesapeake region

Executive order changes federal framework for Bay cleanup Page 10



A NEW LOW FOR OSPREYS



Nest survival rates plummeting, latest survey shows **PAGE 20**

BEYOND JACK-O'-LANTERNS



All hail the pumpkin, king of the squashes **PAGE 34**

BRIDGE OVER MD WATERS



From aqueduct to viaduct on the C&O Canal Trail **PAGE 24**

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The acreage of underwater grasses in the Chesapeake Bay and its tidal rivers has expanded every year since 2021. See story on page 14. (Dave Harp)

CONTENTS

NEWS

- 8 MD fines developer for more Gunpowder tributary pollution
- 9 VA rebuilds quail habitat, hoping other species will follow
- 10 Trump revises, narrows federal framework for Bay cleanup
- 12 Indigenous council leaves Chesapeake Bay Program talks
- 13 Bay region marks passing of environmental leaders
- 14 Chesapeake grass beds expand for fifth year in a row
- 15 Menhaden fishery workers caught in the middle of debate
- 16 Decades later, a big gap persists for key Bay pollution goal
- 18 VA tells Richmond airport to lower its use of PFAS
- 19 Stormwater woes flow downhill, but funding often doesn't
- 20 Osprey woes in the Bay worsen, latest survey finds
- 21 PA governor issues order on data center development
- 22 Crippled by a cold snap, MD wineries replant and reset
- 23 MD plant seeks to increase discharges, despite PFAS

TRAVEL

- 24 The Monocacy Aqueduct: Walk where canal boats travelled

FORUM

- 27 Chesapeake Born | A lifetime of managing fish
- 28 To align Bay efforts and impacts, prioritization is key

QUIZZES | EVENTS | RESOURCES

- 26 Chesapeake Challenge | Cryptids, past and present
- 32 Bulletin Board | Volunteer | Events | Programs | Resources

COLUMNS

- 34 Steward's Corner | The history of the pumpkin
- 35 On the Wing | Birds we'll never see again
- 36 Bay Naturalist | For wildlife watching, pick a refuge – any refuge

EDITOR'S NOTE

A 'civics' lesson, Flanigan-style



In September, I joined an event hosted by the Friends of the Jones Falls in Baltimore to celebrate the work of Frances Flanigan. Fran spent most of her career building partnerships to help heal the Chesapeake Bay. Now retired, she was involved with the Bay restoration effort almost from its inception — though rarely in the headlines. Yet veterans of Bay efforts cite her repeatedly as the bridge connecting stakeholders who might otherwise have never sat at the same table.

Last December, I met the eldest of three generations of Virginia watermen. He asked if I know Fran, because she was the reason he got involved with clean-water work several decades ago. Fran, he said, had “a way about her” for bringing people together.

At the September event, former U.S. Sen. Ben Cardin credited Fran with brokering the foundational conversations that made possible today's Chesapeake Bay Program (the state-federal partnership guiding the cleanup effort).

Cardin described Fran's contributions and her ethics, referencing civic dialogue and civic participation. I noticed that his definition meant more than community involvement. It also meant active curiosity, active listening, inclusiveness and respect.

These values gave Fran's work impact in many ways, and there's one I'd like to highlight here: She helped launch the *Bay Journal*.

Fran was not a government employee. She volunteered much of her time and eventually became the founding director of the Alliance for the Chesapeake Bay. At the Alliance, she championed clear, fair and accurate communication about Bay issues. She thought she was starting a newsletter. But soon after hiring Karl Blankenship as editor, he recommended more. Fran agreed, and the *Bay Journal* launched as a newspaper under her supervision.

Before long, the *Bay Journal* became an independent nonprofit organization committed solely to environmental news. The ethics it was founded under live on. Don't just grab a story, she advised Karl — take time to learn the issues.

Over the years, I've learned a lot about the issues. And I learned a lot from Fran. Thanks, Fran.

—Lara Lutz

ON THE COVER

Watermen tend to their nets in the lower Nanticoke River on Maryland's Eastern Shore. (Dave Harp)

Bottom photos: left by Dave Harp, center by Bunches and Bits/CC BY-NC-ND 2.0, right by Robb Helfrick



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BY THE
numbers

174 million

Estimated tons of sediment trapped behind Conowingo Dam as of 2014 (with 3 million tons added each year)

48%

Amount of nitrogen (a form of nutrient pollution) that reaches the Bay from agriculture, according to 2022 estimates

85%

Estimated percentage of harvested forest sites in Pennsylvania that have problems regenerating because of deer browsing

196

The number of tree species found in Pennsylvania, of which 134 are native

20

The number of times a woodpecker can peck per second

5,000

The approximate number of ants found in one northern flicker's stomach

The natural rhythms of vernal pools



Vernal pools are depressions in the ground that temporarily fill with water from snowmelt in spring or rainfall in autumn. They form in grasslands and forests, ranging in size from large puddles and small ponds to shallow lakes.

Far from flowing waters, where fish and other predators might eat them or their offspring, these ponds on the forest floor provide a haven for creatures like wood frogs, salamanders and fairy shrimp.

Slippery creatures who call both land and water home prepare for the “Big Night” each year, when they travel to vernal pools to lay and fertilize their eggs. It typically takes place from March through May. Timing matters. Spotted salamanders wait until the water is high enough to lay and fertilize their eggs. After wood frogs lay their eggs, the tadpoles must grow and head for land before the pool dries up.

Extreme weather, such as drought and cold snaps, can disrupt this timed relationship. And development can bulldoze over these critical habitats. But landowners can build their own vernal pools, sometimes with state assistance.

— L. Hines-Acosta

Background photo: This vernal pool is on the Dickinson Farm in the Delaware Wild Lands. (DE Wetland Monitoring and Assessment Program)

Inset photo: Spotted salamanders use vernal pools to lay and fertilize their eggs. (VA Dept. of Conservation and Recreation)



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BAY JOURNAL NOTEBOOK



Emmett Gartner has joined the Chesapeake Bay Journal team as a Maryland-based reporter. (Garrick Hoffman)

The Bay Journal welcomes Emmett Gartner

Please join us in welcoming **Emmett Gartner** as a new member of the *Bay Journal* team based on Maryland's Western Shore. Emmett has spent the last few years as an award-winning environmental reporter at the *Maine Monitor*, covering topics that might sound familiar: water quality, forest health, coastal resilience, dam removals and more.

Now, Emmett is eager to put that experience to work in his home state. He grew up in Annapolis. Later, while earning a degree in environmental studies at the University of Vermont, his work at the campus newspaper spurred a new passion: reporting. He went on to complete a master's degree in journalism at the University of Maryland, where he was a fellow in the investigative journalism program. Between studies, he spent a couple of summers on trail crews in the forests of Oregon and Nevada. He then worked at the *Frederick News-Post* before accepting a position with the *Maine Monitor*.

You'll see more reporting from Emmett soon. You'll see some new *Bay Journal* films soon, too, and one is about sturgeon. While filming in Maryland, photographer **Dave Harp** saw researchers capture a large one. They attached a tracking device and named it Walt, in honor of pioneering Bay scientist Walter Boynton, who passed away in September (see page 13). The *Bay Journal* consensus is that Walter would have been thrilled by his namesake fish.



Sturgeon researchers with the Maryland Department of Natural Resources hold a sturgeon they dubbed Walt to honor scientist Walter Boynton. It was then released. Left to right are Tyler Fowler, Ashlee Horne and Tanner Broadwell. (Dave Harp)

Chesapeake loggerperch are recovering, feds say

Populations of a small darter species found only in the lower Susquehanna River have rebounded enough not to warrant protections under the Endangered Species Act, according to a federal review released in early September.

The U.S. Fish and Wildlife Service touted the recovery of the Chesapeake loggerperch as a testament to years of conservation efforts between the agency and officials on both sides of the Maryland-Pennsylvania border that could yield further population expansions.

"Efforts to improve Chesapeake loggerperch habitat have allowed the species to maintain stable populations and may help partners reestablish populations in parts of its historic range where it is no longer found," the agency said in a press release.

Since 2017, the coalition has concentrated efforts to improve water quality and connectivity throughout the tiny, green-striped fish's spawning and foraging grounds. Support from the nonprofit organization Conservation Fisheries, Inc. helped spawn more than more than 1,500 Chesapeake loggerperch in 2019, and populations bloomed from there.

The Fish and Wildlife Service added, though, that although current research determined the loggerperch hasn't triggered federal endangered species protections, it will continue monitoring its populations. Pennsylvania still lists the Chesapeake loggerperch as threatened and has targeted the species for further conservation work. — *E. Gartner*

Alexandria completes sewer upgrade project

Alexandria Renew Enterprises, or AlexRenew, completed its overhaul of the combined sewer system serving the city of Alexandria, VA, on June 29. The upgrade is expected to keep 120 million gallons of wastewater out of Virginia waterways each year.

Combined sewer systems from the 1800s are found throughout the Chesapeake Bay region. They capture both sewage and rainwater, but the wastewater treatment systems they go to are often overwhelmed during heavy rainstorms. By design, the excess flow is diverted to nearby rivers.

According to the Virginia Department of Environmental Quality, 23 million gallons of sewage are released into state waterways annually from combined sewer systems — though that

is estimated to be 0.005% of the total treated wastewater in the state.

The project in Alexandria, called RiverRenew, created a 130-foot-deep, 2.2-mile tunnel that will capture overflow and hold it until it can be treated and only then released into the river. The project also features an interceptor sewer, diversion facilities, wastewater plant upgrades and a 12-story underground pumping station.

The project took eight years to build and met its extended timeline of July 1, 2026, by just two days.

The cities of Richmond and Lynchburg are still upgrading their combined sewer systems. Richmond has the most annual overflows, at 2,585 million gallons. — *L. Hines-Acosta*

Susquehanna riverkeeper to sue PVC pipe maker

The Lower Susquehanna Riverkeeper Association is calling out Westlake Pipe and Fittings, a manufacturer in Leola, PA, for alleged violations of the Clean Water Act and the Pennsylvania Clean Streams Law. On Sept. 2, the riverkeeper group, represented by the Chesapeake Legal Alliance, issued a notice of intent to sue the facility for

unauthorized discharges of pollutants into an unnamed tributary of Mill Creek, which flows into the Conestoga River.

The association obtained discharge monitoring reports filed that the company filed with the state Department of Environmental Protection. The filings showed that the facility, which manufactures PVC pipes, violated effluent permit limits 179 times between October 2021 and June 2026. These violations included releases of water above a permitted temperature, as well as releases of pollutants above permitted concentrations.

"Excessive toxic pollutant discharges, such as vinyl chloride and other constituent toxic organic compounds, pose not only a real threat to local aquatic environments, but create a risk of exposure to humans and animals," wrote David Reed, executive director for the Chesapeake Legal Alliance, in a press release. "We issued this notice letter with the goal of bringing the facility back into compliance and eliminating the excessive toxic discharges as soon as possible."

As required by the Clean Water Act, Westlake Pipe and Fittings is granted 60 days from issuance of the notice before further legal action. If the

See **BRIEFS**, page 6



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briefs

From page 5

company does not fix the alleged violations in that time, the Lower Susquehanna Riverkeeper Association intends to sue in federal court.

— C. Beans

MD county expands Abingdon estuary preserve

Harford County, MD, has added a 22-acre plot of vernal pools and oak forest to its outdoor education center and estuary preserve in Abingdon, officials announced early this month.

The Aug. 20 transaction with the Harford Land Trust expands the 700-acre county park surrounding its Anita C. Leight Estuary Center on Otter Point Creek, a tributary to the Bush River just a couple of miles from Interstate 95.

Harford County executive Bob Cassilly said the parcel was slated for development and that the acquisition conserves land the state deems critical due to its proximity to tidal waters.

"The additional forested areas will enhance the visitor experience and support research at the center as they continue to protect our precious natural environment," Cassilly said in a press release published by the land trust.

Their exchange is part of a string of transactions

between the two that date back to 2001, organized under a partnership called the Harford Forest Conservation Program that aims to improve local water quality by conserving forest and estuary land.

"Expanding a beloved park in a highly developed area of the county makes this success all the more important," wrote Kristin Kirkwood, Harford Land Trust's executive director.

— E. Gartner

VA governor issues order for data center accountability

Virginia Gov. Abigail Spanberger signed an executive order Sept. 18, setting out her plan to establish environmental protections and ensure transparency around data centers.

Led by Loudoun County in Northern Virginia, the state has become the "data center capital of the world." That designation has brought tax revenue and jobs for localities, but also immense energy demand. Environmentalists also worry about the industry's impact on water supply and air quality.

Earlier this summer, lawmakers added a tax in the state budget for the energy that data centers use. Spanberger also supported other budget language that added regulations requiring new data centers in "cooling water scarcity areas" to minimize how much water they use to cool their servers.

The order directs the Department of

Environmental Quality to evaluate the cumulative impact of emissions from the facilities' backup diesel generators and submit a report by March 17, 2027. It also prohibits the Virginia Economic Development Partnership from helping expedite permitting for facilities that need more than 25 megawatts of power.

The new rules are part of the governor's Data Center Accountability Framework, which focuses on cooling water scarcity areas and noise regulations.

The framework also lists priorities for the 2027 legislative session, such as establishing standards for energy efficiency, water use, land impacts and decommissioning. Labor unions have resisted policies that would make data centers leave Virginia, taking maintenance and construction jobs with them. But

Michael Town, executive director of the Virginia League of Conservation Voters, said the state isn't kicking the industry out, but insisting that they be good neighbors if they want to stay.

Environmentalists are split on the policy, with some saying it doesn't go far enough. The Piedmont Environmental Council is demanding that Spanberger call for a special session and for a statewide moratorium on data center development, a move New York Gov. Kathy Hochul made in July.

— L. Hines-Acosta

USDA rule repeal could lead to logging in PA, VA forests

The U.S. Forest Service under the U.S. Department of Agriculture filed a proposed rule on Aug. 18 to fully rescind the 2001 Roadless Area Conservation rule. Public comment periods on the repeal and environmental impact statement were accepted until Sept. 21.

Established under the Clinton administration, the Roadless Rule prohibits building roads and harvesting timber in the wildest areas of national forests. The law was made to prevent the fragmentation of forests while protecting clean drinking water sources and habitats for endangered species and. Roadless areas also boost local economies through tourism and host 120 miles of the Appalachian Trail.

There are more than 400,000 acres of roadless areas in the Chesapeake Bay watershed, located in Virginia's George Washington and Jefferson National Forests and Pennsylvania's Allegheny National Forest.

Secretary of Agriculture Brooke Rollins said rescinding the rule will give more flexibility to local agency decision-making rather than a one-size-fits-all approach.

"We filed a proposal to restore authority to local forest managers who know the land best, removing

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the barriers that have kept them from doing the work the land demands,” Rollins said.

The USDA said removing the rule to allow for logging will reduce wildfires, but the rule already allows for the harvesting of small trees to reduce the risk of wildfire. Terminating the rule will not mandate timber cutting or road construction.

— L. Hines-Acosta

VA increases hunting, fishing fees for first time in 14 years

The Virginia Board of Wildlife Resources approved new fees on Aug. 20 for hunting, fishing, trapping, boating and primitive camping. The increased fees will go into effect on Oct. 1.

Most hunting, fishing and trapping licenses, including boat registration and titling fees, will increase by \$5. But fees won’t increase for youth, disabled veterans, apprentice and disabled participant licenses.

The Department of Wildlife Resources will also add a \$10 authorization fee to camp on state lands, including wildlife management areas.

Paid licenses and fees help the department manage fish and wildlife populations along with managing Virginia’s lands and water. The revenue also supports public safety trainings, regulation enforcement and park maintenance.

Boating fees have not changed since 2019. Hunting, fishing and trapping licenses have not increased since 2012.

The demand for more public access and timely responsiveness to human-wildlife conflict resolution has risen, according to the department. Staff also say the new fees are necessary due to increased U.S. prices, construction costs and inflation since 2012. The state budget mandates that salaries increase each year, but the department has not received state funding to do so and has reduced its workforce.

— L. Hines-Acosta

MD seafood worker gets probation in tampering case

An employee of a Maryland seafood company will not face jail time after he was found guilty of interfering with a state Natural Resources Police investigation.

Daniel R. Webster, 75, received three years of probation and a \$1,500 fine stemming from misdemeanor charges of altering evidence and obstructing an investigation. The maximum penalty would have put him behind bars for three years, coupled with a \$5,000 fine. Somerset County District Court Judge Paula A. Price also stipulated that Webster must cooperate with the Natural Resources Police (NRP) in a related investigation.

In that case, the NRP is trying to determine whether Webster’s employer, Kool Ice Seafood, illegally dumped unsanctioned material, including plastic, into the Chesapeake Bay to support its oyster-farming sites.

“I’ll let this one be one of those one-offs,” Price told Webster during the Sept. 14 sentencing, “but in the future, I think because of your age you know the difference between right and wrong, right?”

“Yes,” Webster replied. It was the only time he spoke during the hearing. He declined to speak to a reporter as he left the courthouse. But his attorney, Kirk Simpkins, said he was pleased with the outcome: “I think [the incident] was a misunderstanding.”

The case began with reports in late April of hunks of plastic washing up along the shoreline off Deal Island, a small waterman community on the Eastern Shore. An NRP investigation focused on Kool Ice. The officer testified that he told Webster not to disturb the area where the material had been dumped but later witnessed Webster doing just that.

Webster, a longtime advocate for watermen, was arrested when he arrived back on shore. He was found guilty after a July 6 trial.

Several community leaders and family members wrote letters to Price leading up to the sentencing, asking for leniency in light of Webster’s decades of volunteerism.

— J. Cox

VA program can lower rooftop solar costs by 23%

Virginia Gov. Abigail Spanberger, Solar United Neighbors and their partners have launched the Switch Together initiative that will help lower the cost of rooftop solar projects for homeowners. The program is available through Oct. 15.

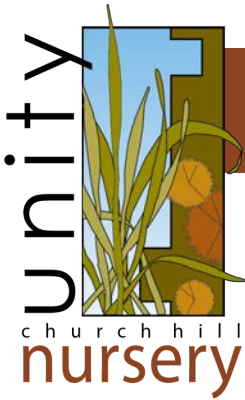
Switch Together leverages bulk buying power to get customers discounts. People can sign up on the website and enter details about their home. Then, companies bid each other for people’s business. The customer can review the offers and schedule a consultation if they like what they see.

According to Virginia’s chief energy officer Josephus Allmond, homeowners can expect a 23% discount on their installation. People can also get discounts on battery storage and, in some places, heat pumps. The program is estimated to save the average household approximately \$2,200 a year on electricity costs, according to the U.S. Department of the Treasury.

This program comes after the One Big Beautiful Bill Act terminated the \$156 million federal Solar for All program, which provided grants to low-income individuals for solar installation.

The program is available to 100 localities in Virginia, or 85% of the state, and might be available statewide by next year.

— L. Hines-Acosta



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MD fines developer for more Gunpowder tributary pollution

\$24,000 fine follows multi-million-dollar settlement reached in May with three companies

By Timothy B. Wheeler

Months after reaching a record settlement over mud pollution from a Harford County MD housing project, state environmental regulators have fined the developer another \$24,000 for continuing to foul a Gunpowder River tributary.

The Maryland Department of the Environment levied penalties of \$6,000 each for four occasions this past spring and summer when inspectors found that sediment from the Ridgely's Reserve development had washed offsite into local streams.

On May 19, MDE announced that Texas-based homebuilder DR Horton, its development subsidiary Forestar USA Real Estate Group and a Pennsylvania building contractor agreed to pay \$4.1 million to settle a lawsuit brought by the state and the nonprofit Gunpowder Riverkeeper.

That deal came in answer to more than four years of complaints from area residents about chronic muddy runoff from the 121-acre housing development in Joppa. Almost

whenever rain fell, Foster Branch and the tidal Gunpowder basin turned murky shades of orange and brown. The lower Gunpowder lost much of its underwater grasses, critical habitat for fish and crabs.

The \$2 million civil penalty in the settlement was the largest ever in Maryland for runoff pollution from a construction site, according to MDE. The other \$2.1 million paid by the developers is to be used for "community-driven" remediation projects to restore aquatic habitat in Foster Branch and the Gunpowder.

