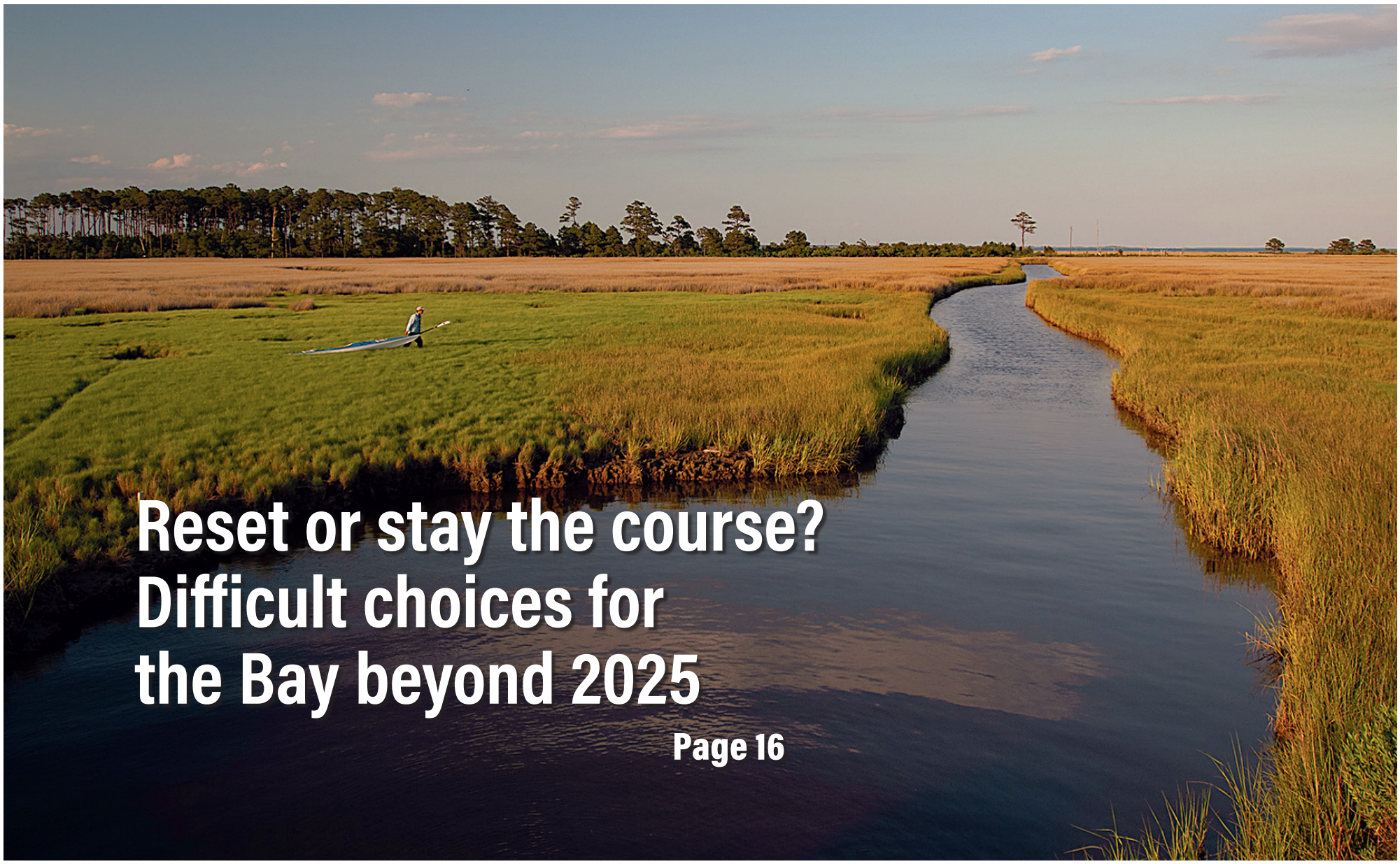
CHESAPEAKE
BAY JOURNAL
May 2024 Volume 34 Number 3
Independent environmental news for the Chesapeake region



Reset or stay the course? Difficult choices for the Bay beyond 2025

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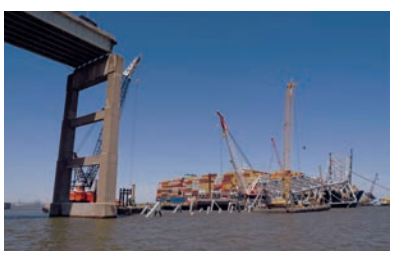
CHOP IT AND DROP IT

Foresters fell trees to improve stream health PAGE 15

THE SEDIMENT QUESTION



Authorities wary of toxics under fallen Key Bridge PAGE 13

ICE MOUNTAIN MYSTERY

Natural refrigerator in WV is a puzzle for the ages PAGE 28

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Half a century after their brush with extinction, peregrine falcons are beginning to return to their natural haunts — the rocky bluffs of Appalachia. For three years in a row, a nesting pair has fledged chicks in their nest on the heights overlooking Harpers Ferry, WV. Read the article on page 21. (Andy Reago & Chrissy McClarren/CC BY 2.0)

ON THE COVER

A kayaker pulls his boat across spartina grass on his way to a marsh gut in lower Dorchester County. Some Bay advocates are pushing for a greater focus on shallow-water habitat for 2025 and beyond. (Dave Harp)

Bottom photos: Left courtesy of the Pennsylvania Bureau of Forestry, center by Dave Harp, right by Ad Crable.

EDITOR'S NOTE

The future Bay and the future Bay Journal

In 2014, when government leaders signed on to a set of voluntary goals in the latest Bay cleanup agreement, their 2025 deadline seemed far away. Now, it's nearly here. The most fundamental goals — for nutrient pollution, streamside trees, wetlands and urban tree canopy — have not been met. The nutrient goal hasn't been met under any previous cleanup pact, either.