Under the terms of the court-approved consent decree, the companies agreed to pay without question penalties ranging from \$1,000 to \$6,000 for any future violations of their permits to build 388 homes at Ridgely's Reserve.

In a Sept. 10 letter, MDE notified the developer's lawyers that state and county inspectors had found multiple sediment and erosion control violations in late May, July and August. The agency assessed the latest penalties against Forestar alone, though,

and just for illegal discharges of sediment into the streams feeding into Foster Branch.

Forestar did not respond to an emailed request for comment.

MDE's inspection reports listed other violations, including instances of eroding soil, exposed soil vulnerable to washing off in a rainstorm and improperly installed "silt fences" meant to keep mud from running off the site. Aimen Lipscomb, an MDE spokesperson, acknowledged that the inspection reports documented other permit violations. But she said the consent decree signed by the developers gave them seven days to correct those violations before penalties would apply.

Theaux Le Gardeur, the Gunpowder Riverkeeper, said he and the group's lawyer want to meet with MDE officials to understand their rationale for not imposing more penalties.

Meanwhile, he and some area residents suggested Harford County could and should do more to crack down on continuing problems with sediment and erosion

controls at the development. Through the summer, county inspectors visited the construction site weekly and after heavy storms. They issued a series of stop-work orders and "correction notices" for multiple infractions, many of them similar to those cited by MDE. The county has since begun making daily inspections, according to a recent county report shared with residents. A county spokesman said in August that based on violations found then, officials were considering revoking permits.

Le Gardeur contended that the settlement does not preclude Harford from levying its own fines and penalties. While penalties assessed by the state go into a statewide clean water fund, he suggested that any fines the county collects could help pay for closer monitoring of the development and for restoring Foster Branch and the impacted habitat of the Gunpowder.

"I am concerned about the cumulative impacts on the environment and community of the site being out of compliance for over four-and-a-half years," he said. ■



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VA rebuilds quail habitat, hoping other species will follow

By expanding grasslands, state hopes quail will return along with monarchs, foxes

By Lauren Hines-Acosta

Clare Novak and her husband, Tim Miller, had never hunted before. But a Gordon setter puppy named Vika, bred for bird hunting, entered their lives. So they signed her up for a bird-dog upland hunting class in 2015 — and she caught three quail in five minutes. The three of them were hooked.

But both quail and quail hunters are becoming increasingly rare breeds in Virginia. To help address that, the state Department of Wildlife Resources (DWR) is taking on its largest grassland restoration project at the Land's End Wildlife Management Area in King George County. Not only will the project keep pollution out of the adjacent Rappahannock River, but the increasingly rare grass field habitat could help connect quail populations in the state.

The northern bobwhite quail, known for its two-whistle call, is an indicator species, meaning the bird's health reflects the health of the ecosystem. Casey Sousa, a wildlife area manager with DWR, said if the restored



Clay Ferguson of the Virginia Department of Wildlife Resources visits the Land's End Wildlife Management Area in King George County on Sept. 15, 2026. (Lauren Hines-Acosta)

grassland can attract quail, then other species will follow — pollinators, grey foxes and snakes, to name a few.

Over the last 50 years the quail population in Virginia has dropped 80%, and the

number of quail hunters has fallen by 90%. But Clay Ferguson, regional lands and access manager with DWR, said their surveys show that pockets of quail exist in Virginia's Northern Neck.

"Quail is never going to get back to what it was for my father and his father," Ferguson said, "but I think there is potential for quail to recover to a reasonably hunted, somewhat sustainable population throughout pockets of Virginia. And I think we're starting to see that recovery in places, which is inspiring."

Ferguson added that grasslands are the "most imperiled habitat in Virginia," mostly because they have been lost to development and agriculture. Lack of natural fire and disturbance from grazers have made grasslands too thick for quail to cross, and herbicide and heavy equipment have cleaned up the grassy edges of farms that could hide quail from predators.

At the Land's End Wildlife Management Area, about an hour from Richmond, bald eagles soar over a field of 6-foot-tall

Indian grass, and monarchs flutter among yellow crownbeard. Ferguson hopes to eventually hear a chorus of bobwhite whistles here as well.

The land was originally used for row crops but was donated to the state in the late 1960s for waterfowl management. DWR received a \$100,500 grant in 2024 as part of a statewide initiative to reduce nutrient pollution from state lands. By converting these 140 acres into grassland, Ferguson and his team hope to keep nutrient pollution from entering the river and create habitat for grassland species.

To ensure the field doesn't get too thick for quail to cross or enjoy their dust baths, Ferguson plans on opening the field to grazing. He wants to show farmers they can still make money while practicing conservation. The grant allows Ferguson to keep cattle out of the river by adding a fence and an alternate water source.

The department aims to plant native flowers this winter and complete the project by June 2027. ■

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Trump revises, narrows federal framework for Bay cleanup

Impact unclear as order repeals 2009 policy but confirms importance of restoration

By Jeremy Cox, Emmett Gartner, Lauren Hines-Acosta and Karl Blankenship

President Trump on Sept. 16 repealed a policy that has guided federal participation in Chesapeake Bay cleanup efforts for nearly two decades. It's unclear how much effect the new order will have on the cleanup, but its narrow focus has triggered fears that some priorities will be left behind.

Trump's order directs key agencies to prioritize "direct, on-the-ground projects ... that would result in the most impactful water quality improvements."

Efforts to reduce nutrient and sediment pollution were at the center of the federal government's previous Bay policy. But that executive order, established through the Obama administration in 2009, referred to a broader list of ambitions, including restoring habitats, conserving lands and battling climate change.

Trump's new executive order also seeks to reduce the cost of the cleanup to individual pocketbooks. And one of the main ways the federal apparatus can do so, it suggests, is by pressuring state and local governments to repeal controversial stormwater management fees — which some jurisdictions collect from property owners to help pay for pollution-reduction projects.

The order cites the region's partial progress toward reducing nutrient pollution as one justification that the Obama executive order is no longer necessary.

In a statement, the press office for the U.S. Environmental Protection Agency said the 2009 order was "vague and confusing," leading to unnecessary and costly state and local spending on projects that did little to improve the Bay's health.

"This new executive order emphasizes that Americans don't need to choose between clean water and economic prosperity," a spokeswoman for the U.S. Environmental Protection Agency wrote. "With practical and focused actions, they can have both."

The order represents the most significant action Trump has taken solely involving the Bay cleanup. It immediately raised concerns and faced backlash. The move was described as "shortsighted and harmful" in a statement signed by Maryland's entire congressional delegation, including its lone Republican, Rep. Andy Harris.



On Sept. 16, President Trump (shown here in February) repealed and replaced a 2009 policy guiding federal involvement in the Chesapeake Bay cleanup. (Daniel Torok/White House photo)

Another key Republican, Rep. Jennifer Kiggans of Virginia, was lukewarm in her response. Kiggans, a member of the House's natural resources committee whose district borders much of the lower Bay, applauded the order's intent to remove regulations that could hinder economic growth. But Kiggans added that she will be "closely monitoring" the next steps to ensure they're done with the Bay's health and economic potential squarely in mind.

The order uses the annual "dead zone"

report and another report pointing to reductions in nutrient and sediment pollution as proof of progress. "Given this significant progress," the order states, "it is appropriate to revoke [the 2009 order]."

But some critics charged the administration with applauding the results of the Bay cleanup on the one hand and seeking to dismantle it on the other. "Despite both the progress the partnership has made and the clear work left to be accomplished in delivering a thriving Chesapeake Bay, the

Trump administration is targeting the Chesapeake Bay partnership and related restoration efforts," the Maryland League of Conservation Voters said in a statement. "This is yet another disappointment regarding this administration's approach to environmental health."

Impacts uncertain

The order's impacts, though, could be limited. For example, the order states that it can be overridden by any laws passed by Congress. And lawmakers routinely dictate how the executive branch should spend much of its cleanup dollars.

Further, the order leaves in place the voluntary Chesapeake Bay Watershed Agreement, a pact between Bay states and the federal government with four main goals: nurturing "thriving" habitats, cleaning up water, conserving important landscapes and engaging the public. Those are then separated into 21 outcomes, ranging from nutrient reductions to oyster restoration to increasing forest coverage.

Last year, a Trump administration official signed the latest version of the agreement on behalf of seven federal agencies, pledging to press forward with other signatories — Bay states, the District of Columbia and the Chesapeake Bay Commission — toward a 2040 deadline.

"As the new executive order correctly states, our federal partners remain full signatories to the comprehensive Chesapeake Bay Watershed Agreement and provide significant technical and financial assistance to the restoration effort," said Anna Killius, executive director of the Bay Commission, made up of state lawmakers from across the region.

"But," she added in a statement, "it is crucial that this assistance extends to all four goals of the agreement."

An EPA official sought to reassure state and federal counterparts of the agency's continued commitment to coordinated Bay restoration work during a Sept. 21 meeting of the state-federal Chesapeake Bay Program.

Amy Van Blarcom-Lackey, administrator of the EPA's Mid-Atlantic region, encouraged the Policy Steering Committee to "read the executive order closely" and pay attention to the concrete water-quality goals it seeks to attain.



An algae bloom, driven by nutrient pollution, chokes the mouth of a small creek in Caroline County, MD, near its confluence with the Choptank River. (Dave Harp)

“The executive order gives us an opportunity to strengthen that work by focusing federal coordination and resources on measurable environmental results,” Van Blarcom-Lackey said. “It does not diminish the importance of partnership.”

But governors of three states in the Bay Program, all Democrats, were quick to condemn the order.

“This executive order is just the latest of Trump’s assaults on Bay restoration, stripping away the accountability measures and federal coordination that have guided this work for nearly two decades,” said Maryland Gov. Wes Moore in a statement.

Virginia Gov. Abigail Spanberger called Trump’s order “short-sighted.” At a press conference on Sept. 21, she said it ignores the value of farm conservation practices and could potentially threaten the long-term health of the Bay.

“While the Trump administration is abandoning their commitment to coastal Virginia, I’m proud our bipartisan state budget includes record funding for practices to protect water quality, improve soil health and keep Virginia steadily accelerating its Chesapeake Bay clean water goals,” Spanberger said in a statement.

Pennsylvania Gov. Josh Shapiro addressed the executive order at a ribbon cutting on Sept. 18, emphasizing Pennsylvania’s autonomy regarding local decisions.

“As chairman of the Chesapeake Bay [Program], we’ve worked closely with local communities and, as a result of their important work, we’ve been able to clean up the Bay at a better rate than Pennsylvania has ever done,” Shapiro said. “I’m grateful to the leadership of these local communities, and I’ll continue to stand with them.”

What changes?

Obama’s executive order, signed May 12, 2009, called the Bay a “national treasure” and stated that the federal government “should lead” the restoration. To guide that effort, it directed federal agencies to develop a coordinated strategy that focused on restoring the region’s ecological health.

That expansive document, released a year later, painted a sweeping picture of what a healthier watershed ecosystem would look like, from increased oyster populations and expanded tidal and nontidal wetlands to larger brook trout populations in headwater streams.

“We plan to devote unprecedented resources and unmatched effort,” then-EPA Administrator Lisa Jackson said at the time of its signing. “We are initiating



Stormwater runoff carries pollutants into streams, rivers and the Chesapeake Bay. (Dave Harp)

one of the most comprehensive protection efforts in decades.”

While it emphasized meeting water quality goals and called for stepped-up enforcement of cleanup activities, the order stated that success “will ultimately be measured by the vitality and richness of its fish and wildlife and the health and well being of the people who rely upon them.”

To that end, it also called for conserving large landscapes along rivers, protecting wildlife habitat by preserving an additional 2 million acres of land, rebuilding oyster populations, expanding the wintering black duck population, protecting high-quality forests, accelerating restoration of wetlands and doing more to control invasive species.

Many of those ideas found their way in full or in part into the goals of the 2014 Chesapeake Bay Watershed Agreement.

That expansive vision is broader than Trump’s executive order, which focuses on nutrient and sediment reductions. Although the new order doesn’t prevent agencies from pursuing other actions, some of which are mandated by other legislation or appropriations, it could affect where agencies place their emphasis.

The new order also streamlines the cleanup’s procedural requirements. The Bay Program has reporting requirements in place, but the order removes federal requirements for the annual action plans, annual progress reports and independent evaluations that were part of the previous policy.

The EPA is one of six agencies identified in the new order as having an oversight role. The others include the departments of the Interior, Agriculture, Commerce, Homeland Security and Defense.

Stormwater fees

Trump’s order singled out the fees that some localities charge property owners to support stormwater infrastructure, which captures, filters and sometimes treats polluted runoff before it enters waterways. The order claims that successes in pollution reduction make the economic tradeoff unnecessary. Its language joins the policy’s harshest critics in referring to the fees as a “rain tax.”

Chesapeake Bay Foundation president Hilary Harp Falk refuted those claims and cited the 2009 policy as the cornerstone for many of the Bay’s modern restoration efforts.

“For 17 years, the 2009 executive order has helped provide the federal leadership, coordination, science and accountability needed to restore the Chesapeake Bay,” Harp Falk said in a press release. “Its replacement undermines the federal government’s role while eroding the ability of states and local governments to fix problems ranging from pollution to flooding.”

Kristin Reilly, director of the Choose Clean Water Coalition, said that although those stormwater programs are established at the municipal level, Trump’s order signals

that the administration could challenge the authority of local governments to implement them.

“Our big concern is whether local governments have sort of lost a little bit of their rights and their autonomy to make these decisions based on the needs of their local communities,” Reilly said.

Obama’s 2009 order doesn’t mention stormwater fees. And the new order doesn’t dispute this, noting that “nothing in that [previous] order required or explicitly justified such measures.” But state and local officials pursued them anyway, the Trump order states, due to the original order’s “lack of clarity.”

Anne Arundel County and nine other large Maryland jurisdictions first implemented local stormwater fees around 2013 under a state mandate. They grew not from Obama’s order but from the EPA’s adoption of the Bay’s “pollution diet” that followed a year later, said Erik Michelsen, deputy director of the Anne Arundel County’s Bureau of Watershed Protection and Restoration.

Maryland required stormwater fees as a tool to meet those pollution reduction goals and to fund public stormwater management projects — until 2015, when Gov. Larry Hogan and the state General Assembly repealed them.

While Anne Arundel and others elected to maintain their stormwater fees, some jurisdictions repealed theirs just to raise fees elsewhere, Michelsen said.

“They still had those obligations that they had to achieve,” he added. “They just may not have had that dedicated stormwater fee until that point.”

In Anne Arundel alone, the fees have helped fund nearly 200 watershed restoration and stormwater control projects, according to Michelsen. They not only reduce nutrient and sediment pollution in the Bay downstream but also in local waterways.

“I think a lot of people would and are arguing that that’s precisely why the regulations went into place — so that you see those kinds of improvements,” he said.

Hedrick Belin, president of the Potomac Conservancy, said the partnering approach has been critical to reducing pollution, helping to raise the Potomac River’s health score from a “D” to a “B.”

“In a time when stacking stressors threaten substantial progress on the Potomac,” he said in a statement, “this new executive order is a step in the wrong direction.” ■

Indigenous council leaves Chesapeake Bay Program talks

After two years, tribes say the Bay Program won't add them to the Executive Council

By Lauren Hines-Acosta

The Indigenous Conservation Council (ICC), which is made up of representatives from the seven federally recognized tribes in Virginia, announced on Sept. 21 that it will withdraw from talks with the state-federal partnership that guides the Bay cleanup effort.

The tribes will no longer hold discussions with the Chesapeake Bay Program after nearly two years of exploring how the ICC could become a fellow governmental signatory, or voting member, on the program's top policymaking body, the Chesapeake Executive Council. ICC staff say a recent meeting with the Bay Program showed that no progress could be made.

"The partnership is unwilling to give the tribes a seat at the table," said Melissa Ann Ehrenreich, ICC executive director. "This has been disappointing given that respect for tribal sovereignty was included as a core principle in the revised 2025 Chesapeake Bay Watershed Agreement."

In January 2025 the ICC issued a resolution calling for the Bay Program to make the federally recognized tribes signatories under the Bay Agreement. The resolution points out that tribal nations are not citizen stakeholders or special interest groups but have a government-to-government relationship with the United States.

As sovereign governments, the tribes say they should be represented on the Executive Council alongside its existing members: the governors of Maryland, Pennsylvania, Virginia, Delaware, New York and West Virginia; the mayor of the District of Columbia; the chair of the Chesapeake Bay Commission and the administrator of the U.S. Environmental Protection Agency.

Last December, the Executive Council authorized a study of how best to include the tribes, though it did not specify that meant inclusion on the council. A few months later, the council's Principals' Staff Committee said it would create a resolution by this winter on what that partnership would look like.

But those conversations halted at a Sept. 3 meeting at the Sharon Indian School in King William County, VA. Members of six Indigenous tribes met with representatives from Maryland, Pennsylvania, Virginia, the



Rappahannock Tribe Chief Anne Richardson speaks at the 2024 annual conference of the Sovereign Nations of Virginia in Glen Allen. Richardson also serves as chair of the Indigenous Conservation Council. (Lauren Hines-Acosta)

Chesapeake Bay Commission and the U.S. Environmental Protection Agency.

According to Ehrenreich, the purpose of the meeting was to begin drafting the partnership resolution. She said Bay Program staff proposed that Indigenous representatives join working groups or goal teams, but they could not promise signatory status.

"There was no real language that would indicate that the partnership itself would do anything but put the tribes into its existing structure and relegate them under the signatories, which is inappropriate," Ehrenreich said.

A Bay Program spokesperson said that the partnership's proposal reflected the consensus of the signatories.

"While the partnership did not extend an option for adding signatories, we remain committed to working together on the foundational elements of advancing and respecting Indigenous guardianship and Indigenous knowledge within watershed restoration planning and implementation," the Bay Program said in a statement.

"We stand with the tribes," said Keisha

Sedlacek, senior policy director with the Chesapeake Bay Foundation. "For far too long, they have not had a seat at the table when it comes to the Chesapeake Bay partnership even while delivering invaluable contributions on promoting broader goals of clean water, thriving habitat and healthy landscapes."

All seven of the tribes are doing restoration work, from rebuilding fish populations to conserving land. The Nansemond Indian Nation, for example, is building oyster reefs along its namesake river, and the Rappahannock Tribe is reacquiring its ancestral land for conservation.

"If you look at studies, Indigenous knowledge works," Ehrenreich said. "It's valuable. It's creating impacts. It's accelerating outcomes, but you don't just get to have that without upholding tribal sovereignty."

The Chesapeake Bay Commission has advocated for more support from Congress to advance the tribes' restoration work.

"We are disappointed that the reasonable but diverging viewpoints on how to grow a meaningful, respectful partnership could



Vanessa Adkins, councilwoman for the Chickahominy Indian Tribe, shared a resolution in April 2025 with the United Nations Permanent Forum on Indigenous Issues that asks the Chesapeake Bay Program to include the Indigenous Conservation Council among its signatory partners. (Courtesy of the ICC)

not be more quickly resolved, but the commission will continue to look for ways to support the tribes as we all pursue a healthy and resilient Chesapeake Bay watershed," said Anna Killius, executive director of the Chesapeake Bay Commission.

During this two-year process, consideration was given to how other governmental clean water programs have integrated Indigenous tribes at a leadership level, such as the Puget Sound Partnership.

"Our conservation efforts in the Chesapeake region are often held up as an example for a successful multijurisdictional restoration effort," Kristin Reilly, director of the Choose Clean Water Coalition, said in a statement. "Today, we officially fall behind other geographic programs when it comes to recognizing tribal sovereignty and authentically engaging Indigenous communities."

The ICC plans on working with non-governmental organizations, businesses and other governments to carry out Bay restoration work. Ehrenreich said that the ICC is open to talking with the Bay Program if things change in the future. ■

Chesapeake region marks passing of environmental leaders

Walter Boynton, Gerald McCarthy and Franklin Kury made lasting impacts

By Timothy B. Wheeler,
Lauren Hines-Acosta and
Carolyn Beans

A trio of environmental leaders who made their mark in Maryland, Virginia and Pennsylvania have passed away. Walter Boynton of Maryland, one of the Chesapeake Bay's pre-eminent scientists and communicators, died Sept. 14 after a long illness. Gerald McCarthy, who helped build an enduring network of environmental advocacy in Virginia, died peacefully at home on July 28. Former Pennsylvania legislator Franklin L. Kury, author of the environmental rights amendment that is now a part of the state constitution, passed away Aug. 16 in Hershey.