The situation has triggered crucial conversations among policymakers, scientists and key stakeholders. I hope that it will soon extend to the broader public. There is philosophical angst over how to set future goals and what the right goals might be. There is recognition that, despite decades of scientific excellence, gaps persist in our understanding of this enormous, complex ecosystem. Do we buckle down on the current path, or is it time for a reset?

The *Bay Journal* has already been tracking these issues. In this edition, you'll find the first in a series of articles that will follow the "Beyond 2025" debate into the coming year. I doubt you'll find coverage like this anywhere else.

The *Bay Journal* is the only source of independent news dedicated entirely to environmental issues in the Bay region. Local news outlets rarely have resources to track environmental news in detail. The *Bay Journal* helps fill that gap. And as a nonprofit media organization, our goal is not to turn a profit but to make environmental news available to as many people as possible.

Frankly, the need is growing. For the Bay and for a future in which we can hopefully live in better balance with our shared natural resources, environmental literacy is critical. Grants and donations power our work. We need your support to keep our in-depth reports coming. And we need your help to expand and reach more people.

I hope you will consider a spring donation to the *Bay Journal* Fund. And we have great news: It will be doubled by a generous matching gift from the Shared Earth Foundation, up to a combined total of $30,000. We're grateful for their support — and yours too! And remember, you can always help by sharing the *Bay Journal* with a friend.

— Lara Lutz

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BY THE
numbers

From the Bay Journal readers survey

The *Bay Journal* readers survey helps us learn about the topics that interest you most, what you enjoy most about the *Bay Journal* and how we can improve. In our 2023 survey, we also asked for your feedback about the amount and quality of environmental news coverage by other media in your local areas. Here are some of the things we learned.

Things readers value about the *Bay Journal*

77%
In-depth articles that put news into context

70%
Articles that explain science

56%
Articles that explain public policy

Topics of high interest to *Bay Journal* readers

90%
Health of the Chesapeake Bay

86%
Health of local streams & rivers

77%
Fisheries & wildlife

70%
Land use & conservation

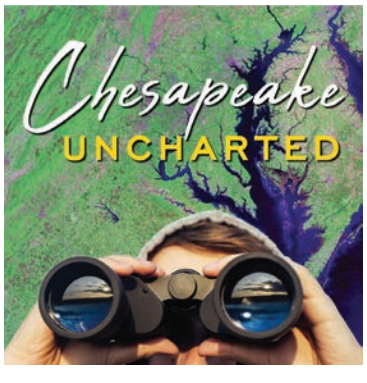
How well does media in your local area cover environmental topics?

68%
Poorly or not at all

Is there a need for more environmental reporting in your local area?

93%
Yes!

Photo by Dave Harp



bayjournal.com/podcasts

LOOKING BACK

30 years ago

Report takes 'inventory' of toxics in Bay

A study found that hundreds of thousands of pounds of toxic substances could be reaching the Bay each year through stormwater runoff and air pollution.

— *Bay Journal,* May 1994

20 years ago

Bay grass survey reveals rebound

Studies showed that underwater grasses increased by 24% in 2013, after three years of sharp declines.

— *Bay Journal,* May 2004

10 years ago

Students net sturgeon in James River

Students on a field trip netted a 6-inch sturgeon near Richmond, providing strong evidence that a remnant population of the fish could be spawning in the James River.

— *Bay Journal,* May 2014

ABOUT US

The *Chesapeake Bay Journal* is published by Bay Journal Media, an independent nonprofit news organization dedicated to environmental reporting in the Chesapeake Bay region. *Bay Journal* reporting reaches well over 250,000 people each month through news articles, columns, films and the *Chesapeake Uncharted* podcast.

The *Bay Journal* is available in print and by email and is distributed free of charge. The print edition is published 10 times a year, and bundles are available for distribution at offices, libraries, schools, etc.

The Bay Journal News Service distributes *Bay Journal* articles and opinion columns for free use in hundreds of newspapers across the region.

Publication is made possible by grants, reader donations and advertising revenue.

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BAY JOURNAL NOTEBOOK

Karl Blankenship of the Bay Journal (left) was part of the 2024 Chesapeake Bay Summit on Maryland Public Television about "course corrections" for the Bay cleanup. The program was then shared with stations in Pennsylvania and Virginia. (Courtesy of MPT)

Read, listen, watch

Bay Journal writers and editors have been as busy as pollinators this spring. But perhaps you saw us at a conference last month — or heard our voices on the radio, a podcast episode or even on TV — so we don't need to tell you about it. But just in case…

Maryland Public Television's Chesapeake Bay Summit took place in April, and several *Bay Journal* staffers played a role in the program. Editor **Lara Lutz** helped shape the content for the summit, while editor-at-large **Karl Blankenship** participated in the panel discussion about the "Course Correction" that's needed for the Bay. Veteran writer **Tim Wheeler** was filmed for a video segment about population pressure. The summit aired in Maryland on April 23 and was then shared with stations in Virginia and Pennsylvania.

Karl also gave a presentation on the future of the Bay during the annual Environment Virginia Symposium in Lexington, VA, in April, recapping some of the lessons from the ongoing *Bay Journal* series, *Agriculture & the Chesapeake Bay: Sowing a Conversation*. Staff writers **Whitney Pipkin** and **Lauren Hines-Acosta** also attended the conference. Lauren introduced herself to several new sources, and Whitney asked a question at a data center panel that stymied some of the panelists: "Are ratepayers paying for the infrastructure expansion being fueled by data centers?" She's since found an answer that's complicated enough to justify another article.

Lauren and Tim participated in the Society of Environmental Journalists' annual conference in Philadelphia, and Tim served as the co-leader of a Chesapeake Bay field trip for 41 attendees. The group spent almost 12 hours circuiting the upper Bay watershed, with stops at Havre de Grace, Conowingo Dam, a poultry and pig farm in Lancaster County, PA, and the Stroud Water Research Center. Lauren was among those who survived the marathon bus trip.

That wasn't enough for Tim in April. He later traveled down Maryland's Eastern Shore to Salisbury University to participate in a panel discussion about offshore wind energy. *The Global Issues, Local Solutions* class to which he spoke is led by our staff writer **Jeremy Cox**.

If you haven't listened to the third season of our podcast *Chesapeake Uncharted*, you're missing out on some great conversations. This season spotlights Bay "Wavemakers" under the age of 40, like Pennsylvania 16-year-old Grace Ziegmont, who tells us how she helped the U.S. Environmental Protection Agency.

Tune in and reach out if you see us around!

NEWS briefs

LOCAL
REGIONAL
NATIONAL

Plans for largest U.S. plastic recycling plant cancelled in PA

A proposed $1.1 billion plastics recycling plant that was to be built in the floodplain of the Susquehanna River in Pennsylvania has been dropped by its developer after local opposition.

Houston-based Encina, which had been wooed by former Democratic Gov. Tom Wolf and the state legislature, said on April 18 that it will stop pursuing what would have been the largest petrochemical plant in the U.S.

Instead, Encina plans to move ahead with similar projects elsewhere in the United States, Saudi Arabia and Southeast Asia.

"While we were excited about the many attractive opportunities for expansion and growth in Point Township, we have determined that our current strategic objectives and long-term goals will be better met though this decision," said Encina CEO Dave Roesser.

The plant would have been located on 101 acres of a former gravel mining site in Northumberland County, about 60 miles north of Harrisburg.

Encina had secured a number of key permits from local officials, and state lawmakers passed legislation to classify such plastic recycling as manufacturing rather than a more-regulated waste disposal process.

But opposition began growing and local officials seemed to cool on the project over concerns about contamination from PFAS, or "forever chemicals," the leaching of plastics from the floodplain into the Susquehanna, the use of up to 2.5 million gallons of river water daily, air pollution, truck traffic and more.

In March 2023, Point Township officials denied the company's request for a variance on height restrictions. Then, on April 2, the borough council of Northumberland, a river town near the site, voted unanimously to "strenuously and unequivocally oppose" the project.

Encina had promoted its recycling technology as a timely response to growing concerns about plastic pollution and waste.

Up to 450,000 tons of hard-to-recycle plastics such as straws, yogurt containers, plastic bags and potato chip bags were to be trucked yearly to the plant. There, high heat would liquify and separate the plastic into basic chemicals that would then be shipped to plastic manufacturers to make new plastic products.

But plastic waste groups called the plan greenwashing and said it would only perpetuate, not reduce, single-use plastics.

A local opposition group, Save Our Susquehanna, wrote in an email to supporters, "Encina is pulling out. We won! We won!" *— A. Crable*

Offshore wind project in VA gets key permit

Virginia's massive offshore wind project marked two important milestones recently.

Dominion Energy on April 9 acquired its final air quality permit from the U.S. Environmental Protection Agency for its proposal to construct what would be the largest offshore wind farm in the country. Once completed, the 176 turbines are expected to produce enough electricity to power 660,000 homes.

Two additional turbines are already operating as part of a pilot project.

The air approval was the last of the 11 federal permits needed for construction to move forward. Workers are expected to begin installing monopiles for the turbines in May. Dominion hopes to have the farm, located 27 miles off Virginia Beach, fully operational by the end of 2026.

The energy giant also announced that the ship needed to complete the installation of the enormous turbines is officially in the water. The 472-foot Charybdis, named after the whirlpool monster that menaced Greek mythological heroes, remains under construction in Brownsville, TX, and is expected to be delivered to Virginia in late 2025.

The ship is being assembled in compliance with the federal Jones Act, which requires cargo traveling between U.S. ports to be shipped aboard vessels owned, built and run by U.S.-based interests. It will be the first such vessel operating in the offshore wind industry in the country. *— J. Cox*

DC metro area aims to hold the line on trees

Officials in the District of Columbia metro area recently committed to maintaining a minimum tree canopy of at least 50% across the region. Leaders from the city and surrounding states signed the regional tree canopy goal on April 11.

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briefs

From page 5

Members of the Metropolitan Washington Council of Governments, made up of elected officials from two-dozen local governments, adopted the regional tree canopy goal on April 11.

Data from the Chesapeake Bay Program in 2023 indicated that, of the metro area's 2.2 million acres, 49.6% were covered by tree canopy. That's down from 51.3 % coverage in 2014.

It's estimated that the area is losing about 4,838 acres of tree canopy per year on average. If that rate of loss continues through 2050, tree canopy coverage would drop to 44.4%.

The Chesapeake Bay Foundation said in a statement that the commitment signals an important commitment to holding the line on trees.

"Trees are indispensable, free, natural infrastructure," said Ann Jurczyk, the Chesapeake Bay Foundation's Virginia manager for urban restoration. "We applaud this much needed aspirational goal to not only reduce pollution and protect communities against climate change threats, but also support healthier neighborhoods, property values and equity goals."

In Virginia, about 9,548 acres of urban and forest canopy were lost between 2014 and 2018. The Bay Foundation attributed the loss to a mix of development, road widenings, wildfires and increased energy infrastructure such as transmission lines and solar panels. Over the same period, Maryland lost an estimated 13,804 acres of canopy while the District of Columbia gained 21 acres of trees.

Julieta Rodrigo, the foundation's urban and community resilience manager in Maryland, said tree canopy is particularly important in urban landscapes and surrounding suburbs, where they keep the streets cooler and help buffer communities against the effects of climate change.