Walter Boynton leaves a legacy of more than 50 years of pioneering research and advocacy for his adopted Chesapeake watershed. Scientific colleagues and many others who have worked with Boynton over the decades mourned his death but hailed his contributions.

Beth Polidoro, director of the Chesapeake Biological Laboratory, where Boynton worked, called him "an icon of Chesapeake Bay science whose research and leadership profoundly shaped our understanding of the Bay."

Fernando Miralles-Wilhelm, president of University of Maryland Center for Environmental Science, of which CBL is a part, hailed Boynton "not only for his contributions to science, but also for his warmth, wisdom and humanity."

Patuxent Riverkeeper Fred Tutman put it more vividly: "A great tree has fallen in our midst," he wrote on Facebook.

Born and raised in Massachusetts, Boynton first came to CBL in Solomons, MD, in 1969 as a summer intern. He returned in 1975 to join the faculty there after earning his doctorate in systems ecology from the University of Florida.

Early on, Boynton teamed up with other scientists in Maryland and Virginia to investigate the then-mysterious disappearance of the Bay's underwater grasses. While some suspected herbicides or other toxic contaminants, the researchers ultimately identified the real culprits: excess nutrients from wastewater and fertilizer runoff, which cloud the water and block sunlight that the grasses need to grow.



Walter Boynton (Dave Harp)



Gerald McCarthy (Grant Burchill)



Franklin Kury (Tom Horton)

Over the decades, Boynton published or co-authored dozens of research papers, which in recent years have been cited nearly 18,000 times, according to Google Scholar. And, with his folksy way of breaking complex subjects down, he made it his business to clearly explain the science to policy makers and the public.

In 2009, the Coastal and Estuarine Research Federation honored Boynton and his longtime CBL colleague, the late Mike Kemp, with the Odum Award for Lifetime Achievement. He also received Maryland's Mathias Medal in 2016, to recognize his foundational contributions to Bay science.

Beyond the laboratory, Boynton was a founding board member of the Patuxent Riverkeeper organization. He also served on the board of the Nature Conservancy and spent more than a decade on Calvert County's board of zoning appeals.

Even after retiring in 2017, Boynton continued to publish. The most recent, which appeared online Aug. 1, he wrote with Donald Boesch, former longtime president of UMCES, and Jon Mueller, a law professor at the University of Maryland. Titled in part "Escape from Neverland," it makes the case for sticking with the total maximum daily load or "pollution diet" adopted by the Bay Program in 2010.

"He brought a very positive perspective," Boesch said, adding that Boynton would say, "there's no reason you can't do this."

After entering the environmental movement as it was gaining momentum in the 1970s, **Gerald "Jerry" McCarthy** used philanthropy to nurture a lasting network of environmental advocacy in Virginia.

McCarthy moved to Virginia in 1970 after being honorably discharged as an Air Force Captain who conducted nuclear

research. That same year, Virginia Gov. Linwood Holton appointed McCarthy as the first executive director of the state's new Council on the Environment.

He entered the environmental space as the movement was picking up speed with the federal government instituting the first national Earth Day, the Clean Air Act and the National Environmental Policy Act.

Locally, the movement was shaken after state regulators found that a plant in Hopewell, VA, had been releasing the toxic chemical Kepone into the James River for years. A federal judge fined the company \$13 million. The judge turned \$8 million of that fine into the Virginia Environmental Endowment (VEE) Fund, which would go toward improving the local environment.

McCarthy was VEE's executive director since it began in 1977 until his retirement in 2013. McCarthy used the funds from the disaster's wreckage to grow seeds of environmental advocacy. The endowment, leveraging matching funds, invested more than \$120 million in environmental efforts. Many of today's vocal and active organizations got off the ground due to the endowment.

"Jerry helped the foundation grow into a premier environmental funder," said VEE's current director, Joseph Maroon. "He left quite a legacy in Virginia's environmental and philanthropic communities and in service to Bay restoration and state government."

McCarthy received many awards for his work, including a Joint Resolution of the General Assembly in 2014. The University of Virginia also created the Gerald P. McCarthy Award for Leadership in Environmental Conflict Resolution in his honor.

He authored a book in 2024, *Blueprint for Going Green: How a Small Foundation Changed the Model for Environmental*

Conservation, sharing the story of what happened after the Kepone disaster.

In it he wrote, "There is one evergreen fact of life in environmentalism: It takes a lot of people working together over a long period of time to make improvements. The endowment stood on the shoulders of wonderful leaders in environmental conservation who came before us. Now, it's your turn. Go and do likewise."

Franklin Kury served three terms in the Pennsylvania House of Representatives from 1967 to 1972, representing parts of Northumberland County, including his hometown of Sunbury, as well as Montour County. He then served two terms in the state senate from 1973-1980, representing Columbia, Juniata, Montour, Northumberland, Snyder and Union counties.

Kury was a leader in passing environmental laws, including amendments to the Clean Streams Act. But he is most remembered for authoring Article I, Section 27 of the Pennsylvania Constitution, more commonly known as the environmental rights amendment.

The amendment states: "The people have a right to clean air, pure water and to the preservation of the natural, scenic, historic and esthetic values of the environment. Pennsylvania's public natural resources are the common property of all the people, including generations yet to come. As trustee of these resources, the commonwealth shall conserve and maintain them for the benefit of all the people."

In 1971, the amendment passed the house and senate with the support of every voting legislator across both parties. Pennsylvania voters then ratified it by a four-to-one margin.

"This amendment has helped protect Pennsylvania citizens and their environment and has inspired comparable constitutional amendments all over the world," wrote John Dernbach, emeritus professor of law at Widener University, in an online memorial.

"I'd like to be remembered as somebody who came to town with the idea of trying to improve our laws dealing with the environment and succeeded," said Kury in a 2006 interview for a legislative archive's oral history project. "When my children ask me what I did when I was in the House, I'm going to hand them a copy of Article I, Section 27." ■

Chesapeake grass beds expand for fifth year in a row

But total acreage across Bay region remains far from the long-term goal

By Karl Blankenship

Chesapeake Bay underwater grass beds expanded for the fifth consecutive year in 2025, driven in large part by the surprising resurgence of underwater meadows in the lower Bay.

Underwater grasses provide critical habitat and are one of the most closely watched indicators of Bay health. Last year's annual aerial survey found the most submerged aquatic vegetation, or SAV, since 2018. The coverage was sixth highest reported since the survey began in 1984.

Grass beds generally increased throughout the Bay in 2025, but the best news came in the high-salinity areas in Virginia. That area had the most underwater grasses ever seen in the survey — surpassing the record set in 2024 by 13%.

"We are just exploding in the saltiest waters of the Chesapeake," said Chris Patrick, a researcher with the Virginia Institute of Marine Science who oversees the survey. "The eelgrass is just doing phenomenal."

Overall, the amount of SAV in the Bay and tidal portions of its tributaries increased more than 7% in 2025 compared with the same areas in 2024.

But the 82,968 acres mapped by the survey almost certainly undercounted the extent of the grasses by thousands of acres. Extended periods of poor weather, government shutdowns and restricted access to some sites limited aerial photography in some places, primarily in Virginia.

Those areas contained 6,417 acres of SAV in 2024. Assuming those sites had similar coverage in 2025, scientists estimate that the Baywide total in 2025 was likely closer to 89,385 acres.

That's good news for the Chesapeake. Underwater grass beds provide an important refuge for juvenile blue crabs and fish, as well as food for waterfowl. Plus, they pump oxygen into the water, their roots help stabilize sediment, and their leaves buffer wave action.

The grasses are also a key indicator of Bay health because the plants require clear water to get the sunlight needed to survive. The region's goals to reduce nutrient pollution are aimed, in part, at improving water clarity for grass beds by reducing the amount of murky water caused by algal blooms.

Still, the estimated 2025 total was less than



A scientist holds underwater grasses from the Susquehanna Flats near Havre de Grace, MD. (Matt Rath/Chesapeake Bay Program)

half of the newly updated 196,600-acre restoration goal established by the state-federal Chesapeake Bay Program. The most SAV seen in recent decades was the 108,000 acres estimated in 2018, prior to an extended high-rainfall period that washed large amounts of sediment and nutrients into the Bay, causing extensive diebacks.

Scientists believe the positive trend is likely to continue when 2026 data is assessed because field observations were indicating continued expansion.

"The SAV population seems to be doing really well," said Brooke Landry, a biologist with the Maryland Department of Natural Resources and chair of the Bay Program's SAV Workgroup. "I think this year will be another good one."

Last year's survey showed that the grasses increased in most areas except for the upper tidal tributaries on the Western Shore, particularly in areas with the lowest salinity.

Patrick said it's unclear what caused those declines which, in many places, represented a continuation of losses seen in 2024.

That illustrates how grass beds are not the same throughout the Chesapeake. Beds in different areas consist of different species based on the salinity levels, and they can be impacted by local factors as opposed to Baywide conditions.

Notable expansions occurred in the Elk, Sassafrass and Back rivers, as well as parts of the upper Bay in Maryland. It had losses in the middle Potomac River, middle Rappahannock River and Chickahominy River.

The oligohaline zone has the least amount of potential underwater grass habitat. Its restoration goal is 13,100 acres.

Mid-salinity zone

The mesohaline zone, with a mid-range salinity, saw an increase. Scientists estimate that SAV covered 37,878 acres, including 34,926 acres that were mapped and about 2,900 acres thought to exist in areas not surveyed. That was up from 33,032 acres in 2024.

The mesohaline has the largest amount of potential SAV habitat — its restoration goal is 126,000 acres — and it stretches south from near Baltimore to the Rappahannock River and Tangier Island in Virginia. It includes large sections of most tidal rivers.

This zone had a sizable increase of more than 3,000 acres in Tangier Sound. Other areas with increases include portions of the central Bay, lower Chester River, Choptank and Little Choptank rivers, Fishing Bay, Manokin River, Big Annemessex River, lower Pocomoke River, lower Patuxent River and lower Potomac River.

Losses were observed in the Patapsco and Honga rivers, and in portions of the lower Rappahannock River.

High-salinity zone

The high-salinity, or polyhaline, portion of the Bay is in Virginia, stretching south from the Rappahannock River and Tangier Island to the mouth of the Bay. It had 28,142 acres, including 25,862 acres that were mapped and about 2,300 acres thought to exist in areas not surveyed. That was up from 25,266 acres in 2024.

That was good news because the region is dominated by eelgrass, a species that is particularly sensitive to warming temperatures and that had been in gradual decline for more than 20 years.

Patrick said the eelgrass is moving into deeper, cooler water. Also, improved water clarity provided the plants with more sunlight, and therefore more energy, which helped them better tolerate warmer water.

The polyhaline goal is 35,800 acres. ■

The survey assesses the status of SAV in four different salinity zones.

Tidal fresh zone

The tidal fresh zone, which includes the upper Bay and portions of its tidal tributaries, experienced a decrease in SAV. Scientists estimate that the zone had 18,652 acres last year, including 17,643 acres that were mapped and about 800 acres thought to exist in areas not surveyed. That was down from an estimated 20,221 acres in 2024.

Most of the tidal fresh area was fairly stable, though, with almost all of the losses occurring in several Western Shore tributaries. Mattawoman Creek, a Maryland tributary to the Potomac River, lost about 200 acres, while the upper Rappahannock River in Virginia lost more than 1,100 acres. The upper James River in Virginia lost more than 100 acres.

The goal for the tidal fresh zone is 21,700 acres.

Low-salinity zone

The slightly salty oligohaline zone held steady. This zone, a relatively small area that includes portions of the upper Bay and its tidal tributaries, had an estimated 4,712 acres, about the same as the 4,731 acres seen in 2024.

Menhaden fishery workers caught in the middle of debate

Pound-netters, purse-seiners, Omega Protein employees have much at stake in coming vote

By Lauren Hines-Acosta

Carolmane Diggs was seasick the first week he was on an Ocean Harvester vessel in 2011. It was his first time on a boat, ever. But his dad, with decades of experience fishing for menhaden, was there to help him. Diggs had explored college and the military but ultimately decided to be a fisherman “to make my dad proud.”

The Atlantic States Marine Fisheries Commission (ASMFC) will vote in November on whether to cut the company’s allowable menhaden catch in the Chesapeake Bay. Bait watermen believe the cut will mean more menhaden in their pound nets, while Diggs and other employees of Ocean Harvesters and its partner, Omega Protein, worry they’ll lose pay or even their jobs. Public comment on the cut is open until Oct. 9.

Menhaden are fatty fish that serve as food for wildlife throughout the Bay.

Many watermen catch menhaden in pound nets to use or sell as bait for catching crabs and other fish. That harvest is dwarfed, though, by the menhaden “reduction” fishery in the Bay. Omega Protein, based in Reedville, VA, and its fishing partner Ocean Harvesters catch tens of thousands of tons of menhaden annually to pulverize them into fish oil and fish meal.

The ASMFC has deemed the menhaden population not overfished along the East Coast. The population’s biomass, or weight, has increased and remained stable since the 1990s. But the commission cut the company’s coast-wide harvest by 20% last October after concluding it had previously overestimated the species’ abundance.

Still, debate continues over whether menhaden are overharvested in the Bay specifically and whether that affects wildlife, especially osprey and striped bass, whose diet depends partly on menhaden.

Maryland and Virginia bait fishermen have been catching less menhaden in the Bay in recent years. According to the Maryland Department of Natural Resources, bait fishermen harvested one million pounds of menhaden in 2024 compared to as much as 10 million pounds in years past.

Robbie Wilson, a pound-netter on Tilghman Island, MD, is a fourth-generation waterman. With people buying less seafood and diesel prices rising, he thinks this will



Carolmane Diggs, a mate for Ocean Harvesters, heads to the boat to get some sleep before his shift begins at 5 a.m. (Lauren Hines-Acosta)

be his last year fishing for menhaden.

“It’s not worth the hassle,” Wilson said. “The money’s not there.”

Tyree Smith, a Virginia crabber, said that the menhaden bait he buys comes from out of state and that its cost has doubled while the size has shrunk. Smith worries that the reduction fishery is taking too many menhaden from the Bay. He wants the commercial fishery to only harvest along the coast. But no research has measured the size or health of the menhaden population in the Bay.

Some answers may finally be on their way. After years of failed bills and advocacy, federal lawmakers gave \$2.5 million to the National Oceanic and Atmospheric Administration in February to conduct such a study. But some want to take precautionary steps now.

“The science is years away, and the warning signs are worsening,” said Will Poston, forage campaign manager with the Chesapeake Bay Foundation.

Environmentalists worry that declines in osprey breeding rates and striped bass populations are caused by a lack of menhaden.

The ASMFC will hold a vote at its meeting on Nov. 10-11 on whether to cut the

company’s harvest up to 50% in the Bay and add quota periods that would evenly distribute the catch over time.

Poston said the company can still catch all 125,000 metric tons of its allowable catch out at sea. But Diggs, now a mate with Ocean Harvesters, said high winds and waves from bad weather make fishing in smaller boats at sea more dangerous than in the Bay.

“That one concern does not supersede the health of the ecosystem,” Poston said, but he doesn’t want to ignore the health and safety issues at sea.

Commercial fishermen say that harassment from some Bay harvest opponents has become expected but rare. Mostly, other boats break up schools of menhaden before the industrial vessel can catch them. The fishermen say, though, the incidents have become more personal in recent years.

David Haynie, bosun with Ocean Harvesters, was aboard a harvesting boat when a jet skier yelled obscenities and drove over a net in 2023.

“The harassment is nerve wracking because you don’t know when a certain individual could just be on his worst day and get mad at us and do something very irrational and harm us,” Haynie said.

The menhaden reduction fishery has shrunk over time, whether through regulation or lack of fish. The harvest peaked in 1956, catching more than 700,000 metric tons of menhaden with at least 20 factories along the coast. But the industry grew and contracted alongside the fish population in the 1970s and 1990s. Now, only Omega Protein remains, and Virginia is the only state on the coast allowing harvest for the reduction fishery.

Ben Landry, vice president of public affairs for Ocean Harvesters, said the company has survived past cuts by retiring four boats since 2012 and cutting staff through attrition.

According to a report by the ASMFC’s Committee on Economics and Social Sciences, there will be a “break-even threshold” where, if the harvest limit is pushed too low for the company, it will have to shut down instead of instituting layoffs. It’s unclear where that point lies.

It’s also unclear if any layoffs would take place following the proposed cut. If the company catches less fish, employees would be paid less. Ocean Harvester fishermen are paid based on the number of fish caught. Diggs expects to lose \$10,000 over the season due to the most recent cut.

The fishery employs about 510 people directly and indirectly. Because menhaden fishing is seasonal, many employees have side jobs, from cutting trees to catering to oystering. If layoffs were to happen, many said they would retire early or need to commute two hours away to find something with the same pay and benefits.

Omega Protein is the main employer in Northumberland County, VA. According to the socioeconomic report, “job losses in this sector could potentially lead to structural unemployment.”

The report added that bait fishermen have more “elasticity” than the reduction fishery and could switch to other species if menhaden continue to be scarce. The report relied on data from 2010, though, and did not account for how fuel prices and labor markets have evolved.

If the proposed cut in Bay harvest is approved, Poston with the Bay Foundation said he hopes that bait fishermen would soon feel relief. ■



Decades later, a big gap persists for key Bay pollution goal

Computer model shows region hit 57% of 2025 goal, with uneven progress among states

By Jeremy Cox

The leaders of the Chesapeake Bay cleanup have officially missed another deadline for achieving their nutrient-reduction targets needed to meet the estuary's water-quality goals — the third time that's happened in as many tries.

News of the missed deadline didn't come out of the blue. State and federal leaders of the Chesapeake Bay Program acknowledged years ago that the effort would fall short before time ran out at the end of 2025.

But the Aug. 6 release of new computer model results confirms it. And the release serves as a critical inflection point, presenting in bare numbers exactly how much progress was made — and how much wasn't. Overall, the data shows that the region met and surpassed its goal for reducing sediment pollution, but it missed the mark widely for nutrient pollution.

Some leaders in the Bay cleanup effort are portraying the 2025 progress as a near-miss, a feat made all the more impressive by the headwinds they faced from accelerating population growth and climate change.

President Trump's White House applauded the progress depicted in the models. An executive order, issued Sept. 16, overhauling the federal cleanup framework cited the "significant improvements" in the modeled data and in other indicators as a motivation for the changes.

"What we're trying to do here is really hard," said Joe Wood, a Virginia senior scientist for the nonprofit Chesapeake

Bay Foundation and a member of the Bay Program's science advisory panel. "We've put a lot of effort into it, and we're better off for that effort."

But critics say the model numbers reveal a lack of meaningful headway on several key fronts, pointing to, among others, a continued lag in farm pollution reductions and Pennsylvania's across-the-board shortfalls.

Some also question the validity of the computer models themselves. Real-world measurements often show less improvement in some areas and greater progress in others. And many tangible indicators of progress, ranging from tree canopy expansion to the striped bass population, have stagnated in recent years.

Taken together, critics say, the 2025 modeling results don't bode well for

achieving the next cleanup deadline, which the Bay Program extended last year to 2040.

"[The results] give people the impression we're making all this progress," said Fred Tutman, the Patuxent Riverkeeper. "It's obviously a step in the right direction. I don't want people to think I'm a naysayer. But I'm pessimistic if we don't get real."

The EPA has the authority to punish Bay states for failing to make adequate progress. Such "backstops" can include withholding federal grants and forcing state regulators to crack down harder on reducing pollutants. A spokeswoman said the agency is reviewing whether the missed 2025 deadline, which was set voluntarily by Bay Program partners, warrants such action.

"EPA will keep working with Bay jurisdictions on nutrient and sediment reductions,"

Kelly Offner said in a statement, "and has not made any final decision about whether to use its backstop authority."