According to the Chesapeake Bay Program, more than 8,300 acres of community trees have been planted across the Bay region since 2014, supporting a goal of expanding urban tree canopy by 2,400 acres by 2025. But the rate of tree loss has outpaced the rate of new plantings. *— W. Pipkin*

Chesapeake Bay Foundation volunteers add mulch to native trees planted in April at Yaupon Place, a community garden in Richmond, VA. (Chesapeake Bay Foundation)

U.S. Sen. Ben Cardin honored for environmental leadership

The University of Maryland Center for Environmental Science presented U.S. Sen. Ben Cardin with the Reginald V. Truitt Environmental Award on April 18 in Annapolis. The award recognizes Cardin, a Democrat, for decades of leadership in environmental public policy.

"As Marylanders and scientists, we are grateful for everything he has done for Marylanders and the Chesapeake Bay," said UMCES Interim President Bill Dennison.

Cardin has served as Maryland's U.S. senator since 2007 and prior to that held seats in the House of Representatives and the Maryland House of Delegates. He plans to retire in 2024.

Cardin helped steer tens of millions in federal funds to Bay research and restoration efforts, as well as federal clean water initiatives. He worked on the Chesapeake Bay Agreement in the early 1980s and championed funding for the state-federal Chesapeake Bay Program. He also supported recovery efforts for striped bass, blue crabs, and oysters, working to boost funding to restore oyster populations in major Maryland tributaries. *— L. Lutz*

briefs

Poplar Island marshes showing resilience, study shows

A study of Poplar Island's marshes suggests that the newly restored scrape of land in the middle of the Chesapeake Bay may have staying power.

Most of the marshes constructed as part of a decades-long reconstruction effort appear to be resistant to drowning from sea level rise — for now, researchers found. Poplar, lying just off the coast of Talbot County's Tilghman Island in Maryland, was once home to a community of about 100 residents but steady erosion drove them off by the 1920s.

A restoration project launched in 1998 has been rebuilding the island with mud dredged from Bay shipping channels and aims to create 1,715 acres of new bird and wildlife habitat, with about 770 of those acres consisting of marshland.

But salt marshes build height mainly by capturing sediment and accumulating plant material in their soils, and it's uncertain if constructed marshes build height rapidly enough to keep up with rising sea levels.

It's an important question: A growing number of projects worldwide recycle dredge material into new tidal marshes. Scientists say that the years-long monitoring program at Poplar Island offers a rare window into what happens to such marshes.

They found that most of Poplar's marshes are gaining height faster than the current rate of "relative sea level rise," the combined increase in the sea's surface from human-caused global warming and the natural sinking of the Earth's crust in the Bay region.

Studies of the "rebuilt" marshes of Poplar Island, shown here in 2016, will offer new insight into the viability of using dredge spoil to restore marshland and counteract sea level rise. (Will Parson/ Chesapeake Bay Program)

Even the most vulnerable marshes increased an average of 7.7 millimeters per year in height while the Bay's surface rose at about 5.7 mm per year. The study was conducted by the University of Maryland Center for Environmental Science, the University of South Carolina and the National Oceanic and Atmospheric Administration. *— J. Cox*

Plant discharges may harm Shenandoah smallmouth bass

Chemicals in municipal and industrial wastewater plant discharges may be affecting the reproduction of smallmouth bass in the Shenandoah River, according to a recent study from the U.S. Geological Survey.

The study, published in March in the *Journal of Environmental Toxicology and Chemistry*, found that the number of young-of-year smallmouth bass — those less than a year old — declined as the percentage of effluent in the river increased.

The study found that there were on average 41% fewer young smallmouth bass during spring spawning season when river levels had been low the previous year, and in the months immediately before spawning.

When there is less rain entering the river to dilute wastewater effluent, the study suggested, adult bass were exposed to higher chemical concentrations as wastewater makes up a greater percentage of the river.

Other studies have shown that smallmouth bass are sensitive to chemicals in effluent, and the researchers said they suspected that exposure to high concentrations of those chemicals during dry periods hurt the fishes' ability to produce young the following year.

Scientists said that the percentage of effluent in the river better explained fish reproduction than changes in river levels alone.

The study used smallmouth bass survey data collected by the Virginia Department of Wildlife Resources at 33 sites within the watershed from 1998-2018, as well as river flow data and discharge records compiled by state agencies for the 98 treatment plants in the watershed, comprising 76 municipal plants and 22 industrial facilities, in the watershed. *— K. Blankenship*

EPA provides $206 million for grants in Bay region

Programs aim to support restoration work while reaching new communities

By Lauren Hines-Acosta

The U.S. Environmental Protection Agency, hoping to accelerate lagging restoration efforts for the Chesapeake Bay, recently announced that it was providing $206 million for grant programs administered by the National Fish and Wildlife Foundation and Chesapeake Bay Trust.

Adam Ortiz, administrator for the EPA's Mid-Atlantic region, said the funding represented a "historic investment" and would provide "game-changing funding for our partners who are equally committed to preserving, protecting and enhancing the communities, people and businesses who rely on the Bay."

The funding will support projects over the next four years that manage runoff from city streets and rural farmlands, improve stream habitat, protect Chesapeake shorelines and improve the environment in historically disadvantaged communities.

"These grants reflect our continuing commitment to protect the Chesapeake Bay and preserve our nation's environmental legacy for future generations," Ortiz said in making the announcement March 27.

Adam Ortiz, administrator of the U.S. Environmental Protection Agency's Mid-Atlantic Region, announced on March 27 in Arlington, VA, that the EPA was awarding $206 million to the National Fish and Wildlife Foundation and Chesapeake Bay Trust. (Chesapeake Bay Program)

Congress has allocated $110 million of its annual budget for these grants, which will support projects led by environmental groups, state departments, universities, churches and public schools. But officials say the remaining $96 million is a bonus, stemming from the Bipartisan Infrastructure Law, also known as the Infrastructure Investment and Jobs Act.