History of struggle

The Chesapeake Bay Program is a voluntary, regional partnership launched in 1983 between Bay states and the federal government to steer the cleanup efforts.

One of the program's landmark moments came in 1987, when leaders established the region's first nutrient-reduction goals. But they failed to meet them by the 2000 deadline. Another deadline was set for 2010. That also passed without hitting the mark. Now, 2025 can be added to the list.

After the Bay Program fell short of its 2010 goals, the EPA took a new tack by setting cleanup targets under a Total Maximum Daily Load, or TMDL. The Bay Program then tied its water-quality goals to that TMDL and set a voluntary deadline of 2025 for achieving them.

The TMDL, also known as a "pollution diet," assigned strict caps on how much each state could pollute the Bay. Those triggers — sediment as well as two nutrients: nitrogen and phosphorus — are blamed for a host of water-quality problems. The most notable among them are "dead zones," areas of water so depleted of oxygen they can no longer support most aquatic life.



Reducing nutrient pollution from farmland has been difficult in all Bay states, but Pennsylvania faces the biggest challenge because it has the most farms. (Dave Harp)

Top photo: Boats rest in the harbor of Cambridge, MD, on a winter day. (Dave Harp)

Role of computer models

The Bay Program computer models are the primary benchmark by which officials measure cleanup progress. Scientists feed mountains of data about land use, storm-water runoff, wastewater plant discharges and air pollution into the models to estimate the amount of nutrients and sediment reaching the Bay.

Those inputs are then balanced against pollution-control measures reported by the states — such as wastewater plant upgrades, stream restoration projects, fencing livestock out of streams and planting cover crops.

“The model is a tool, and it extrapolates and it guesses what the real conditions are like,” Wood said.

To get the clearest picture of the Bay’s water quality, he added, it’s critical to also consider monitoring results.

That’s because there can be gaps between the modeled results and reality. The results of pollution reduction projects can take years to yield cleaner water, especially in groundwater. Due to these lag times, the watershed model estimates the future impacts of actions taken today.

In addition to providing a window into the Bay’s health, the computer models help officials decide how to spend billions of state and federal dollars on cleanup projects, including which geographic areas and which sectors to target.

The 2025 modeling suggests the cleanup has had mixed results since 2009, the baseline year under the TMDL. Here’s what the latest numbers show.

- **Nitrogen:** The region trimmed its nitrogen releases to 237 million pounds a year in 2025, a 12% reduction. But that fell short of the TMDL’s goal of a 25% decrease.
- **Phosphorus:** The region reduced loads to 13.2 million pounds a year, equating to a 21% reduction, a bit below the 24% goal.
- **Sediment:** Understanding the sediment goal is a bit more complex. Modeling updates undertaken several years into the TMDL’s existence dramatically reduced the required reduction, from a 20% decrease to 1%. The region easily met that target, cutting sediment discharges by about 7%, according to the models.

State by state

Of the three contaminants covered by the TMDL, nitrogen is the most important to reduce for meeting the Bay Program’s primary objective: controlling dead zones in deep portions of the upper Bay, experts say.



Damon Jenkins of the U.S. Geological Survey conducts amphibian research and monitoring at Great Falls Park in Virginia. (Courtesy of USGS)

That’s because it’s the main fuel source for algae, which rob the water of oxygen when they die, leading to dead zones. But water quality goals in those areas are the most difficult to achieve.

Regionwide, efforts to reduce nitrogen loads achieved just 57% of the 2025 goal. A few states did most of the heavy lifting. West Virginia and the District of Columbia each surpassed their targets. Maryland fell only 1% short of the goal. Virginia came within 15% and New York within 40%. But Pennsylvania trailed far behind, landing 85% behind while Delaware actually dumped more nitrogen into the Bay in 2025 compared to 2009.

Experts caution that while trends identified by the models can be taken at face value, the exact numbers should probably be taken with a grain of salt. For example, one of the reasons that Pennsylvania appeared to fall so far behind on its nitrogen goal is that the latest estimates include a backlog of fertilizer data that disproportionately impacted that state’s nutrient ledger.

Also, the model projections undercount the nutrient reductions needed to achieve Bay water quality goals. That’s because they don’t include the 6 million pounds of annual nitrogen reductions needed to offset the impact of Conowingo Dam on the Susquehanna River — the dam is releasing more nutrients now that its reservoir is mostly filled with sediment. Those reductions are addressed in a separate cleanup plan, where progress also lags.

Maryland leaders celebrated their progress on Aug. 11 during a waterfront press conference on the Eastern Shore. The state had met 100% of its sediment and phosphorus goals and 99% of its nitrogen goal, Democratic Gov. Wes Moore boasted.

But the models show that much of

Maryland’s nitrogen success came from over-delivering on wastewater treatment upgrades while under-delivering on cleaning up agricultural runoff. Critics say it’s far easier to tackle so-called “point” pollution because it stems from a single source, such as a sewage plant. Reducing “nonpoint” pollution is far trickier because it deals with many separate sources, such as the thousands of farms across the state.

The location of those efforts matters, too.

Since most of Maryland’s population is on the Western Shore, those wastewater improvements have yielded a bigger share of water-quality benefits to the western side of the Bay. But because the Bay’s currents flow in a mostly counterclockwise direction, that water flushes out to the Atlantic Ocean relatively quickly. The result is a more ephemeral improvement for the Bay.

Meanwhile, the water on the Eastern Shore’s agriculture-dominated landscape has been slower to realize cleanup gains. And since the water on that side tends to stick around longer in the Bay, it disproportionately impacts the estuary’s water quality.

Sector by sector

Across the Bay’s 64,000-square-mile watershed, some sectors ran circles around others in reducing nitrogen pollution. Nearly two-thirds of the reduction since 2009 came from one sector: wastewater.

Alarming, some sectors saw increases in nitrogen pollution over the 16-year period. Stormwater runoff from developed areas was one of them, contributing about 5% more pollution to the Bay in 2025 than it did in 2009. Septic systems were another, increasing by approximately 3%.

Farm runoff was by far the biggest source of nitrogen in the Bay. Despite huge public and private investments in

pollution-fighting practices, farmland sent 116 million pounds of nitrogen to the Bay in 2025, down just 4% from the 2009 total.

In her statement, the EPA’s Offner said that agriculture “continues to be a priority focus for nitrogen reductions in the Bay watershed.” To that end, the latest state-written “watershed implementation plans” call on the sector to do more, she added.

That will be difficult, critics say. One of the main reasons is that many farms are intensifying their practices — raising more crops and livestock on less land — to meet growing global demand.

“We’re making it a lot harder to get to the measurable outcomes because we’re adding more nitrogen and phosphorus to the land,” said Greg Noe, a research ecologist with the U.S. Geological Survey (USGS).

The years ahead

Beyond the Bay Program’s models, a picture emerges of an estuary still struggling to recover from neglect and misuse.

A study released by the USGS in September shows that the biological conditions improved for just 1% of the watershed’s total stream length over the past 40 years. And in the latest analysis, only 29% of the region’s rivers and streams met federal water quality standards, down from a high of 42% in the mid-2010s.

“This is a marathon we’ve only begun running in a generation’s time, dealing with an issue that has been impacting the Bay literally for centuries,” said the MDE’s Ortiz, who served as administrator of the EPA’s Mid-Atlantic region during the Biden years. “In approximately 300 years, there were few controls on the impacts to our waterways and the Bay, and only in recent decades have we mobilized resources and the legal structure to control the present and deal with the past.”

New computer models are expected to be available by 2030. With those, the Bay Program will revise how deep their nutrient and sediment cuts must be to achieve Bay goals, and it will assign each state their appropriate share.

How will the states and federal government accomplish in the fourth attempt what they were unable to do the first three times?

“That’s the big question,” said the Bay Foundation’s Wood. “We didn’t get to our goals [in 2025], and we’re sort of in this moment of reconsideration. Like, what do the next 15 years look like? What I think is important is we set up implementation and restoration to be even more effective in the next 15 years.” ■

VA tells Richmond airport to reduce its use of PFAS

Bay Foundation and Chickahominy Indian Tribe call for specific limits on 'forever chemicals'

By Lauren Hines-Acosta

Concerns around the nearly indestructible family of pollutants known as PFAS have been growing as environmental groups have pushed Virginia to add limits in permits across the state. But the Richmond International Airport may be one of the first required to reduce PFAS, or “forever chemicals,” in its discharge.

The Richmond airport is renewing its stormwater discharge permit, and the Virginia Department of Environmental Quality (DEQ) added general requirements for the airport to monitor and lower its discharge of PFAS. Some stakeholders say that’s not enough and are asking for specific reduction targets.

DEQ is still reviewing public comments and plans to host a public hearing on the permit. The agency has not yet set a date.

PFAS, or per- and polyfluoroalkyl substances, are used in a wide range of products for their stain-resistant and heat-resistant properties. Toxicity varies between compounds, but many have been linked to health issues such as cancer, developmental effects and cardiovascular problems.

At the airport, concerns focus on firefighting foam that contains PFAS. PFAS in the foam can enter waterways through stormwater runoff or seep into pockets of groundwater.

The Federal Aviation Administration required the airport to test and use firefighting foam in case of an emergency. But as of 2019, the airport has been using a closed loop system that captures and recovers foam when calibrating emergency equipment. The airport does not use the foam during firefighter trainings.

The Virginia National Guard has leased two sites on the property and has held firefighting training exercises with the foam.

According to a sampling study conducted by the environmental services firm LimnoTech, PFAS were found at all three stormwater discharge sites that lead to the Chickahominy River. Specifically, it detected PFOS. PFOS and PFOA are two possibly carcinogenic compounds within the PFAS family that are of greatest concern for public agencies. The study suggests that the main source of PFOS for one of the sites is near the former burn pits and current



An airplane heads for the Richmond International Airport in June. (Lauren Hines-Acosta)

testing areas where staff trains with water on the airport property.

DEQ has identified the airport as a potential source of the PFOS found in White Oak Swamp, which joins the Chickahominy River about 11 miles east of Richmond. As a result, the Virginia Department of Health issued warnings about eating fish caught in the river due to high levels of the compound in fish tissue.

Downstream, Newport News Waterworks has detected PFAS in the city’s drinking water supply system, which primarily comes from the Chickahominy River. Ron Harris, asset sustainability manager with Newport News Waterworks, said they shared their monitoring data with DEQ, which confirmed that the airport is the source of the pollutant.

While PFAS has been detected in the city’s treated water, the annual average level of the PFAS samples has been below the U.S. Environmental Protection Agency’s proposed safety threshold. Nonetheless, Harris is installing equipment to ensure compliance with new federal regulations by 2029.

“We’re designing and having standby systems because, as you might expect, we have no idea what the airport’s actually going to do,” Harris said. “You have floods one year and droughts the next, and that amount of water really does change the way that these contaminants move about in the river.”

The EPA released a proposed rule in May that sets standards for PFOA and PFOS at 4 parts per trillion each in drinking water. Public drinking water systems have until 2029 to add equipment to meet those standards.

Virginia lawmakers recently passed Senate Bill 293, which directs the Capital Region Airport Commission to stop using



Bald cypress trees grow along the shore of the Chickahominy River in Virginia. (Dave Harp)

firefighting materials containing PFAS at the airport by Jan. 1, 2030. The commission must submit a discontinuation plan to the Virginia Aviation Board by Nov. 15, 2026.

The airport is transitioning to a foam with lower levels of PFAS. In the meantime, the airport’s website says it will only use the foam during emergencies and will isolate, collect and dispose of it to limit contamination.

The draft permit requires the airport to make a PFAS pollution minimization plan that will identify where the compounds are coming from, which compounds are present, possible treatments and an implementation schedule. The permit also requires the airport to monitor for PFAS quarterly at each discharge site and submit an annual progress report showing “measurable progress toward reducing” PFAS levels.

But the nonprofit Chesapeake Bay

Foundation submitted comments asking the state to set “meaningful targets” in the permit to reduce PFAS discharges and to host a public hearing.

“Virginia must take meaningful steps to control PFAS runoff from Richmond International Airport,” said Patrick Fanning, the foundation’s Virginia staff attorney. “These harmful chemicals can linger in the environment for years, and leaders should be making every effort to keep people and waterways safe.”

The foundation recommends that the state adopt the EPA’s human health criteria for PFAS or its proposed standards for PFOS and PFOA. Irina Calos, DEQ spokesperson, said that the department is still considering public comments and the permit is not yet finalized.

The Chickahominy Indian Tribe is also calling for DEQ to set enforceable PFAS limits that would trigger corrective action if not met. Chickahominy environmental director Dana Adkins said monitoring for PFAS is not enough.

Between the CSX train derailment dumping coal into the river last winter and pollution from the airport, Adkins said DEQ should take a more holistic approach to the river’s health. He suggested a Chickahominy River monitoring framework, which would include the state working with both the Chickahominy Indian Tribe and the Chickahominy Indian Tribe Eastern Division to keep the river healthy.

“By not placing enforceable limits on the airport’s stormwater discharge permit, that’s not responsible economic development,” Adkins said. “We want to see the airport grow. We want to see it prosper, but it shouldn’t be to the detriment of the health of our environment.”

In the Capital Region Airport Commission’s comments on the fact sheet accompanying the draft permit to DEQ, the commission said it will consent to the PFAS monitoring and pollution minimization plan.

John Rutledge, chief operating officer with the Capital Region Airport Commission, said the airport started monitoring and investigating PFAS before the permit process began and shared that information with regulators. The commission has also been exploring remediation methods and talking with the industry about how to transition away from older firefighting foams. ■

Stormwater woes flow downhill, but funding often doesn't

Impacts of land inequity continue to plague low-income communities, people of color

By Jeremy Cox

The Turner Station neighborhood was hardly what someone might call a developer's dream.

Much of it was untamed marshland that often flooded when it rained. If tides or storms caused the adjacent Back River to escape its banks, the low-lying terrain gave way to a sheet of water. Today, all that still happens — but now there are homes and businesses in the way.

The location of the historically African American, low-income neighborhood is no accident, said Dillon Mahmoudi, an urban and economic geographer at the University of Maryland Baltimore County (UMBC).

"It's called altitudinal discrimination," Mahmoudi said. "This is a fancy way of saying that rich people live [uphill] and poor people live in low-lying areas."

That cheap land may equate to cheap housing prices, but it often comes with a steep cost: a significantly higher threat of floods. And the risk is rising, Mahmoudi said, as developers continue to build at higher elevations, displacing more stormwater onto downhill communities. And sea level continues to rise, increasing the frequency of tidal inundation.

Mahmoudi wants to help places like Turner Station avert this wetter future, so he and some UMBC colleagues launched a research lab earlier this year. A \$1 million congressional earmark secured by U.S. Rep. Kweisi Mfume of Maryland, a Turner Station native, got the project off the ground.

It has a complex name: the UMBC Laboratory for Flood Risk Impact Assessment and Adaptation in Impoverished Maryland Communities. But its mission, Mahmoudi said, is simple: analyzing why these vulnerable places are flooding and suggesting what can be done about it.

Researchers will study four communities across the state — two in urban and suburban settings and two in rural areas. "We think that that will actually give us a good picture of what communities within Maryland can do," Mahmoudi said.

The researchers plan to develop three-dimensional flood maps showing current and future flood risks down to the street and house level.

"It won't be a bunch of bar graphs," said Alan Yeakley, another UMBC professor



Margaret Risher, 96, lives on a road in the Maryland community of Turner Station, which frequently deals with flooding. (Jeremy Cox)

and the project's co-leader. "It'll be like, 'Here's where you live, and [do you] see what is happening here in 20 years? This may not even be here anymore,'" he said, adding: "Hopefully, it will connect in ways that scientists normally don't connect."

The researchers also want to document what local officials are doing — and not doing — to combat these problems. "We think that we can put together kind of a playbook," Mahmoudi said. "It will be like a living document that we revise and add to, so that it reflects the best practices of each community."

Mahmoudi and Yeakley are still trying to pin down three of the communities they want to study. They are leaning toward southern Baltimore City for the urban category, and they're looking to the Eastern Shore to represent the rural ones. So far, the only place they can say with certainty that's going forward is Turner Station.

White and Black workers first flocked to this area southeast of Baltimore after World War I. Many were drawn by its burgeoning factories, including a Bethlehem Steel mill. African American families, though, were excluded from the new housing in Dundalk, so many settled in Turner Station.

It wasn't the best land, but it was land they could call their own, said Margaret Risher, a 96-year-old retired labor and delivery nurse and lifelong Turner Station resident.



A vehicle kicks up floodwater in the Turner Station community near Baltimore after a rainstorm in May 2026. (Courtesy of Olivia Lomax)

"This was nothing but a swampland when I was coming up," said Risher, who lives in a brick townhouse with a rectangle of grass out front bordered by a chain-link fence. Anytime it rains hard, passing vehicles on Sollers Point Road kick waves of floodwater up to her porch steps.

Several roads in the neighborhood have the same problem, residents say. Over the years, the frequent flooding has ruined cars, destroyed store merchandise and forced homeowners to replace ground-level air-conditioning and heating units.

According to a 2022 U.S. Army Corps of Engineers report, the community's main issue is that heavy rainfall often is unable to drain away. Under normal conditions, it should flow downhill into a drain inlet

and gush through pipes into Bear Creek. But the stormwater system is so close to sea level that the creek's water frequently backs up into the pipes, limiting their capacity to capture and discharge rainwater.

And climate change is expected to make things worse, the Army Corps says. They predict that by 2080 an intense storm would likely drop 1.5 more inches of rain than an equally intense storm would today. Meanwhile, "nuisance" tides are expected to reach 5.2 feet above sea level, an increase of nearly 2 feet.

Residents have banded together in recent years to draw attention to the neighborhood's flooding problems and push for funding to fix it. "We started raising more hell," said Gloria Nelson, president of the Turner Station Conservation Teams.

"I tell all my Facebook friends that you've got to email and make calls," said Olivia Lomax, another longtime resident. "As long as we're quiet, they'll just think, 'Oh well, they don't care.'"

They've cobbled together several million dollars from state and federal sources, including \$3 million championed by Mfume earlier this year for the resilience project. But Risher and other residents say that tangible help hasn't come fast enough.

"They're not telling us when they're going to start," she said.

Lauren Buckler, director of the Baltimore County Department of Public Works and Transportation, said she understands residents' frustration. But, she added, it takes a lot of planning to solve stormwater problems as complex as those in Turner Station.

It also takes money, she said. So far, the county doesn't have enough of it.

The first and most-needed project on the list is installing a new storm drain and pipe outlet in the flood-prone spot in front of Risher's home near the Sollers Point Multipurpose Center. Officials don't have enough funding to cover the \$11.7 million price tag, so they plan to tackle the job in phases, Buckler said.

That's just the beginning. More than a dozen projects are planned across the community, totaling more than \$350 million. They include a floodwall, drainage ponds, shoreline restoration efforts and backflow preventers on outfalls. But there is no official timetable for the work, Buckler said. ■

Osprey woes in the Bay worsen, latest survey finds

Report cites 'food stress' from menhaden scarcity but says that causes are unclear

By Timothy B. Wheeler

Osprey breeding continues to falter around the Chesapeake Bay, a new survey has found, with the meager hatching and survival of chicks this year well below what is needed to maintain the population.

The Center for Conservation Biology at the College of William & Mary reported Sept. 14 that the 2026 osprey breeding season in the Chesapeake region was the worst recorded to date. The center began reporting the decline of osprey breeding in Virginia's Mobjack Bay several years ago but expanded the nest checks Baywide starting in 2024.

This year, biologists and volunteers from nine different state and federal agencies, academic institutions and nonprofit organizations monitored 937 osprey pairs in 23 areas of the Bay from March through August.

Roughly four out of every five pairs that nested in brackish waters along the Bay's mainstem and its lower tributaries failed to fledge any young, according to Bryan Watts, the center's director. Birds migrating to those waters in the spring produced just 0.25 chicks per pair, Watts said, which is far below the range of 0.8 to 1.3 young per nest needed to maintain their numbers.

The Chesapeake Bay harbors the largest osprey breeding population in the world, but the current nesting slump is worse than it was when widespread DDT pesticide poisoning decimated their numbers in the 1970s, Watts said.