Officials hope the influx of money will help accelerate efforts to improve the Bay and its watershed as many goals set by the state-federal Chesapeake Bay Program are far behind schedule, including those for reducing nutrient pollution, planting streamside buffers, restoring wetlands and expanding tree plantings in urban areas.

The grants will support projects in all Bay watershed states and, beyond restoration activities, will also support efforts ranging from expanded environmental education to fish studies. Examples of recently

announced projects include:

- The Lancaster Farmland Trust in Pennsylvania received $765,700 in grant funding and leveraged an additional $2.4 million in matching funds to create 50 conservation plans and deploy best management practices on five farms.
- Arlington County, VA, received $282,400 and leveraged an additional $151,100 in matching funds to improve the Grandma's Creek watershed. Instead of re-engineering the stream to address stormwater runoff, the county plans on adding rain gardens and trees to filter runoff.
- The Maryland Department of Natural Resources received $977,600 and leveraged an additional $8.1 million in matching funds to restore headwater streams and wetlands in the Severn River Watershed. The department plans to restore more than 2,000 linear feet of stream and add 2.7 acres of wetlands.

Most of the grants, totaling $193 million, will be dispersed from the National Fish and Wildlife Foundation's Innovative Nutrient and Sediment Reduction Grants and Small Watershed Grants programs. Jake Reilly, who oversees the Bay-related grant programs, said the organization has worked over the years to build relationships with locally led efforts that can leverage capacity, resources and expertise.

Farms in southern Lancaster County, PA, will be the beneficiaries of more than $3 million in grant money and matching funds, through the Lancaster Farmland Trust, to create conservation plans and deploy best management practices. (Frank G. Heron/CC BY-NC 2.0)

The Bay Trust received $13 million for its Community Capacity Building grants, which help build local engagement for environmental efforts.

"A lot of land in that [Bay] watershed is privately owned," said Jana Davis, president of the Chesapeake Bay Trust. "And if we don't give people, who have agency and control over that private land, resources to do projects, I personally don't think we're ever going to get there."

The funding allocated under the infrastructure law must adhere to President Biden's Justice40 executive order, which aims to allocate 40% of certain federal environmental funding toward historically disadvantaged communities. That means 40% of the grants issued by the National Fish and Wildlife Foundation and Bay Trust must go to underserved communities, according to Rachel Felver, communications director for the Chesapeake Bay Program.

Still, some groups have questioned the adequacy of the funding for disadvantaged communities, criticizing Justice40 for using an expansive definition of environmental justice that they say doesn't bring enough emphasis to race. The executive order uses the Climate and Economic Justice Screening Tool to identify "disadvantaged communities." It looks at multiple factors like climate change, housing and legacy pollution alongside census data.

While the grants aren't explicitly listed as environmental justice programs, Reilly said the foundation prioritizes projects that can fund work in underserved communities and reach new groups.

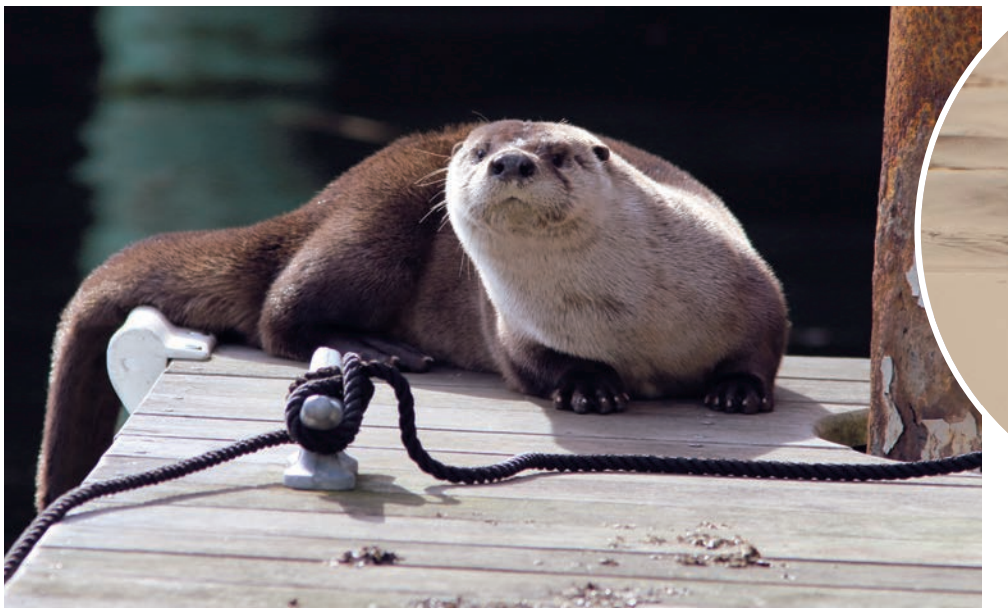
"At the end of the day, the most impactful projects that we have, the most successful projects that have the longest prospect for sustainability over the long term, are the ones that have deep and lasting approaches to community engagement," Reilly said.

Among the grants is $499,600 to Defensores de la Cuenca, which deploys an adult Spanish-language watershed training program. Another grant provided $75,000 and leveraged an additional $98,000 in matching funds for the Increasing Capacity for the Octoraro Source Water Collaborative. It provides technical assistance to Amish farmers in Pennsylvania for water protection practices. Eight programs also focus on urban tree canopies. ■

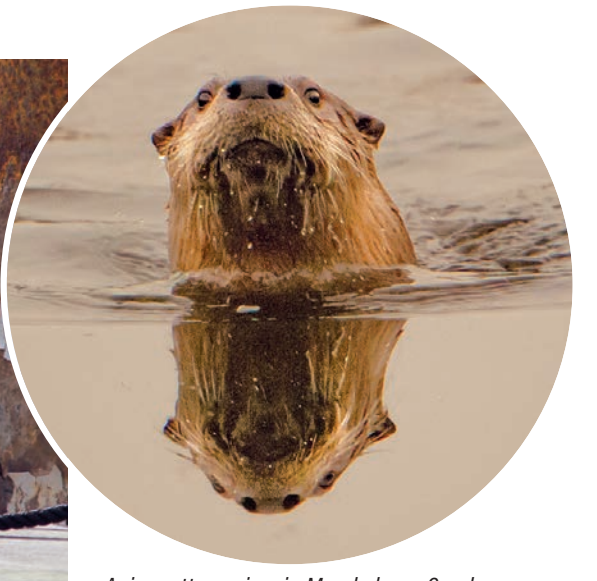
Norfolk program asks for help from citizen 'otter spotters'

Project seeks photos and other signs of otters' return to local waterways

By Lauren Hines-Acosta



A river otter near the Nauticus battleship in Norfolk, VA, relaxes on a dock in 2018. (Eric Alton)



A river otter swims in Marshyhope Creek, a tributary of the Nanticoke River that flows through Delaware and Maryland on the Delmarva Peninsula. (Dave Harp)

Megan Isadore, co-founder of the River Otter Ecology Project, led a nature walk to Plum Point Park in Norfolk on March 23. The group reached a dock — a popular site for evidence, if not sightings, of their favorite critter. Some combed through the shore's sand, and others scoured the dock.

Finally, they found something. It was otter scat, or poop. While not exactly the cute creature everyone hoped to see, they were excited to be on the right track.

In collaboration with the Elizabeth River Project and Fieldscope, a nonprofit data analysis organization, the River Otter Ecology Project is a community science program, imported from the West Coast, to assess the otter population and water quality in one of Norfolk's most environmentally challenged waterways. Participation is open to the public.

Isadore started the project, informally known as Otter Spotter, in 2012 in San Francisco, where river otters were thought to be extirpated. The animal had essentially disappeared in the area, initially from fur trapping and then from pollution and habitat loss. But Isadore wasn't convinced they were gone, so she formed a team to map locations where the public saw or photographed otters. The resulting dataset increased the official California river otter range map by 4,100 square miles.

Now, Isadore is going national, and one of her first stops is the Elizabeth River. Like San Francisco, Norfolk is where water meets urban landscapes and connects to a large bay.

"It's our serenity within a large urban area," said Chesapeake resident Angelique Thames, who attended the Otter Spotter presentation at the Pru and Louis Ryan Resilience Lab and Learning Park. "And so, we kind of have that ownership to it and wanting to protect it, keep it safe and keep it clean."

As the apex predators of their food chain, otters need many things to thrive, from plenty of food sources to adequate shelter. So, if an otter is present, there's a good chance that the ecosystem is fairly healthy.

"The fact that there are river otters here indicates that there are some good things going on in the [Chesapeake] Bay," Isadore said.

Like the situation out West, trapping took a heavy toll on the otter population in the Bay region, as did water pollution, habitat loss and disruption of natural streams. In Virginia, for instance, their numbers were extremely low by the 1970s, and in 1978 the state both outlawed trapping and added otters to its endangered species list.

The population rebounded fairly quickly, even with the animals' comparatively slow pace of reproduction. Otters were delisted in Virginia in 1990, though the state continues to restrict trapping to three months of the year. Pennsylvania and Maryland also restrict otter trapping. Isadore believes that has made a difference, but she also attributes their return to the Clean Water Act and Clean Air Act.

Leah Card, a Virginia Department of Wildlife biologist specializing in furbearers — animals trapped for fur — said the state's river otter population is rising and doing well.

"We only have a few scientists, so having this citizen science project [tell us] where the otters are, note any behaviors — that's really helpful," Card said. "I think just getting a better glimpse of what the population is now will help us going forward."

Marjorie Mayfield Jackson, Elizabeth River Project executive director (center); Megan Isadore, River Otter Ecology Project co-founder and executive director (right); and Otter Spotter attendees hike to Plum Point Park in Norfolk to search for otters in March. (Lauren Hines-Acosta)

In California, the data collected by Otter Spotter has helped agencies make decisions on development plans, land usage and oil spill response plans.

Isadore hopes to bring that knowledge to the Chesapeake Bay — and she's counting on citizens, even outside the Elizabeth River watershed, to join the search and submit their photos online (www.elizabethriverotter.fieldscope.org). The Elizabeth River Project is also offering FieldScope training June 20 to teach how to enter the data.

To spot an otter, Isadore recommends not only watching for movement on the water's surface but also for signs on land, including smashed vegetation, pawprints and especially scat. It's not unusual to spot the animals in storm drains, rip rap and gravel bars. They also love docks and are most active at dusk and dawn.

Otters often get confused with muskrats, beavers and nutria. Features unique to otters include a long tail that is a third of its body, extremely smooth fur when wet and a weight of 15–20 pounds — smaller than an adult beaver, but bigger than any muskrat.

While otters are cute, they are wild animals. Isadore recommends maintaining distance.

"I hope people will pay attention to this good news," Isadore said. "It's one of our few good news stories that we have these days. And it shows that people can remediate the problems that we've caused, and that we need to not give up." ■

MD lawmakers pass some green bills, take a pass on others

Some advocates hoped for stronger action on climate measures

By Timothy B. Wheeler

A roof with solar panels covers part of a parking lot at a federal building in New Carrollton, MD. Maryland legislators passed a bill that provides financial incentives for nonresidential rooftop solar. (Carol M. Highsmith/public domain)

Maryland's 2024 General Assembly session yielded what one activist called "a mixed bag" of legislation dealing with the Chesapeake Bay, climate change and environmental justice.

During their 90-day session, lawmakers okayed a reboot for Bay restoration efforts, gave boosts to rooftop solar and offshore wind, and renamed the invasive snakehead fish. They also put $90 million toward fighting climate change.