"Given the poor reproductive rates recorded in recent years, this population is not sustainable," Watts said. He first raised that specter in 2025, but in this report warned that unless things change, the Bay's ospreys could decline by 50% over the next decade.

The survey report comes as East Coast fishery managers are being pressed by sports anglers and conservationists to slash the large-scale commercial harvest of Atlantic menhaden in the Bay.

The nest survey report heightens concerns voiced in recent years by conservationists that ospreys may be struggling to reproduce because there aren't enough menhaden in the Bay to sustain them. Menhaden are a nutrient-rich "keystone prey species" for many ospreys in the Bay, Watts said, and survey results this year and earlier have



Bryan Watts, director of the Center for Conservation Biology, uses a pole-mounted mirror to peer into an osprey nest on a navigation marker in Virginia's James River. (Dave Harp)

indicated the birds' nesting failure stems from "food stress." Among the evidence he cited: female ospreys laying fewer or even no eggs, emaciated chicks and even some young starved to death in the nest.

The Atlantic States Marine Fisheries Commission is scheduled to vote in November on a plan that would impose new limits on the Virginia-based fishing fleet that harvests menhaden for reduction, or processing into animal feed and human dietary supplements. The commission, which regulates the near-share catch of migratory fish, is considering lowering that fleet's Bay harvest by up to 50% and distributing that harvest more evenly from spring through fall.

A six-vessel fleet operated by Ocean Harvesters pursues menhaden with the aid of spotter airplanes in coastal waters and in Virginia's portion of the Bay. Maryland does not permit it. The fleet's catch is landed in Reedville, VA, for processing at a plant there owned by Omega Protein.

That reduction fishery has long been controversial, especially in the Bay, which is a prime nursery area for the coastal menhaden stock. Conservationists and sports anglers contend that the Ocean Harvesters fleet leaves too few fish in the



A pole-mounted mirror shows three eggs in an osprey nest, along with a small object apparently picked up by the adult ospreys. (Dave Harp)

water for striped bass and other creatures to sustain themselves. Osprey lovers have joined the chorus in calling for the menhaden harvest to be limited.

In some parts of the Chesapeake, Watts said, the ospreys' diet has shifted radically away from relying on menhaden, leading to smaller broods and more nesting failures. Ospreys that nested in fresher water up the Chester, Patuxent, Potomac and James rivers, where the birds can prey on fish other than menhaden, fared better. But the vast majority of the nests in menhaden-dependent

brackish water, and their reproductive woes, outweighed the success of others upriver.

While many recreational anglers and conservationists blame Ocean Harvesters for the apparent shortage of menhaden to feed striped bass and ospreys, some fishery scientists say there is no solid evidence to support those claims.

In this report, Watts demurred from pointing fingers.

"The underlying causes of reduced availability of menhaden to osprey are not clear," he wrote. Besides commercial harvest, he cited factors such as climate change and changes in the distribution or migration patterns of menhaden that might be delaying their entry into the Bay in spring, when nesting ospreys need them most.

"Ospreys are unable to successfully adjust their breeding chronology when large numbers of menhaden do not arrive until late June or July," he noted.

Ocean Harvesters responded to the survey report by stressing that Watts did not say what was causing ospreys' food stress. Other factors could also affect the birds' reproductive success, it said, such as storms, heat stress and competition from other species for prey.

The company also pointed out that its fleet is not allowed to begin fishing in Virginia waters until early May, and that in 2026 it did not begin until early June. Nor are osprey nesting declines limited to the Chesapeake, it noted, citing reports from elsewhere along the East Coast and even on the Pacific Coast.

"We are not disputing the reproductive conditions reported by the center," Ocean Harvesters said. "The point is simply that neither [the center] nor [the U.S. Geological Survey] has established that commercial menhaden fishing caused them."

A 2025 assessment by fisheries experts found that the coastwide menhaden population is not overfished, but it did not look specifically at conditions in the Chesapeake. Sports anglers, environmentalists and some scientists contend that the reduction fishery may be causing or contributing to a localized depletion in the Bay. Federal and state funding has been provided to conduct such a study, though it could take several years to conclude. ■

PA governor issues order on data center development

Shapiro aims to control explosive AI-driven growth of huge data warehouses

By Carolyn Beans

With a few dozen data centers already up and running in Pennsylvania and proposals on the table for over 100 more, public opposition is growing — especially to the new hyperscale projects intended to support AI. Like his counterparts across the Chesapeake Bay region, Gov. Josh Shapiro is reading the room.

According to a Quinnipiac University poll released in July, 74% of Pennsylvania voters say they would be against building an AI data center in their community. And on August 18, Shapiro signed an executive order intended to give municipalities more control over data center development and to establish stricter guardrails for those projects. Governors in Maryland and Virginia have since followed suit.

Shapiro's order is "an important way to address concerns about consumer impacts, environmental impacts and public health impacts from data centers," said Robert Routh, the state's policy director for the Natural Resources Defense Council.

Shapiro, a Democrat, was once a champion for data center development. In June 2025, his administration announced a \$20 billion Amazon investment for AI infrastructure in Pennsylvania. "Our team worked closely with local leaders and Amazon to land this deal," he said at the time.

But with public outcry growing and the number of proposals multiplying, the Shapiro administration is attempting to place checks on the industry. In a May 2026 precursor to the executive order, Shapiro's team announced the Governor's Responsible Infrastructure Development (GRID) initiative, intended to establish "strict standards that data centers must comply with to receive support from the commonwealth."

Those standards include commitments to economic development, energy affordability and transparency. They also address environmental protection, such as requirements for technologies that minimize water use and air pollution. In exchange, data center developers could expect speedier permitting through the PA Permit Fast Track Program.

But compliance with GRID is voluntary. The new executive order adds teeth to the program and gives more power to local communities.



Pennsylvania Gov. Josh Shapiro signs an order establishing stricter "guardrails" for data center development and giving localities more control over proposed projects. (Commonwealth Media Services)

Now, developers who sign a legally binding agreement with the state Department of Environmental Protection to meet GRID requirements can immediately submit permit applications for review. But DEP will not issue those permits until municipalities have approved the project.

If a developer refuses to sign the agreement, DEP will not even begin reviewing its permit applications until local approval is secured. And the department will not issue any permits until all applications have been submitted. Developers who do not agree to GRID will also not qualify for the existing tax exemption on data center computer equipment.

The order also removes all data center proposals from the PA Permit Fast Track Program, prohibits developers from using nondisclosure agreements and requires data center operators to report energy and water usage to DEP annually beginning in July 2027.

"There are no AI data centers up-and-running right now in Pennsylvania," Shapiro remarked at his executive order signing ceremony. And only two have completed DEP review, according to the department's new Data Center Permit Tracker website. One of those is in Westmoreland County and the other is one of two planned for Lancaster County.

The expectation, one administration official said on background, is that these new requirements will help distinguish projects

that may never be built from "projects that are serious, have financing and access to power, and have a committed end user."

The order means that developers cannot use the state's approval as leverage at the local level, said David Sanko, executive director of the Pennsylvania State Association of Township Supervisors. Developers, he adds, will no longer get their state permits first and then say, "Well, the state already says 'okay.' Why are you in the way?"

Kirk Stoner, director of planning for Cumberland County, across the Susquehanna River west of Harrisburg, wishes the GRID guidance had come sooner. His county is home to the hotly contested \$15 billion PAX-1 data center project in Middlesex Township. Some of the arguments over energy, water and air quality could have been more focused if there had been more definitive information on resource impacts to consider up front, he said.

But exactly how the executive order will play out in individual towns isn't yet clear. "A lot of the ordinances that I'm seeing here in Cumberland County are really strict, and I'm not sure that there's going to be a lot of projects moving forward to the state level," Stoner said.

A municipality might, for example, restrict data center development to a minimum lot size of 40 acres within an industrial zone that doesn't contain available lots that size. Stoner said it gets the question, "At

what point does the private sector and the data center industry start to push back on some of those and come in and challenge ordinances to say they're exclusionary?"

Stoner also wonders whether some municipalities might actually request that DEP complete reviews of environmental permits first, so they don't waste time and concern citizens with projects that might ultimately be killed at the state level.

Another question is how many data center developers will sign the GRID agreement.

"In distinguishing speculative proposals from real projects, it's important that rules are not changed midstream, impacting ongoing investment in verified and responsible data center projects," said Dan Diorio, executive vice president of state policy and government affairs for the Data Center Coalition, a trade association. "Companies have made plans, [and] communities have prepared for economic opportunities."

As of September 18, one month after the executive order was signed, a Shapiro administration official told the *Bay Journal* that no data center developers had signed on.

Sanko, of the township supervisors association, expects that data center developers will dedicate time and attorney fees to understanding exactly what the order means before signing. He predicts none will openly refuse to sign before election day.

The upcoming November gubernatorial election is a reminder that executive orders come and go with administrations.

There are more than a dozen bills now pending in the Pennsylvania legislature that would add protections for communities considering data center proposals, said Michael Helbing, executive director of Penn State's Center for Energy Law and Policy.

One such bill, HB 2650, would incentivize compliance with GRID by only offering the existing tax breaks on data center computer equipment to those who follow the initiative's standards. The bill passed the state house in June 2026 but has not been brought to a vote in the senate.

Shapiro took "a critical step forward," but this does not mean "mission accomplished," said Routh of the Natural Resources Defense Council. "If we want binding requirements on data center projects, [GRID] has to have the full force of law behind it, which requires legislation." ■

Crippled by a cold snap, MD wineries replant and reset

Springlike temperatures followed by deep freeze in March damaged vineyards across the state

By Amanda Loudin

For the Maryland wine industry, climate change is a paradox. It has helped the industry diversify and expand as average annual temperatures rise. But last spring an extreme temperature swing, another hallmark of global warming, devastated vineyards across the state.

For several days in March, temperatures soared into the 80s across the region, 30 degrees higher than average. Sensing an end to their winter's nap, grapevines in Maryland began budding out. Then came April 21, with several hours of temperatures in the mid-20s. Vineyard owners did what they could to protect those delicate buds, but for most the damage had been done.

Melissa Aellen, president of the Maryland Wineries Association, a third-generation vintner at Linganore Winecellars in Mt. Airy, MD, and founder of Simple Theory Wine Co. in nearby Frederick, says that her family's vineyards lost 90% of their grapes. "We have protective sprays and frost machines that can help with frost, but at 24 degrees, that's a freeze," she said. "The grapes were so far along from the warm temperatures in March that they couldn't withstand the cold."

In vineyard after vineyard, from hilly Western Maryland to comparatively flat Southern Maryland, the damage was extreme. Eastern Shore and Chesapeake Bay-adjacent wineries got off a bit easier thanks to their proximity to the water, but the state's entire industry suffered this year.

Virginia vineyards also sustained damage of varying degrees, depending on location, and in some cases, the damage was worse. "The vines were more advanced and more [had put out] buds," said Joe Fiola, a University of Maryland extension specialist in viticulture and small fruits. "The higher elevations of 800 feet or more did better than the lower because they were behind in bud break."

Over the past two decades, Maryland wineries enjoyed explosive growth, reaching nearly 1,000 acres of grape growing statewide. That's thanks in part to the state's wide range of soil composition, or *terroir*, as vintners call it — but the main driver has been hotter growing seasons. "We have many climates in this state," Fiola said.

All that means the state can grow a wide variety of grapes, something researchers



Anthony Aellen of Linganore Winecellars in Mt. Airy, MD, examines the shriveled growth on a petit verdot grapevine. (Courtesy photo)

like Fiola have helped expand. "Grapes like heat, but not humidity, which brings disease," Linganore's Melissa Aellen said. "We've worked with the universities to hybridize grapes to better withstand Maryland humidity."

The list of Maryland-grown grapes continues to expand as temperatures rise. Familiar varieties like pinot noir, cabernet franc, chardonnay and albariño are ever more common, as are hybrids such as vidal blanc, vigneoles and chambourcin.

"The limiting factor to East Coast vineyards has always been the very cold winters," Fiola said. "But now our averages are higher, and we don't have as many lasting extremes."

Maryland has reaped this benefit. Where nearby states like Pennsylvania, Virginia and New Jersey have a greater range of average temperatures, Maryland today now sits in a sweet spot for grape cultivation. "If I were to put in a commercial vineyard on the East Coast, I'd pick Maryland," Fiola said.

While climate change has made average temperatures more moderate in the state, it also causes short events at the extremes, such as this spring's freeze. "Late spring frosts haven't been the Achilles' heel here," Fiola said. "But this was an unusual combination of events. The highs were so high in March, and the April freeze lasted several hours."



Dead growth on a cabernet franc grapevine in Mt. Airy, MD, shows the damage caused by two hours of nighttime temperatures in the mid-20s. (Courtesy photo)

The type of damage varied, from killing off weeks-old buds to entire vines, the latter being harder to recover from. Linganore — which is 50 years old — suffered extreme damage but not a total loss of its vines. "Our vineyards aren't dead. They're just not producing," Melissa Aellen said. "So, we still have to pay for labor and care, and now we have to buy grapes we didn't plan on buying."

By state law, Maryland wineries can source up to 49% of grapes from out of state and still call the resulting wines "Maryland made." Linganore and others are leaning on industry friends in states like New York and Texas to supplement their losses.

Rachel Lipman is a fifth-generation vintner who makes wine and mead at Loew Vineyards, also in Mt. Airy, and is vice president of the Maryland Wineries Association. She says her business is still figuring out its path forward after the spring damage. As the state's first kosher winery, Loew can't rely on out-of-state grapes as other wineries can. "We have to work with our own raw materials," she said, "unless we could find grapes in another state that are kosher."

Most of the state's wineries will still have plenty of wine available this year, according to the vintners, because they were created with past years' reserves. It's the next few years that will see more Maryland wine made with some out-of-state grapes.

"We will be replanting most of the vines we lost this year, but it will be three years before they bear fruit, and probably 2029 or 2031 before we can produce wine from the new plants," Aellen said.

A silver lining for Loew is the fact that it produces mead (made from honey instead of grapes), which will fill in its white wine gaps as reserves run out. "It's going to be a very different few years, and we'll have to get creative," Lipman said. "But we hope the honey wines can help us hold over."

The U.S. Department of Agriculture has approved some financial assistance in the form of low-interest emergency loans and credit, which some wineries may tap into, but the costs of the April freeze will likely top well over \$2 million, according to the Maryland Wineries Association. That leaves plenty of gaps and plenty of worries, Aellen said.

Both Aellen and Lipman emphasize that while people often consider wine a luxury item, its producers are still farmers and there are tough times ahead. Lipman hopes wine lovers remember that and buy local. "We still have wine to sell," she said, "and [local] relationships are the most important factor in our sustainability." ■

Amanda Loudin is a freelance writer based in Howard County, MD.

MD plant seeks to increase discharges, despite PFAS

State agency set to approve fivefold increase in Perdue processor's permitted wastewater

By Jeremy Cox

Maryland's environmental regulator is poised to allow a soybean processor on the Eastern Shore to discharge up to five times more polluted water into the headwaters of a Chesapeake Bay tributary.

The pending action comes as the owner of the Salisbury soybean plant, agribusiness giant Perdue Farms, continues to struggle with removing PFAS, also known as “forever chemicals,” from its effluent more than three years after their discovery. The Maryland Department of the Environment (MDE) contends that the new permit will provide more protection to the surrounding community.

“In the simplest terms, this draft permit is more restrictive than the current permit and will require immediate action if any level of these compounds is detected in the wastewater discharge,” MDE spokeswoman Aimen Lipscomb said in a statement.

Some neighbors disagree. They say it's inappropriate to approve such a large increase without requiring stronger assurances that the site's upgraded wastewater plant will be capable of filtering out the chemicals.

“If the Perdue facility can't discharge clean water at the levels it's discharging now, I don't see how MDE is going to enforce clean drinking water at a level five times [higher],” said nearby resident Matt Godbey at a Sept 9 hearing about the permit.

Godbey is one of more than 550 Salisbury residents who have signed on to a pair of lawsuits against Perdue, seeking hundreds of millions of dollars in damages. The suits argue that Perdue is to blame for the high amounts of PFAS detected in their private wells.

Perdue has since paid to install hundreds of water filters in nearby homes. But many residents say it took too long for the company to acknowledge the problem and act on it. Margarita Rosado, who has lived in Salisbury for 35 years, said the plans to increase the discharges make her nervous.

The state shouldn't approve the expansion until it puts in place “real safeguards ... because Perdue has proven itself not to be a trusted neighbor,” she said at the meeting.

Perdue's attorneys have argued in court filings that the lawsuit doesn't prove a connection between the soybean facility's



Matt Godbey and his dog, Mango, sit outside his home in Salisbury, MD, where Perdue Farms paid to install a whole-house treatment system to address PFAS in the drinking water. (Jeremy Cox)

discharges and the PFAS contamination in their groundwater. Nor, they have said, have the plaintiffs been able to show a connection with any “specific injuries they allegedly developed.”

Perdue's press office pointed out that it installed PFAS treatment technology at the wastewater plant in 2025, despite being under no regulatory obligation to do so.

“Perdue has been part of the Salisbury community for generations, and we remain committed to transparency, ongoing environmental improvements and sharing information with the public as this work continues,” the Perdue officials said.

PFAS consist of a group of more than 12,000 compounds, officially called per- and polyfluoroalkyl substances. They are collectively called “forever chemicals” because they are extremely resistant to breaking down in the environment. They have been linked to a variety of health problems, including certain cancers, infertility, low infant birth weight, thyroid disease and type 2 diabetes.

PFAS have been an ingredient in many products for decades. Perdue's investigation of the contamination's source has pointed to the facility's previous firefighting system as the culprit. Perdue has sued two companies

associated with its firefighting system — 3M and Johnson Controls — to make them liable for any monetary damages.

A Johnson Controls representative declined to comment, citing a policy against speaking about pending litigation. 3M did not respond to a request for comment.

The pending MDE permit would allow Perdue to increase its discharge from 170,000 to 1 million gallons per day. All of it would be directed to a single pipe that flows into a stream called Peggy Branch. The ditch-like waterway runs westward into the Wicomico River, the fifth-longest river that flows from the Eastern Shore into the Chesapeake Bay.

If finalized, the permit would mark the first time the state has defined a regulatory standard for PFAS compounds in a discharge permit. MDE proposes setting the maximum allowable concentration at no more than 4 parts per trillion for two PFAS compounds — PFOS and PFOA. Any concentration below that level is considered below the detectable limit using available technology.

Perdue officials balked earlier this year when MDE first proposed the ultra-low standard. According to MDE's permit fact sheet, the company was concerned about

technical challenges with maintaining such tiny concentrations, namely clogs and wastewater storage issues caused by the processing slowdowns.

Through the first eight monthly sampling events after the treatment plant's upgrades, the amount of PFAS removed from the wastewater ranged from 51% to 100%, with an average of 79% taken out.

So, MDE officials agreed that Perdue doesn't have to start meeting the new standards right away, said Jonathan Rice, head of the agency's industrial permitting section. During the first two years, MDE will allow Perdue to correct problems without being considered in violation of the permit. The goal, he said, is to “provide time for the permittee to optimize their treatment system.”

After those two years, Perdue could begin facing fines or other enforcement actions. But even then, regulators could back off if the company submits a “modification request” that successfully argues for new standards.