But legislators also killed or simply passed over other measures environmentalists backed. Bills failed that would have stopped subsidizing trash incineration as a form of green energy, further protected shorelines and made it easier to deny permits for projects that pollute disadvantaged communities. The final straw for many: a "dark-of-night" budget amendment that held up new rules to reduce climate pollution from buildings.

"We accomplished, actually, a lot," said Kim Coble, executive director of the Maryland League of Conservation Voters. "And yet I think the losses, while not as many, were probably more significant than we had anticipated."

Winners

The main Bay-related legislation to pass was the Whole Watershed Act, which would provide $20 million over five years for efforts to reduce polluted runoff and improve fish and wildlife habitat in five Chesapeake tributaries. It is an attempt to remedy shortcomings in the long-running Bay restoration campaign that were spelled out last year in a sobering scientific report.

"We've been at this work for [41] years and we're seeing only limited results," said Democratic state Sen. Sarah K. Elfreth at a hearing on the bill, which she cosponsored. She said the measure would direct the state to focus on reducing pollution and improving habitat in shallow waters, which are more important to fish and people than the "dead zone" in the Bay's deepest waters.

Lawmakers left it to state agencies to select rivers for the five pilot projects but specified that at least two must flow through underserved communities.

Included in the bill are new guardrails on stream restoration projects, which aim to curb sediment and nutrient pollution but have sparked complaints over the clearing of streamside trees.

Poultry "sludge": Farmers planning to store or use "food processing residuals" would have to get a permit and face fines of up to $5,000 per day for violations of new rules. An influx of feathers and semi-solid waste from chicken processing plants has sparked an outcry in rural communities over odors and flies.

"Clean Water Justice": Residents and community groups would have the right to go to court to enforce state laws protecting inland wetlands and headwaters streams after a U.S. Supreme Court decision removed federal protection.

Energy efficiency: Maryland's EmPOWER program to help residents lower their energy bills was retooled to emphasize greenhouse gas reductions. It also provides incentives for homeowners to switch from natural gas to electricity for heating and cooking.

Climate: Lawmakers stripped an exemption for manufacturers from limits on carbon emissions. They provided tax credits and other financial incentives for community solar projects and solar panels on parking lots and nonresidential rooftops. They also opened the door for additional state subsidies to an offshore wind project planned off Ocean City. The money Gov. Wes Moore proposed for climate efforts in the budget goes to electrifying community buildings, installing electric vehicle chargers and buying electric school buses.

Snakeheads: Hoping to make northern snakeheads more palatable to consumers, lawmakers decided to give the invasive fish from Asia (*Channa argus*) the new name of Chesapeake channa.

Losers

Data centers: Lawmakers streamlined regulatory review of proposed data centers after one was denied an air quality waiver, leading to the project's cancellation. Environmentalists resisted the bill but withdrew their opposition after it was amended to allocate some data center tax revenue to emission reductions.

Environmental justice: A bill died in the Senate that would have authorized the Department of the Environment to deny permits for certain projects because of their impacts on overburdened and disadvantaged communities. The measure divided environmentalists, with some groups objecting that it didn't go far enough.

Solar: Legislation aimed at settling disputes over the siting of large-scale solar projects on farms or in forests never got out of committee.

Living shorelines: A bill aimed at nudging more waterfront property owners to install "living shorelines" failed to get out of committee. It would have required MDE to give greater scrutiny to requests to replace failing bulkheads or riprap with more armoring rather than using a living shoreline.

Incineration: For the third time since 2021, lawmakers refused to strip renewable energy subsidies from "waste-to-energy" trash incineration.

Fossil fuel fees: A bill proposing stiff one-time fees on the world's biggest fossil fuel producers would have raised $9 billion to help carry out the state's climate pollution reduction plan, estimated to cost $1 billion a year. The legislation died in committee.

Building energy: A last-minute provision slipped into the state's budget bill blocks MDE from finalizing new building energy performance standards until it performs additional studies. Under the 2022 Climate Solutions Now Act, private building owners must reduce their carbon emissions to net zero by 2040. MDE spokesman Jay Apperson said the budget amendment may delay rollout of the building standards but doesn't change the requirement.

Jamie DeMarco, Maryland director of the Chesapeake Climate Action Network, accused the legislature of not just delaying but weakening the 2022 climate solutions law. He also lamented that Moore, after vowing to shift Maryland to 100% clean energy by 2035, did not list any climate measures among his legislative priorities.

MDE's Apperson countered that the legislative session "laid a solid foundation" for the administration's climate and environmental agenda, and he predicted the governor would include them among his priorities next year. ■

Data center pushback doesn't get much traction in VA, MD

Bills aimed at regulating footprint of rapidly expanding industry stall out

By Whitney Pipkin

Decision-makers across the Chesapeake Bay region are asking more questions about the environmental impacts of a proliferation of data centers. But measures aimed at reining in what some see as the industry's unrestrained growth, particularly in Virginia, didn't make much headway this year. Virginia lawmakers introduced more than a dozen bills this session in attempts to add regulatory oversight for the industry. They all failed, though the legislature did agree to conduct a yearlong study of the industry's impacts.

In Maryland, Democrat Gov. Wes Moore sees data centers as a necessary boon for the state's economy. This session, he was able to push through a measure that exempts data centers from needing certain approvals from the state's Public Service Commission, which regulates electricity use.

Earlier this year, the commission denied a data center company's request for an air quality waiver for backup generators. In response, the company pulled the plug on a project planned for Frederick County, MD.

The Maryland League of Conservation Voters came out against the bill during the session. It passed, but the group was pleased by an amendment that allocates 15% of the annual corporate income tax paid by data centers to a fund aimed at reducing overall emissions. The General Assembly in 2020 had already passed a tax exemption on data center equipment and appliances, potentially a significant savings in building facilities in the state.