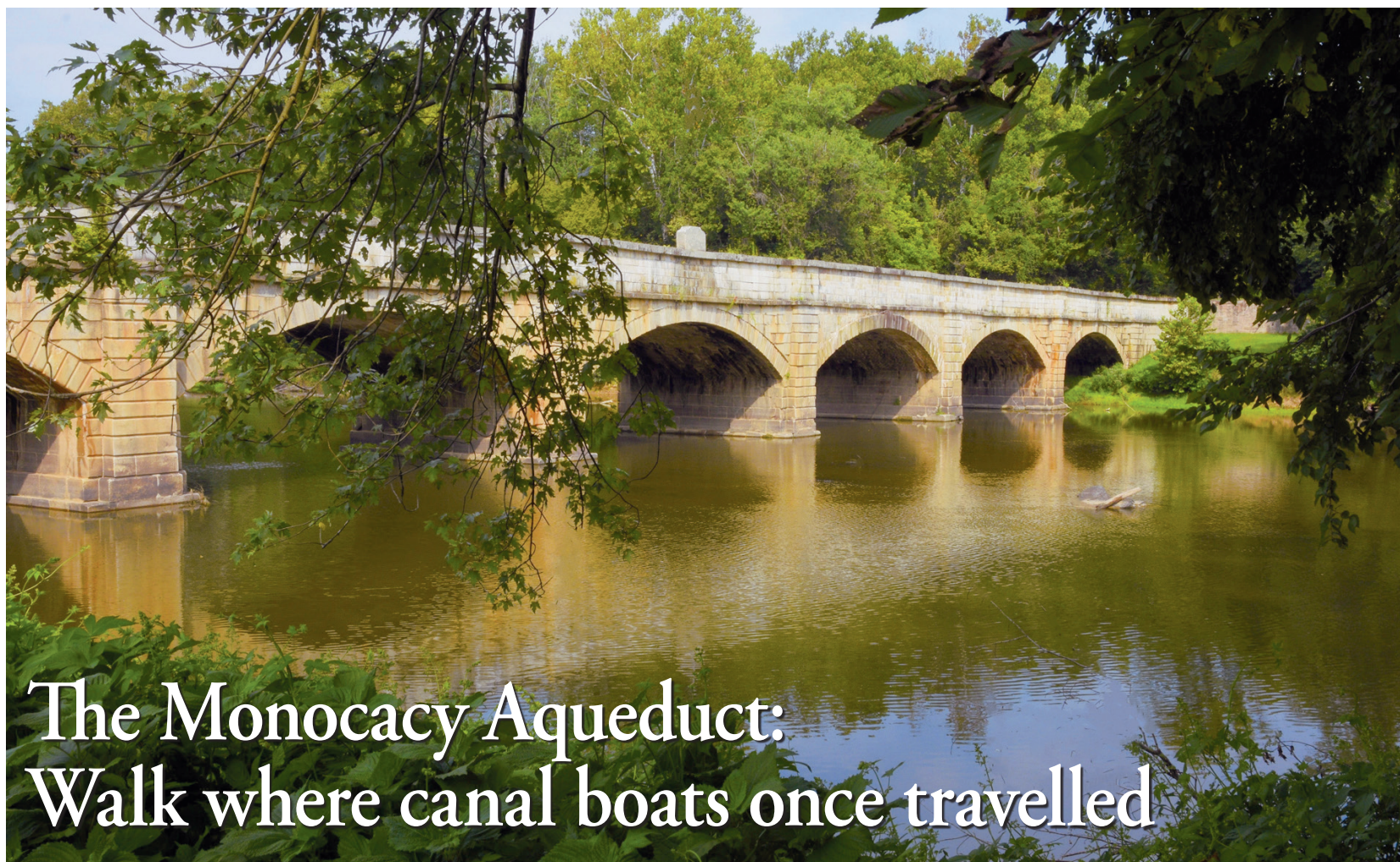
Although Perdue is increasing its wastewater discharge into Peggy Branch by a factor of five, the total PFAS entering the stream won't be allowed to go up that much, Lipscomb said. The permit is set to cap the amount at 0.067 pounds per year.

MDE has been looking for PFAS in fish tissue and water samples statewide, leading to official warnings for fish consumption. Two waterways downstream from Peggy Branch were added to that list in early 2025 after tests confirmed the presence of PFOS in those streams.

The advisories apply to large and small-mouth bass, black crappie and northern snakehead from Johnson's Pond and to white catfish, northern snakehead and largemouth and smallmouth bass from the Wicomico.

To be clear, MDE isn't suggesting that the PFAS detected downstream are tied to the Perdue plant. Forever chemicals are so ubiquitous in the environment, it's difficult to determine where they came from, experts say.

Public comment on the permit is open until Nov. 9. ■



The Monocacy Aqueduct: Walk where canal boats once travelled

By Robb Helfrick

The Monocacy Aqueduct near Dickerson, MD, is an engineering marvel and a timeless work of art. Nearly 200 years after its construction, the resilient landmark endures as a transportation relic and a monument to preservation. Completed in 1833 as a crucial feature of the Chesapeake and Ohio Canal, the masonry aqueduct once ferried cargo boats over the Monocacy River. Today it carries only people, on foot or on bicycles.

Spanning the Monocacy less than 300 yards from where it flows into the Potomac River, the aqueduct has survived assaults from both humans and nature.

As America expanded westward in the 1800s, entrepreneurs sought new routes to transport goods from the West. The Chesapeake and Ohio Canal Company launched that type of enterprise in 1828. The canal was conceived to connect its namesake bodies of water, linking the Chesapeake Bay to the Ohio River.

The company's ambitious plan called for digging a canal along the Potomac on its Maryland shore, thereby skirting the river's shallower sections and avoiding navigational hazards such as Great Falls. The canal would borrow the Potomac's water and follow its serpentine course like a shadow.

To complete a viable route from Washington

to Pittsburgh required a daunting array of engineered structures. The C&O's builders bored a mountain tunnel and created seven feeder dams, 74 canal locks and 11 aqueducts to carry the waterway's channel over Potomac River tributaries.

The Monocacy Aqueduct, known as Aqueduct #2 when first proposed, was the longest of this group. The structure's design included seven graceful arches, 54 feet wide, and a total span of 516 feet. The aqueduct's six piers were 10 feet thick, with those massive supports anchored on the riverbed's solid rock.

Building the aqueduct required the skills of a legendary engineer, three contractors, a continuous search for suitable stone and lime, and the recruitment of skilled stone cutters and masons. These challenges tested the limits of 1830s engineering.

Benjamin Wright proved an excellent choice as the Monocacy Aqueduct's chief engineer. Considered the "Father of American Civil Engineering," Wright earlier supervised work on the Erie Canal.

When the four-year, \$127,900 project was completed, water was released into the aqueduct from nearby Harpers Ferry. The finished white granite structure was visibly striking, but a report issued by C&O's management stressed its practical attributes: "The manner in which the aqueduct holds water is a subject of admiration; it is a solid structure."



As the 1840s neared, the C&O Canal and the Monocacy Aqueduct seemed poised to enjoy smooth sailing for many years to come, but history records a more turbulent course.

Almost immediately, the C&O faced a formidable challenge from a fierce competitor: railroads, with massive steam-driven locomotives that delivered goods faster and cheaper, ultimately dooming the canal.

The B&O Railroad successfully fought with the canal company for the right-of-way along the Potomac. The ultimate insult came in 1889, when the B&O became the C&O Canal's primary creditor after it went into receivership.

Top photo: The Monocacy Aqueduct in Frederick County, MD, was built during the 1830s to carry the C&O Canal across the river. It now serves people hiking or biking the C&O Canal Towpath. (Robb Helfrick)

Bottom photo: A hiker crosses the historic Monocacy Aqueduct. (Robb Helfrick)

The original plan to build the C&O Canal to Pittsburgh was scuttled, and in 1850 the waterway terminated in Cumberland, MD, 184.5 miles from its origin in Georgetown.

After the Civil War erupted in 1861, the Potomac River became a natural boundary between the two warring sides. The following year, Confederates decided to destroy the aqueduct because of its strategic importance to the Union.

During the first attempt, Thomas Walter, the keeper of C&O Canal Lock 27, came to the aqueduct's rescue. He convinced Confederate General D.H. Hill that simply breaching the waterway's earthen banks nearby would achieve the same purpose as blowing up the aqueduct.

Confederate commander Robert E. Lee commissioned a second attempt, ordering another general to "return to the mouth of the Monocacy and destroy the aqueduct." But drilling holes in the structure and filling them with explosives was simply not enough, given the aqueduct's extraordinary solidity and massiveness. The hurried rebels departed, and the aqueduct was spared.

Another C&O Canal foe was Mother Nature. Periodic flooding caused severe damage to the canal infrastructure during the late 1800s and early 1900s. But it brought down only one of the canal's 11 aqueducts.

The C&O ceased operations in 1924, and the United States government acquired the property 14 years later. The canal, towpath and adjacent land became a National Historic Park in 1971. That designation created a unit of nearly 20,000 acres, including approximately 1,200 historic structures.

But only one year later Hurricane Agnes dumped 19 inches of rain on Maryland and Pennsylvania, and this time the Monocacy Aqueduct suffered extensive damage as the storm's flood debris battered the structure. Afterward, the government stabilized the aqueduct with a steel exoskeleton, but its fate remained in jeopardy.

The process to restore the aqueduct moved slowly for two decades. In 1998, the aqueduct was designated "One of the Eleven Most Endangered Historic Places" by the National Trust for Historic Preservation. Four years passed before Congress appropriated \$6 million for its restoration.

The National Park Service hired Architrave P.C. Architects in the District of Columbia to assist with the aqueduct's renovation. "It's not every day you have a project like that," said firm's cofounder Robert Weinstein, an architect with 45 years of experience in historic preservation. "There were no



The C&O Canal Towpath, now a 184-mile recreational trail, passes by the weathered but sturdy remnants of Lock 27 and its lockhouse near Dickerson, MD. (Robb Helfrick)

handbooks to guide us."

Architrave worked with McMullen Consulting Engineers to develop a restoration strategy. McMullen developed unique structural techniques based on studies of masonry bridges in the United Kingdom. The team restored the aqueduct's exterior façade and pumped grout into hidden voids within the structure. "Our goal was to keep as much of the aqueduct's historic fabric intact as possible," Weinstein said.

One innovative restoration feature was a set of removable handrails. During floods, the original fixed rails snagged incoming debris, contributing to structural damage. Now, the aqueduct's rails can be easily detached when flooding is forecast.

The restored Monocacy Aqueduct was dedicated on May 21, 2005. "That type of project needed a champion," Weinstein said, "and that person was Hillary Clinton." Back in 1998, the First Lady led a press tour at the site, where she remarked, "We can't save historical sites if people don't know they exist."

The Monocacy Aqueduct offers present-day visitors a unique opportunity. A stroll or

a bike ride through the structure's core, where canal water once flowed, reveals its depth and scale. The aqueduct has become part of the C&O's towpath, which is now a pedestrian stretch of quiet beauty.

Seen from the aqueduct, the confluence of the Monocacy and Potomac rivers is inspiring. River, sky and trees converge to form a wild and scenic Maryland landscape. People visiting the site recently were treated to a view of a bald eagle perched in a nearby treetop, an egret wading along the distant shoreline and a great blue heron flying low over the Potomac's main channel.

A short hike east leads to Lock 27, where the weathered walls of the abandoned lock remain. Canal boats were raised and lowered here (the lock functioned as a giant water-filled elevator) to help navigate a natural staircase that saw canal elevations rise 605 feet from east to west.

A solitary lockhouse stands nearby, where dedicated keepers stood on call 24 hours a day. This structure is vacant, but the C&O Canal Trust rents out eight refurbished lockhouses it calls "canal quarters."

The village of Point of Rocks, MD, is six miles upstream from the aqueduct. The constant rush and roar of passenger and freight trains there is a reminder of which industry won the long-ago battle between canal and rail transportation.

Along the tracks at Point of Rocks is a red-brick 1873 Gothic Revival style train station, a local landmark sporting a handsome four-story tower. Artwork depicting this National Register station was used for a U.S. postage stamp in 2023.

The C&O Canal National Historic Park is one of the country's most intact 1800s canal systems. Along its 184-mile route, canal engineers constructed inventive structures to create a unique transportation system. Their work ultimately became obsolete. But the Monocacy Aqueduct endures as one of the nation's finest surviving canal features.

The 193-year-old aqueduct has transitioned into a recreational role, while also serving as a symbol of wise stewardship. "I'm proud to have been part of the restoration," architect Weinstein said. "The aqueduct has a new life, and it's still beautiful." ■

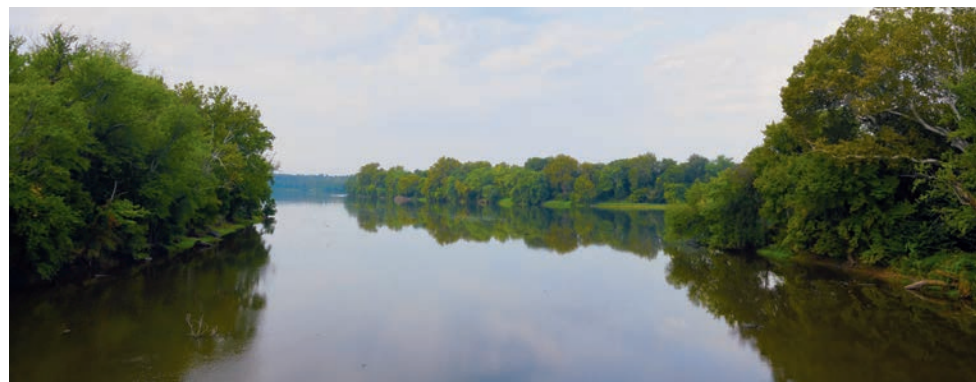
Robb Helfrick is a freelance writer and photographer based in Pennsylvania.



IF YOU GO

The Monocacy Aqueduct, a National Park Service property, is less than a mile upstream from Lock 27 on the C&O Canal. There is a visitors parking lot near the end of Mouth of the Monocacy Road, which intersects with MD Route 28 about a mile east, just north of Dickerson. It's a short walk from the parking lot to the C&O Canal trail. Turn right at the trail and walk a few hundred feet to the aqueduct. There are public restrooms in the parking lot.

Photo: The 1873 Gothic Revival train station in Point of Rocks, MD. (Robb Helfrick)



A view from the Monocacy River Aqueduct. Its confluence with the Potomac River can be seen in the distance. (Robb Helfrick)



— Kathleen A. Gaskell

Cryptids, past and present



A

The areas that are now states in the Chesapeake Bay watershed were already home to legends about cryptids before Europeans arrived and began sharing cryptid reports of their own.

Leaping Loopy of Leicester: According to the Seneca peoples of New York's Genesee River valley, any person trespassing on the tribe's sacred grounds risked an attack from a Bigfoot-like creature able to hop like a kangaroo and fight like a bear. The Seneca name for the creature is lost to the ages, but "Leaping Loopy" is what white folks of Leicester, NY, called a very similar kangaroo-bear cryptid that emerged there in the 1870s.



B

Mhuwe: According to the Lenape peoples, anyone who ate human flesh or was driven mad from the cold could turn into a ravenous human-eating ice giant, the mhuwe. Fortunately, there was a cure: If treated kindly and given a meal of fruits, vegetables and animal meat, a mhuwe could return to its human state.

Flying cannibalistic heads: According to legend, these creatures all but eradicated the people who inhabited what is now the Great Sacandaga Lake area in the Adirondacks of New York before the Haudenosaunee and Wyandot tribes moved in. Appearing as giant human heads with wings, they grabbed their prey with talons. The previous inhabitants' elders had refused to move during a famine, and desperate tribe members decapitated them and threw their heads in the lake. It's said that the heads revived to seek their revenge.



C

Title image: The mhuwe of Lenape legend, while a fearsome cannibal, could be returned to human form with a few kind words and a little something to eat. (*Strangeology.com*).

A This wolf-like creature, a cryptid of Western Maryland and the eastern panhandle of West Virginia, is said to bring bad luck to anyone who encounters it. (*davedickillustration.com*, Instagram @dave_dick_)

B This enormous lizard-bird is said to have terrorized people of the Shenandoah Valley in Virginia, snatching up livestock and children. (*David J. Hardie, author/illustrator, cryptidempire.com*)

C This cryptid of northern Pennsylvania forests is a literal sob story. Legend says that it roams the woods, weeping about its own ugliness. (*David J. Hardie, author/illustrator, cryptidempire.com*)

D Another wolf-like cryptid, this is the official monster of Clinton County, PA. (*David J. Hardie, author/illustrator, cryptidempire.com*)

Myth or myth-taken?

Here are examples of creatures that some people believe have lurked or continue to lurk in various parts of Bay states. We're only asking you to choose the right description. Choosing to believe in them is totally up to you. Answers on page 32.

Giwogggle	Snarly yow
Ogua	Squonk
Snallygaster	

- In 1745, a boy fishing with his family on the Monongahela River in Pennsylvania was pulled underwater and never seen again. The 20-foot culprit was said to be either a turtle or alligator, possibly with two heads. It is also rumored to be found in the Ohio and Allegheny rivers. Witness accounts since then say it has crawled out of the river to prey on deer.
- If you see a literal trail of tears in one of northern Pennsylvania's hemlock forests, it might lead you to this warty, mole-covered creature, who cannot stop sobbing over its state of ugliness. When cornered, it dissolves into a pool of tears.
- The skies over the Shenandoah Valley are haunted by this creature, described as a "bigger than a barn roof," leather-winged reptilian bird with razor sharp teeth and a metallic beak. Some reports include tentacles near its mouth or on its body. Its screech was likened to a metallic whistle. News accounts that date back to the 1800s told of it snatching livestock and children. Later reports said it frequented areas around stills (perhaps a warning to keep away?). It took on a more sinister role in the early 1900s, and as late as the 1970s when its "diet" targeted Black people, especially those who changed political parties. The latter shift begs the question: Who is the bigger monster, the myth or man?
- This 6-foot, wolf-like creature walks on hooves and has bird claws for paws, making it difficult to track. It reportedly pulls pranks and vandalizes farms belonging to those who have offended a witch. Clinton County, PA, has declared this creature its "official monster."
- Tales of this ghostly creature, found in Maryland and West Virginia's eastern panhandle, date to early colonial days. Almost all agree that it is doglike with saggy skin and oversized paws. Descriptions vary after that, saying it has black, blue-gray or white fur. Its eyes glow yellow or red. Others say it has no eyes, because it has no head. The creature can keep pace with a galloping horse, and bullets pass right through it before it vanishes. Those who see this dog of doom are said to be cursed: Encountering it once brings bad luck. It's unclear what happens the second time, but apparently a person does not survive a third encounter.

Columnist Kathleen A. Gaskell served as the Bay Journal copy editor for more than 30 years until her retirement.

After a lifetime of managing fish, a new tilt of the playing field



By Tom Horton

Few Bay dwellers grew up with grand views from waterfront along the main Chesapeake Bay or its tidal rivers. But few grew up without a little creek nearby that connected to the great estuary.

Again and again, I have heard how even the humblest of childhood creeks were formative in setting many a scientist and environmental stalwart (and *Bay Journal* columnist) on their life's course.

It was the Little Paint Branch for Jim Uphoff, trickling through central Maryland to the Anacostia and Potomac rivers. Some 60 years later he's a senior fisheries biologist with Maryland's Department of Natural Resources (DNR), and his wisdom has implications for the Chesapeake that go well beyond fish.

"It was still rural, and I was part of a band of feral little boys that roamed the creek," he said. "There were springs with newts and salamanders ... all kinds of fish, snakes, frogs. It was all slaughtered by construction of I-95 and suburban development.

"These events coincided with my college education ... My first ecology course had this quote: 'It is the whole drainage basin, not just the body of water, that must be considered as the minimum ecosystem.'"

That is, of course, fundamental to what became the Chesapeake Bay Agreement in 1983 — we'd have to manage all 64,000 square miles of the watershed. And it has been Uphoff's life goal to move traditional, single-species-focused management of fish in the Bay proper toward fish-friendly management of the broader ecosystem.

Uphoff recalls a singular moment when it seemed things might be simpler than that.



Jim Uphoff is a biologist with the Maryland Department of Natural Resources. (Dave Harp)

It was the summer of 1989, near the end of a painful five-year Maryland moratorium on catching striped bass (rockfish) whose numbers had plummeted during the 1970s. Uphoff and colleagues were performing DNR's annual summer "young of year" survey, sampling rivers with small nets and counting baby rockfish to estimate the success of that spring's spawning.

That summer morning on the Choptank River, the net came up with scads of little stripers — like nothing in the history of a survey that went back to the 1950s. A combination of ceasing the fishing pressure and improving environmental conditions had brought the Bay icon back from the brink.

Mission accomplished. Or was it? Fast forward to the early and middle 2010s, when once again rockfish stopped spawning as well as they should have under what was presumed to be sustainable management. Those reproductive concerns continue.

Uphoff looked back at critical environmental data recorded during that "come-back" spawn of 1989 (like egg abundance and food available to the larval fish) and found things not much different from now.

Another possible culprit, absent in 1989 but spreading throughout Chesapeake rivers now, was the invasive blue catfish. But, again, looking at "good data" from the Potomac, a major striped bass river, there's no evidence that blue cats so far are having a significant impact by eating rockfish eggs or young.

So, what is going on? What has changed?

Broadly, the Chesapeake Bay might be what has changed, Uphoff explains.

"The shift — you could see it beginning around 2010-2015," he said. "In the Choptank, for example, early rockfish spawning used to be the first or second week of April, and now it's March 20 or thereabouts."

That can be a problem because baby rockfish flourish within a fairly narrow band of water temperatures, from the upper 50s to the high 60s. Spawning is inherently a crapshoot when it comes to hitting the "sweet spot" for survival of young. Rockfish try to cover all their options by arriving in different rivers at different times.

They never win all the time, but when they do win, as in 1989 on the Choptank,

they win big enough to carry the species through multiple leaner years. But now it seems a that a Bay warming earlier is, in effect, stacking the deck against the bass.

"Our best hypothesis right now [for poor spawning] is climate change," Uphoff said.

It's not just striped bass. For menhaden and blue crabs too, the premise that we'll be alright if we just control fishing and maintain current water quality standards seems less certain than it once did.

Specific reasons are not yet clear, but "we're in a period of rapid ecological and environmental change and it's hard to get a handle on it," Uphoff said.

This complicates another long-held premise of Bay restoration, that if we control nutrient pollution, fish will recover along with water quality. While agriculture is the biggest source of nutrient pollution, "some of our monitoring is showing that development is a bigger driver of poor fish production than farming," Uphoff said.

He added, "I think about the impact of development on fish habitat pretty much every day. It's one of my major regrets, maybe the major regret, that we didn't make more progress there."

In fact, he and colleagues have worked since 1992, with some real success, to persuade Maryland's Charles County to limit development along Mattawoman Creek, a Potomac tributary they consider one of the Bay's special places for a diversity of spawning fish.

We need to incorporate fish health into the broader scope of the comprehensive planning carried out by states and counties, Uphoff said. "We get a nice reception in most forums with local planners, but at the end of the day their job is to plan for growth and not manage fisheries.

"We work on it, but funding is scarce and the problems are advancing faster than solutions." ■

Tom Horton has written about the Chesapeake Bay for more than 50 years, including eight books. He is a professor emeritus at Salisbury University and lives in Salisbury, MD.

To align Bay efforts and impacts, prioritization is key

By Susan Shingledecker

Since returning to the Chesapeake Conservancy a year ago, I have heard two words come up repeatedly: priorities and prioritization. People have asked about my priorities for the organization, and our team is seeing firsthand how the Chesapeake Conservancy's data and tools can help organizations across the Bay watershed prioritize and focus their conservation work. This has me reflecting more broadly on the concept of priorities.

Whose priorities? Who sets them? Who is at the table? What is the right scale for setting priorities? And across a watershed that covers 64,000 square miles, how do we decide where to put our collective energy and resources?

Last September, I returned to lead the conservancy as its CEO, after previously serving as vice president and director of programs from 2017 to 2020. Five years away gave me some distance from the work, even as I remained familiar with the Chesapeake and the people and places here. Coming back, I was struck by how much had changed — and how much had stayed the same.

Most striking was the number of organizations working on the Bay and the growing desire to work together. They range from large to small, established to new, and staffed to volunteer-led. They include local watershed organizations, regional groups, land trusts, farmers, faith-based organizations, youth groups, public agencies and many others.

No single organization can do all of this work. The question is how we make sure a given organization's work has the greatest impact. Prioritization is the key — but that does not mean everyone has to agree on what is most important. It is more useful to understand where priorities overlap, where they differ and where those differences can complement one another.

This is where data can help.

Data gives us a way to see the landscape together. It can reveal patterns that are otherwise difficult to see, which helps identify



Partners gathered in April 2024 to celebrate two segments of Turtle Creek in Union County, PA, that were removed, or "delisted," from the federal list of impaired waters following a 10-year effort. (Jody Couser/Chesapeake Conservancy)

places where conservation investments should be focused. But a map cannot tell a community what it values, and an analysis cannot replace the knowledge of people who have lived and worked there for years.

The best results happen when those things come together.

In Pennsylvania, that approach has taken shape over the past decade, as the Chesapeake Conservancy and its partners have used data to identify streams where restoration efforts can have the greatest impact. What started in two counties now spans 16 Pennsylvania counties. The effort includes 80 partners and has directly supported more than 120 projects.

It wasn't always easy.

When the work began, some partners were skeptical. Funding was limited, and organizations often found themselves competing for the same resources. Over time, though, partners saw the benefit of putting their priorities on the table, looking at the same information and determining where their efforts could make the biggest difference.

In 2024, elected and government officials joined partners to celebrate improvements in the Turtle Creek watershed in southeastern Union County that led to its removal from the federal impaired waters list.

At the 2025 annual Rapid Stream Delisting Partnership workshop, one partner

captured what had changed: "It is so great: You have the funding, and I have the projects. I can focus on getting the projects and don't have to worry about the funding."

That is the kind of alignment this work can create. The data matters, but so does the conversation around it.

The same potential exists elsewhere in the watershed. The Chesapeake Conservancy is currently involved in prioritizing efforts in two of the five Maryland watersheds that are designated as priorities in the state's Whole Watershed Act. We are also involved in efforts by land trusts and other organizations to put their conservation priorities into practice.

For example, work with the Harford Land Trust in Maryland resulted in a tool that allows the organization to rank parcels of land based on priorities, including clean water, farms and wildlife habitat. Instead of sorting through thousands of parcels one by one, the trust can quickly identify properties that meet the characteristics it cares about most.

"This tool allows us to quickly assess, visualize and communicate our conservation priorities in a way that wasn't possible before," said Jackie Koehn, land programs manager for the trust.

That is a practical application of data. It helps a small organization make decisions

more efficiently and communicate why particular properties matter, without having to hire its own GIS staff.

Sometimes the role of data is even simpler. In some communities, data has helped confirm the hydrography around a property, identify conservation opportunities that might otherwise be missed, or give partners a common starting point for a conversation project. The technology may be sophisticated, but the purpose is straightforward: Help people make better decisions about where to focus their time, resources and energy.

That may be the most important lesson from my first year back at the Chesapeake Conservancy. Prioritization is not about creating a single list that tells everyone what matters most. It is about creating enough shared understanding for organizations to make informed choices about their own work and to see how those choices fit into the larger effort to restore and protect the Chesapeake.

The Chesapeake watershed is too large, the challenges too complex and the conservation community too diverse for any organization to set the agenda alone. Progress depends on many organizations bringing their own priorities, expertise, relationships and resources to the table and finding the places where those efforts can reinforce one another. ■

Susan Shingledecker is CEO of the Chesapeake Conservancy, based in Annapolis.

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Contact T.F. Sayles at 410-746-0519 or tsayles@bayjournal.com.



Fall colors brighten the trees along Maryland's South River. (Michele Danoff)

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A warty Canada goose stands its ground on its nest, built on a beaver lodge on Maryland's Tuckahoe Creek. (Dave Harp)

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Bozman, MD

John Seiple
Mount Joy, PA

Rudy Shores
Tangier, VA

F. Sieling
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David Silverman
Ellicott City, MD

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Cockeysville, MD

Jill Smith
Lancaster, PA

Barbara Smith
Parkville, MD

Brian Smith
Manchester, MD

Jack Sperry
Cross Junction, VA

Joseph Stalter
West Deptford, NJ

Lauren Starke
Warrenton, VA

John Stauffer
Port Trevorton, PA

Sylvia Sterling
Gloucester, VA

Thomas Stetz
Linthicum, MD

Patrick Stevenson
Gap, PA

Joe Straka
Cobb Island, MD

Mark Strassle
Lancaster, PA

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Waynesboro, PA

Daniel Summers
Cobbs Creek, VA

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Lynchburg, VA

Glenda & Mike Thomas
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Jack & Margaret Thompson
Rockingham, VA

Gregory Uditis
Etters, PA

Lawrence Uman
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Vincent Vaise
Linthicum Heights, MD

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David White
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Anna & Ed Wilkinson
Parkville, MD

Gloria & John Williams
Honesdale, PA

Samuel Wingard
Lebanon, PA

Frances Mary Woll
Colora, MD

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Annapolis, MD

Evonne Woolford
Joppa, MD

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Harrisburg, PA

Nancy Zearfoss
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John Zehmer
Newport News, VA



BULLETIN BOARD

EVENTS / PROGRAMS

PENNSYLVANIA

Apple Festival

10 am–3 pm, Oct. 17 & 18; Little Buffalo State Park, Newport. Enjoy live music, Schoaff’s Mill live corn grinding, apple pressing and apple butter making. Spinning and weaving demos. Sample fresh pressed apple cider, warm apple butter, fresh baked cornbread! Free admission. Info: events.dcnr.pa.gov/event/apple-festival-8813.

Lancaster Conservancy Trail Fest

1–6:30 pm, Oct. 17; Hellam Nature Preserve, York. Explore one of the conservancy’s newest nature preserves before it’s fully open to visitors. Enjoy folk, soul, bluegrass music; the preserve’s farmhouse gallery, and the restored historic structures. Beer, cider, food available for purchase. Info and tickets: lancasterconservancy.org/trailfest.

Mushroom Walk

12–3 pm, Oct. 17; Whipple Dam State Park, Petersburg. Join the Central PA Mushroom Club for an introduction to fungi. Includes a short orientation on mushrooms and how they grow, followed by a walk to forage. Free. No registration required. Info: events.dcnr.pa.gov/event/mushroom-walk-7061.

Poe Paddy Fall Foliage Hike

10 am–1 pm, Oct. 17; Poe Paddy State Park, Aaronsburg. Join the park naturalist on a four-mile hike to see the spectacle of changing colors from two beautiful views in Bald Eagle State Forest. Discuss how and why leaves change, with a short break and story at Ingleby View. Moderate difficulty, but plan for three hours. Free. Info: events.dcnr.pa.gov/event/poe-paddy-fall-foliage-hike-3609.

Building Biodiversity in Our Community

6–8 pm, Oct. 15; Tec Centro, Lancaster. The Lancaster Conservancy presents an introduction to designing, building and stewarding native habitats. This is the introductory class for the series and is required for most of the other classes as well as for earning a Habitat Advocate Certification. Gain baseline awareness of why conservation landscaping is a multifaceted approach to solving our water, climate and habitat crises. \$44.52. Info and registration: lancasterconservancy.org/events.

Day Hike: Appalachian Trail

9:30 am–4 pm, Nov. 14; Caledonia State Park, Fayetteville. Join the Sierra Club for a 10.5-mile, moderate hike on a beautiful section of the Appalachian Trail through mixed forest and interesting rock formations. Nice views. Mostly level, with a steep descent into Caledonia State Park. Suitable for those able to maintain a moderate pace for several hours on rugged terrain. There is no charge for the hike, but donations are welcome. Registration: sierraclub.org/west-virginia/events-and-outings.

VIRGINIA

Loudoun County Farm Tours

October 17 & 18, various farm locations in Loudoun County. These farm tours showcase innovative and sustainable farming practices. It also showcases the finest products that Loudoun has to offer, including honey, mushrooms, traditional vegetables, garlic, ice cream, wine, craft beverages. All ages. More info and interactive farm map: loudounfarms.org/farmtour.

Harvest Festival

10 am–5 pm, Oct. 17; Chippokes State Park, Surry. Celebrate this year’s fall harvest at one of the oldest, continuously-farmed properties in the nation, featuring music and family activities such as an antique tractor pull, pumpkin painting, corn cob dolls, corn hole, tractor-drawn hay rides and an active sawmill. Various local food and craft vendors. See antique harvest equipment in operation and watch costumed interpreters cook on the hearth in the 1850s brick kitchen. Guided tours of the antebellum Jones-Stewart Mansion. \$7 vehicle entry/parking fee. Info: dcr.virginia.gov/state-parks/events (enter date).

Fall Foliage Festival

11 am–4 pm, Oct. 17 & 18; Sky Meadows State Park, Delaplane. Enjoy two full days of breathtaking views of the changing leaves, wagon rides, scenic hikes through vibrant forests. Live music, delicious fall treats. Standard parking or admission fee applies. Info: dcr.virginia.gov/state-parks/events (enter date).

Halloween Safari

7–8:30 pm, Oct. 16 & 23; Leopold’s Preserve, Broad Run. A guide will lead you along the trail, where you meet native “wildlife” that perform natural history skits. The skits are not scary and promise entertainment for all ages. \$10/pp. Timed entry passes available every 6 minutes. Registration: brmconservancy.org (select “Events”).

Autumn Colors Photography

9–11 am, Oct. 24; Shenandoah River State Park, Bentonville. This session will focus on finding and creating images that capture autumn’s beauty. Begin with a review of photography techniques, then head into the field to practice these skills by completing a nature-themed scavenger hunt. This is a great family-friendly event. All types of cameras and all experience levels welcome. Open to all ages. Free, with standard parking or admission fee. Info: dcr.virginia.gov/state-parks/events (enter date).

Saturday Volunteer Day

8:30–11:30 am, Oct. 17; Leopold’s Preserve, Broad Run. Help plant native trees along a section of trail. Ages 13+, under 18 w/adult. Free. Registration: leopoldspreserve.com (select “Calendar”).

Naturalist Walk: Fall Ecology

10 am–12 pm, Oct. 25; Leopold’s Preserve, Broad Run. Guided walk led by a professional naturalist. Join us to marvel at fall colors as we focus on the life cycles of trees. Free. Registration: leopoldspreserve.com (select “Calendar”).

Hike with a Naturalist

10 am–12 pm, Nov. 4; Leopold’s Preserve, Broad Run. Join a professional naturalist and discover the flora and fauna at Leopold’s Preserve. First Wednesday of each month at 10 am. Registration: leopoldspreserve.com (select “Calendar”).

Oyster Gardener Float and Spat Sale

9 am–12 pm, Oct. 17; Camp Kekoka, Kilmarnock. Tidewater Oyster Gardeners Association is selling Taylor floats, flip floats, tidal tumblers, rough riders, and bottom cages, along with spat tubes, wire benders, small and medium mesh spat bags, crab pot line, float wire mesh, shell bag material, and TOGA apparel. TOGA will provide educational materials and personal consultation with master oyster gardeners who will work with both prospective and experienced oyster gardeners. Membership (sign up available sale day) required to purchase floats. Info: oystergardener.org; Jim Dall, jimd@togaboard.org.

MARYLAND

Eden Mill Fall Fest

11 am–3 pm, Nov. 7; Eden Mill Nature Center, Pylesville. Pumpkin chucking, live animals, music, food trucks, mill tours, educational exhibitors, crafts, tattoos, gourd hunt, corn grinding, games, prizes and more. Free. Info: edenmill.org/event/fall-fest-2026.

Blackwater Fall Guided Birding Tours

8–11 am; Oct. 10, 18, 21 and Nov. 1, 10, 11, 22; Blackwater National Wildlife Refuge Visitor Center, Cambridge. Tours may last 3–4 hours. Bring binoculars and dress appropriately for the weather. The birding party will caravan via car to birding hotspots around Wildlife Drive. Information: friendsofblackwater.org/events.html.

Guided Kayak Tour

10 am–12 pm, Oct. 17; Chesapeake Bay Environmental Center, Grasonville. Paddle through scenic wetlands and learn about the unique ecology of the Bay with an experienced naturalist. \$20. Both single and tandem kayaks are available for rent. Registration: bayrestoration.org/product/guided-kayak-tour-oct-17.

Starting Native Plants from Seed

9:30 am–12 pm, Oct. 31; Pickering Creek Audubon, Easton. Pickering Creek is partnering with Wild Ones Delmarva for a workshop on how to collect, clean and plant native seeds. You will go home with small pots planted with seeds that can overwinter outside and should sprout in the spring. Includes an exploration of the center’s pollinator garden and meadows. Free. Registration: pickeringcreek.org/programs/upcoming-programs.



Submission Guidelines

SUBMISSIONS

Because of space limitations, the *Bay Journal* is not always able to print every submission. Priority goes to events or programs that most closely relate to the environmental health and resources of the Bay region.

DEADLINES

The *Bulletin Board* contains events that take place (or have registration deadlines) on or after the 11th of the month in which the item is published through the 11th of the next issue. Deadlines are posted at least two months in advance. November issue: October 11
December issue: November 11

FORMAT

Submissions to *Bulletin Board* must be sent as a Word or Pages document or as text in an e-mail. Other formats, including pdfs, Mailchimp or Constant Contact, *will only be considered if space allows* and type can be easily extracted.

CONTENT

You must include the title, time, date and place of the event or program, and a phone number (with area code) or e-mail address of a contact person. State if the program is free or has a fee; has an age requirement or other restrictions; or has a registration deadline or welcomes drop-ins.

CONTACT

Email your submission to bboard@bayjournal.com. Items sent to other addresses are not always forwarded before the deadline.

Answers to CHESAPEAKE CHALLENGE on page 26

1. Ogua
2. Squonk
3. Snallygaster
4. Giwoggle
5. Snarly yow



BULLETIN BOARD

Composting Demonstrations

10 am, Oct. 7, 17 and Nov. 7; Quiet Waters Park, Annapolis. There are a dozen methods of composting on display at the park, with self-instructional signs and brochures available. The Anne Arundel County Master Gardeners also gives live demonstrations on these dates. Attendees are instructed on how to start and maintain compost and receive a free compost bin and other useful items. Info: fqwp.org/composting-demonstrations.

Spooky Nature

7–9 pm, Oct. 30; Pickering Creek Audubon, Easton. Discover some of nature's spookiest animals! From spiders and snakes, to bats and owls, learn why these creatures of the night aren't actually scary at all, the things they do in their environments, and even the ways they are helpful to humans. Followed by a night hike. \$10/pp. Registration: pickeringcreek.org/programs/upcoming-programs.

Cryptid Crawl & Halloween Hike

6–7:30 pm, Oct. 26; Howard County Conservancy, Woodstock. A night hike to discover what sorts of creatures might be lurking in the dark. Learn the spooky Maryland lore about the Goatman of Prince George's County, our watery friend Chessie and the Snallygaster. The scary level will be kept low for the kiddos as the group hikes along the conservancy's trails at night. Recommended for ages 5+. Free. Reservations: howardnature.org/event/cryptid-crawl-halloween-week-hike.

Wicked in the Woods

1:30–2:30 pm, Oct. 18; Anita C. Leight Estuary Center, Abingdon. Spikes, fangs and claws, oh my! Plants and animals have a variety of defenses to protect themselves. Learn what they are and then explore the trails of Leight Park to see what we can find. Ages 5+, under 18 w/adult. \$10/family. Info: otterpointcreek.org/event/wicked-in-the-woods.

Birding with Online Resources

8 am–10:30 am, Nov. 7; Howard County Conservancy, Woodstock. Join experts from the Howard County Bird Club for a bird walk, then gather inside for a presentation about online resources (Cornell Lab's All About Birds, eBird, Project FeederWatch, Merlin Bird ID and BirdCast) to help you identify birds, discover birding locations and participate in the local, regional and global birding community. Info/registration: howardnature.org/event/beyond-field-guides-birding-with-online-resources.

Fall Foliage Kayak

12:30–3 pm, Oct. 17, Anita C. Leight Estuary Center, Abingdon. Paddle along Otter Point Creek and view the changing colors as the autumn season sets in. \$15/pp. Ages 8+, under 18 w/adult. Registration: otterpointcreek.org/event/fall-foliage-kayak.

Mycological Marvels

2:00–4 pm, Nov. 7, Pickering Creek Audubon, Easton. Fungi are an important part of Pickering Creek's biodiversity. Learn about identifying mushrooms and fungi, the various places they grow, and then ramble through the woods to discover the mushrooms of autumn. \$10/pp. Registration: pickeringcreek.org/programs/upcoming-programs.

Nature Tots

10:30–11:30 am, Wednesdays, Oct. 7–Nov. 28; Benjamin Banneker Historical Park, Catonsville. Seasonal hands-on activities, stories, crafts, games for ages 2–5. A portion of every class will be outside. Parent/guardian must be an active participant. \$6 per session. Info: baltcorec.info/prek.

Patuxent Research Refuge

Patuxent Research Refuge offers free public programs and activities. Register (if required) online: fws.gov/refuge/patuxent-research/events (note special accommodation needs). South Tract, Visitor Center: Wed.–Sat., 10 am–4 pm, (301) 497-5772. Grounds open daily. North Tract: Sundays 8 am–4 pm.

■ *Hollingsworth Wildlife Art Gallery*: 10 am–4 pm Wed.–Sat. All ages. Oct.: Photographer Wade Stephen presents his wild bird photographs, including rare/uncommon species. Nov.: Members of the Southern Comforters Quilt Guild of Bowie display their beautiful nature-themed quilts.

■ *Kids' Discovery Center*: 10 am–12 pm (35 minutes each, on-hour), Wed.–Sat. Ages 3–10, w/adult. Crafts, puzzles, games, nature exploration.

Oct.: Mammals/Bats. Nov.: Owls/Woodpeckers.

Registration: 301-497-5772.

■ *Story Trail*: Sunrise to sunset (Tuesdays til 4 pm). All ages. Sept.–Nov.: Bats/Los Murciélagos by Kate Riggs. Explore this seasonal children's book on the paved Loop Trail.

■ *"Wingspan" Game Days*: Oct. 9/24; Nov. 13/28. Ages 12+. No experience needed. Play award-winning board game; learn more about birds. Use ours; bring yours. Sign in, front desk.

■ *Family Fun*: Staffed: 10 am–1 pm: Oct. 16/17; Nov. 20/21. Independent: 10 am–4 pm, Wed.–Sat. All ages. Free. Sept.–Nov.: Dirt – Dig it! Hands-on activities, games, crafts. Drop-in.

■ *Agents of Discovery*: Sunrise to sunset daily (Tuesdays: til 4 pm). All ages. Outdoor self-guided nature challenge game on refuge grounds: Download free phone app, complete challenges, earn patch. Play: fws.gov/media/agents-discovery-patuxent-research-refuge.

VOLUNTEER OPPORTUNITIES

WATERSHEDWIDE

Potomac River Watershed Cleanups

Learn about shoreline cleanups in the Potomac River watershed. Info: fergusonfoundation.org ("Cleanups").

Become a Water Quality Monitor

Become a certified Save Our Streams water quality monitor through the Izaak Walton League, collecting macroinvertebrates to determine the health of your local stream. Visit iwla.org/saveourstreams. Info: vasos@iwla.org or 301-548-0150.

PENNSYLVANIA

Middle Susquehanna Volunteers

Monitor local waterways, provide online updates: web search "Susquehanna sentinels." Individuals, families, scouts, church groups welcome. Info: MiddleSusquehannaRiverkeeper.org/watershed-opportunities.

Nixon County Park

Front desk greeter: Ages 18+ can work alone, families as a team. Habitat Action Team: locate, map, monitor, eradicate invasive species; install native plants, monitor hiking trails. Info: 717-428-1961 or supportyourparks.org (Select "Volunteer").

VIRGINIA

Friends of the Rivers of Virginia

Volunteer projects include river access, dam removals, water quality work, blueways, fisheries, river-related legislative issues. Info: forva.org.

Virginia Living Museum

VLM needs volunteers ages 11+ (11–14 w/adult) to work with staff. Educate guests, propagate native plants, install exhibits. Info: thevlm.org/support/volunteer.

Prince William Soil & Water Conservation

Manassas district provides supplies, support for stream cleanups. Groups receive an Adopt-a-Stream sign recognizing their efforts. For info/to adopt a stream/get a proposed site: waterquality@pwsacd.org.

Friends of Dragon Run Land Trust

Assisting with kayak trips, hikes, property monitoring, citizen science surveys, maintenance, educational and community engagement projects. Info: DragonRun.org or vicepresidentdragonrun@gmail.com.

Leopold's Preserve Friday Volunteering

8:30 am–12 pm, Fridays. Volunteers can stay as long as they'd like. Volunteer activities are outdoors, involving basic physical labor. Suitable for ages 13+, under 18 w/adult. Free. Info: leopoldspreserve.com ("Calendar").

Mariners' Museum and Park

Be a part of the team that restores the natural beauty of Mariners' Park by removing invasive species. Weekday/weekends; morning and afternoon shifts. Ages 15+. Info: Beth Heaton at bheaton@marinersmuseum.org.

MARYLAND

Chesapeake Bay Environmental Center

Help with educational programs; guide kayak trips and hikes; staff the front desk; maintain trails, pollinator garden; care for captive birds of prey; monitor wood duck boxes. Participate in fundraising, website development, writing for newsletters, photo archiving, supporting office staff. Info: bayrestoration.org/volunteer.

Maryland State Parks

Search for volunteer opportunities at <https://marylandmps.galaxydigital.com>.

Patapsco Valley State Park

Opportunities include daily operations, leading hikes and nature crafts, mounted patrols, trail maintenance, photography, nature center docents, graphic designers, marketing specialists, carpenters, plumbers, stone masons, seamstresses. Info: 410-461-5005 or dnr.maryland.gov/publiclands/Pages/central/patapsco.aspx ("Volunteer Opportunities").

National Wildlife Refuge at Patuxent

To ask about helping in the Kids Discovery Center, Monarch Center, gardens and for general volunteer training call 301-497-5772, Wed.–Sat. 10 am–4 pm. To help in the Friends' Wildlife Images bookstore and nature shop, email Ann: wibookstore@friendsofpatuxent.org. To help with Friends of Patuxent's programs/events, other volunteering, email: friendspr@friendsofpatuxent.org.

Lower Shore Land Trust

LSLT in Snow Hill needs help with garden cleanups, administrative support, beehive docents, native plant sales, pollinator garden tour, community events. Info: infor@lslt.org, 443-234-5587.

A history of the pumpkin, much more than a jack-o'-lantern



By John Montgomery

October marks the beginning of pumpkin season for many of us — browsing pumpkin patches for the perfect jack-o'-lantern and eventually enjoying pumpkin pie for Thanksgiving. But there's more to this squash than decorations and holiday fun. Pumpkins have a long history in North America, including the Chesapeake Bay region.

Pumpkins are a winter squash, related to cucumbers and melons, all of which are in the Cucurbitaceae family. Before selective breeding became widespread, pumpkins weren't as big, perfectly spherical or bright orange. Ancient pumpkins in Mexico had crooked necks and imperfect shapes, and they were hard and bitter — but perfect for withstanding winters.

Scientists believe that pumpkins became cultivated in the Americas about 9,000-11,000 years ago for sustenance, evidenced by fossilized stems and seeds found in caves in the Tamaulipas mountains of Mexico. Pumpkins and other squash have historically been an essential staple crop for Indigenous people. These types of crops were traditionally planted along riverbanks, accompanied by maize and different types of legumes. The three companion plants were known as the “Three Sisters.” Each plant helped sustain the others. The beans helped nourish the soil and could climb the corn stalks to reach more sunlight. The squash helped protect the corn's shallow roots and fought off encroaching weeds. Before the emergence of maize, squash and beans were planted with sunflowers to provide a similar symbiotic relationship.

Somewhere between 3,000 and 4,000 years ago, pumpkins found their way to the plains and woodlands of central North America. Then they gradually moved east into the Chesapeake Bay watershed itself. The Powhatan Confederacy and the Nanticoke, Piscataway, and Susquehannock



A child considers the few remaining pumpkins in a thoroughly harvested pick-your-own pumpkin farm in Northern Virginia. (Dawn Casey/CC BY-NC-ND 2.0)

peoples cultivated pumpkins and other squash for generations before European migrants arrived. Records indicate Indigenous people roasted the seeds, boiled the flesh and sun-dried it to store for winter stews. Another common early preparation of pumpkins was to bake them whole in the ashes of a fire and eat the flesh with animal fat or honey. This is widely considered to be the precursor of today's pumpkin pie.

As with Indigenous people, pumpkins became a vital food for early European colonists. In places like Jamestown and St. Mary's City, though, pumpkins were not at first highly regarded. They were generally thought of as a lower-quality crop, more suitable for livestock feed. But when imported European crops like wheat, barley and rye began failing, colonial populations grew to appreciate the hardy squash. Settlers quickly adopted pumpkin cooking methods like baking the flesh or dicing it for stews. They also found a use for pumpkins in brewing. Scarcity of traditional brewing ingredients like barley and malt in Chesapeake colonies led to fermenting pumpkin flesh with hops and molasses.

By the 1700s, Chesapeake colonists embraced two types of pumpkin: large, round pumpkins produced cheaply for livestock fodder and the denser, more palatable varieties used for human consumption.

Some popular eating-pumpkins were the Long Island cheese pumpkin and the striped cushaw (known as the sweet potato pumpkin in the Chesapeake region). These “table heirloom” varieties became so popular that growers began transporting them along Chesapeake waterways to multiple markets in the region.

We all know the most popular modern-day use for pumpkins in October: jack-o'-lanterns. That practice was brought to America by Irish immigrants, who previously carved jack-o'-lanterns out of potatoes or turnips. Once in America, the tradition switched to pumpkins because they were easier to carve.

Like the colonists, Americans today primarily consume two types of pumpkins. One is the Connecticut field pumpkin, the classic, round, orange variety we all recognize for Halloween and Thanksgiving decorations. The other is the crookneck pumpkin, the elongated, tan-colored squash that most commercial pumpkin pie filling is made of.

Even today, pumpkins are a staple crop for Indigenous people from Mexico to Canada. Although demand increases in the fall, they are eaten year-round in many ways. Most of us like to eat the flesh and seeds of pumpkins, but every part of the plant is edible, including the skin, leaves, flowers and stems. They're also great sources



A bountiful harvest shows that pumpkins can be myriad colors and not just jack-o'-lantern orange. (Drew Stemen/CC BY-SA 2.0)

of potassium, vitamin A and beta-carotene (the stuff that makes fruits and veggies orange). The next time you're not sure what to do with a pumpkin, remember how versatile they are. You can make pies, soups, stews, puddings, purées, breads, cookies, pastas, curries, drinks and more.

Pumpkins are a staple for a reason. Although they're hardy and can endure harsh winters and store well, they still need two things we all know are important life in the Chesapeake Bay: clean land and clean water. We must remember to do everything we can, whenever we can, to keep the Bay clean. Not only will it ensure we have our fall fun for years to come, but it will also protect the valuable resource for everyone who lives, works and plays in the watershed.

So, if you have an unused pumpkin lying around this fall, consider exploring one of the many recipes available online. If you left your pumpkin decorations out a bit too long, think about delving into the world of composting. There are plenty of ways we can reduce pumpkin waste and respectfully use this iconic squash to its fullest extent. ■

John Montgomery is the communications and social media coordinator for the Alliance for the Chesapeake Bay.

The great auk and Labrador duck: Birds we'll never see again



By Alonso Abugattas

As I was debating which bird to focus on for this issue of the *Bay Journal*, it occurred to me that I've never written about extinct birds — those that once graced the shores of the Chesapeake Bay but no longer do because they are simply gone from this earth. There are more than a few to choose from: the Carolina parakeet, passenger pigeon, Bachman's warbler, ivory-billed woodpecker, heath hen, Labrador duck and great auk. I will focus on the last two, which may have been seen hereabouts in the fall and winter.

The Labrador duck (*Camptorhynchus labradorius*) was a small sea duck, and it's thought to have been the first endemic North American bird to go extinct after Europeans arrived on the continent. Also called the pied duck, sand shoal duck or skunk duck, it lived along the Atlantic Coast. It was the only species in its genus and likely never existed in large numbers.

The males, or drakes, had distinctive black and white piebald plumage (explaining "pied" and "skunk" in the alternate names) while the females were a more subdued gray. The immature males were said to look similar to the females for the first year. Adults were fast fliers and fed primarily on shellfish such as mollusks, mussels and snails.

The Labrador duck was not a culinary favorite. Sometimes, for want of a buyer, it rotted in meat markets in New York and Baltimore. The reason for the species' demise is not well known. Hunting wasn't the cause, since the bird was valued more for its feathers than for the dinner table. Theories range from their nests being vulnerable to raids by humans and other egg eaters to the disappearance of a particular shellfish they depended on, or even a disease or parasite that diminished the population beyond recovery.

Naturalist and wildlife artist John James Audubon wrote of seeing small flocks of



Top left: An 1878 illustration of a great auk by W & A. K. Johnston published in *St. Kilda Past and Present* by George Seton. (Public domain); Inset: An 1888 lithograph of a great auk egg by F. W. Frohawk. (CC BY 4.0); Top right: An 1836 illustration of Labrador ducks by John James Audubon. (Public domain)

Labrador ducks on the Bay, but nobody even realized the bird was gone until a long time after it went extinct. Some people have even theorized that they were in fact naturally occurring hybrids of the Stellar's duck and common eider duck. But many consider this unlikely because those species' ranges only overlap along the Pacific and their known hybrids do not resemble Labrador ducks. The last Labrador was believed to have been shot on December 12, 1878, in Elmira, NY. We are now left only with 55 preserved specimens in collections.

Another ill-fated bird that visited our region is the great auk (*Pinguinus impennis*). This long-gone bird is sometimes called the "original" penguin because that's what it was called in the 1700s — and when southern hemisphere explorers encountered more flightless, black-and-white, bipedal birds, they assumed them to be relatives of the auks and named them accordingly. But great auks and modern-day penguins are not just from different families of birds. They're from different orders — Charadriiformes and Sphenisciformes — and are no more closely related than giraffes are to sloths.

Great auks did not breed as far south as the Chesapeake Bay but would forage this

far south and farther, with some observations as far south as North Carolina and Florida. They would forage far and wide and only came onto land when breeding.

This was a large bird — nearly 3 feet tall and weighing more than 10 pounds. It was also known as a garefowl (Nordic for "spear bird"). Like a penguin, its "wings" were for swimming, not flying. It was clumsy and slow on land but nimble and fast underwater. It was found on both sides of the North Atlantic, feeding on fish and crustaceans, often appearing to spear them, and thus the alternate name. They were said to dive deep in pursuit of prey and could go up to 15 minutes without breathing.

Hastening their demise was the fact that they were unafraid of humans — who could walk right up to the birds and kill them. People ate them and also used them as bait for fish. Their feathers were valuable also, and they were regularly clubbed and thrown into boiling water to loosen the feathers. Their large eggs were unique, with no two shaped exactly alike, and many considered them exquisitely beautiful. They were pear-shaped, making them less likely to roll off the rocky cliffs that held their nests.

Auks apparently mated for life, taking 4-7 years to reach maturity and laying just one egg per mated pair during each breeding season — sometimes laying another if the first egg came to grief. Parents shared incubation duties. They were believed to nest in fewer than 20 remote, rocky islands.

As the birds became rarer, collectors were willing to pay money to get them and their eggs. The last known breeding pair was seen on June 3, 1844, on Iceland's Eldey Island. The people sent to collect them, likely for taxidermy, killed them that day. And in the process one last egg was trampled.

There were occasional reports of stragglers for a short time thereafter, with the last credible sighting in Newfoundland in 1852. What we have left today are 78 skins, 24 complete skeletons and 75 eggs — this from a species said to once number in the millions. ■

Alonso Abugattas, a storyteller and blogger known as the Capital Naturalist, is the natural resources manager for Arlington County (VA) Parks and Recreation. You can follow him on the Capital Naturalist Facebook page and read his blog at capitalnaturalist.blogspot.com.

For autumn wildlife watching, pick a refuge — any refuge



By Kathy Reshetiloff

Autumn is a season of change. Trees transform from green to fiery shades of yellow, orange and red. The monarch butterfly, one of the few migrating butterfly species, is on the move. From the first week of September to the third week of October, the monarch, that familiar orange and black beauty, is making its way south through the Chesapeake Bay watershed.

Birds are also flying south. The Chesapeake watershed straddles what is known as the Atlantic Flyway, a superhighway for countless species of migrating birds — in an especially concentrated fashion during fall, when they're heading south. Mountain chains to the west and coastal shorelines to the east serve as geographic boundaries channeling millions of migrating birds through the Bay region.

Raptors, including eagles, falcons and hawks, begin their southward migration before the fall color change. The earliest birds are scattered enough that they may go unnoticed. As the first autumn cold front passes through the area, though, the skies fill with more migrating raptors. As they approach the Chesapeake, some funnel along the coast, while the others are steered along the mountains. At the same time, songbirds and shorebirds begin their long flights to wintering areas.

The shortening of days signals waterfowl to begin moving south. And for some of them — swans, geese and many types of ducks — the Chesapeake Bay is as far south as they need to go for the winter. One of the most familiar of these is the Canada goose, which migrates in flocks noted for their distinctive v-shaped flying pattern. That's only the migrating population. There is also a large population of year-round, or resident, Canada geese in the Mid-Atlantic region.

Some of the best spots to see these long-distance travelers are our National Wildlife Refuges. These are public lands set aside



Dense autumn woods await visitors who cross a footbridge at the Patuxent Research Refuge in Laurel, MD. (U.S. Fish and Wildlife Service)

specifically for the conservation of fish, wildlife and plants that provide habitat for hundreds of bird, mammal, reptile and amphibian species; thousands of fish species; and countless insects and plants. Migratory wildlife uses refuges as steppingstones while they travel or as homes to overwinter.

About 98% of the land in the National Wildlife Refuge System is open to the public for wildlife watching and recreational activities. Some provide hunting and fishing opportunities. You can explore refuges any time of the year, but autumn is an especially good time for birdwatchers to visit.

Here is a small sampling of the refuges in the Mid-Atlantic region. The first three are in the Bay watershed. The last two are just outside of it but in striking distance for many of us. And during National Wildlife Refuge Week, which runs from October 10 to 17 this year, refuges host special events including guided wildlife walks, exhibits, live animals, crafts, children's activities and more. For information or to find a refuge close to you, call (800) 344-WILD or go to fws.gov/refuges.

Blackwater National Wildlife Refuge in Cambridge, MD: Habitats here include rich tidal marsh, mixed hardwood and loblolly pine forests, managed freshwater wetlands and croplands. Blackwater is home to an incredible diversity of plants and animals. The refuge contains one-third of Maryland's tidal wetlands, which are critical to migrating waterfowl. Blackwater



Migrating monarcha alight on goldenrod at Virginia's Chincoteague National Wildlife Refuge. (Emarie Ayala/U.S. Fish and Wildlife Service)

is also home to the largest natural population of Delmarva Peninsula fox squirrels and one of the largest breeding populations of American bald eagles on the East Coast north of Florida.

Occoquan Bay National Wildlife Refuge in Woodbridge, VA: At the confluence of the Potomac and Occoquan rivers, Occoquan Bay is an oasis where migrating birds and busy city residents both seek a quiet escape. Diverse grasslands and marshes attract songbirds, raptors, waterfowl and butterflies that depend on the area for food, nesting sites and a place to rest during migration. Visitors share this feeling of respite at this sanctuary near an urban setting.



Snow geese take flight from their winter roost at Blackwater National Wildlife Refuge on Maryland's Eastern Shore. (Dave Harp)

Patuxent Research Refuge in Laurel, MD: Located between Baltimore and the District of Columbia, the National Wildlife Visitor Center and North Tract at this refuge are open for hunting, fishing, wildlife observation and educational programs. The refuge is the largest block of unfragmented forest of the region, sometime called its "green lungs." Patuxent supports a wide diversity of wildlife in forest, meadow and wetland habitats.

Back Bay National Wildlife Refuge in Virginia Beach, VA: Back Bay habitats include beach, dunes, woodlands, shrub-scrub, agricultural fields and freshwater marshes. Thousands of tundra swans, snow geese, Canada geese and a large variety of ducks visit during the fall/winter migration. Popular recreation activities include hiking, biking, fishing, kayaking, canoeing and wildlife observation.

Bombay Hook National Wildlife Refuge in Smyrna, DE: Located along the coast of Delaware Bay, Bombay Hook protects one of the largest remaining expanses of tidal salt marsh in the Mid-Atlantic region. The refuge also includes freshwater and upland habitats that are managed for migratory birds and other wildlife. It is an important link in the chain of refuges extending from Canada to the Gulf of Mexico that support migratory birds. ■

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