In late 2023, nearly 30 environmental, preservation and climate advocacy groups in Virginia joined forces to create a Data Center Reform Coalition focused on legislative action to regulate the growth of the industry. About 70% of all online activity flows through Northern Virginia, home to the world's largest concentration of data centers.

Virginia offers tax exemptions to attract data centers to the state, as long as they meet certain criteria. That tax break for fiscal year 2023 was worth about $750 million, according to the state's 2023 Comprehensive Financial Report.

A study commissioned by the industry, meanwhile, found that data centers contributed $54.2 billion to the state's gross domestic product between 2017 and 2021.

"Even though Virginia has the largest data center market in the world, our regulatory oversight is behind," said Julie Bolthouse, land use director for the Piedmont Environmental Council, at a December press conference. "We need to catch up."

In Virginia, about 17 data center bills were presented this past legislative session. Some would have required data centers to meet energy efficiency standards to garner building permits or tax exemptions. Others focused on water and energy usage, carbon emissions or noise impacts.

A few bills tried to limit where developers could build by saying data centers couldn't be close to schools, parks or residential areas. Others sought to have data centers disclose water, power and energy use before they received county approvals.

In each case, lawmakers either left the bills in committee or pushed them to 2025. Many said they want to wait for the Virginia Joint Legislative Audit and Review Commission study, which was commissioned on Dec. 11, to consider its results.

The study will examine several issues surrounding data centers: noise, energy demand and supply, impacts on natural resources, policies to transition from fossil fuels to renewable energy sources and economic impacts. There is no deadline for releasing the results.

"It was disappointing to see all the bills deferred until 2025 when there was a clear need for action on certain things right away," Bolthouse said.

One measure sought to add transparency to the cost of new infrastructure, such as the transmission lines needed to support the energy needs of data centers. Virginia ratepayers currently cover the cost of new transmission lines even if they are only needed to serve data centers. ■

Key Bridge salvage raises concerns about toxic sludge

Conditions around the wreckage, though, pose no immediate concerns for environment

By Jeremy Cox

By all accounts, the destruction of Baltimore's Francis Scott Key Bridge was first and foremost a human tragedy: Six men — all of them workers performing routine road maintenance — lost their lives in the early morning hours of March 26 after a cargo ship slammed into the span.

But was it an environmental tragedy as well? It doesn't appear to have been, authorities say.

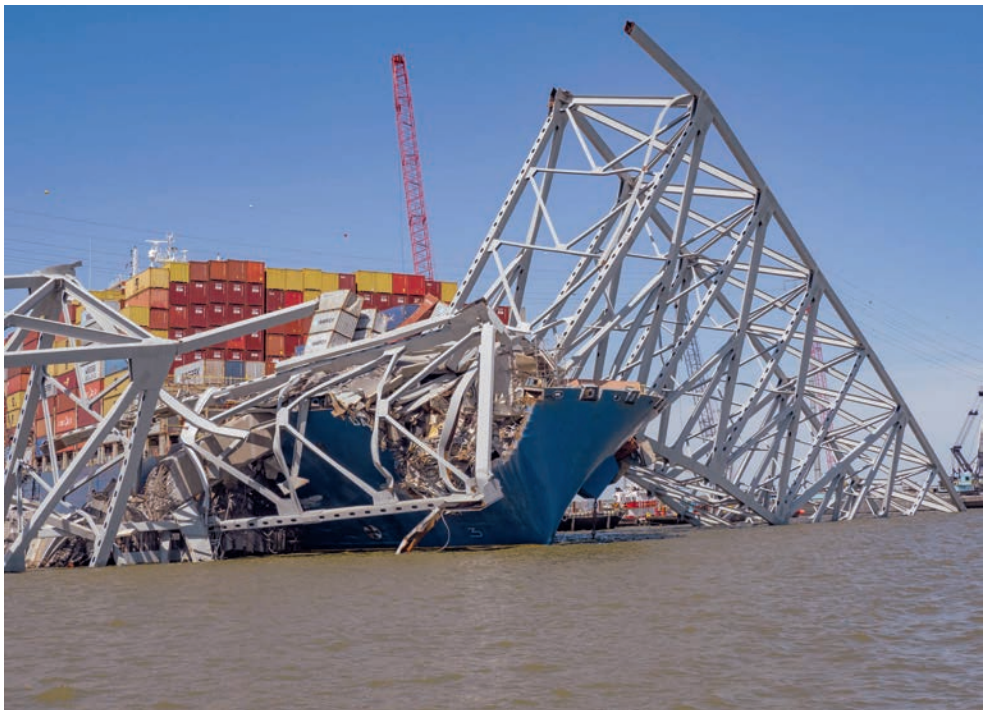
That's not to say the environment is out of the woods. As the long, slow work of retrieving the fallen portion of the bridge from the mouth of the Patapsco River continues, environmental experts say there are potential threats to water quality and aquatic life.

And in the years ahead, those experts point out, the situation will bear close monitoring as attention turns toward the planning and reconstruction of the lost Interstate 695 segment.

The 1.6-mile Key Bridge had stood about four miles from the entrance to Baltimore Harbor since 1977. Its demise came suddenly when the container ship *Dali* apparently experienced power problems and rammed into one of the bridge's supports. Police had managed to clear the bridge of traffic beforehand, but six construction workers plunged to their deaths. As of April 19, two of their bodies remained missing.

The FBI is conducting a criminal investigation of the incident.

In the weeks afterward, a picture of the bridge collapse's environmental impacts was only beginning to come into focus. Here is what is known so far.



Wreckage of Baltimore's Key Bridge rests across the bow of the nearly 1,000-foot container ship Dali. Authorities say there is no immediate risk of environmental damage from contents of the 14 damaged or destroyed containers. (Dave Harp)

The immediate aftermath

An oily sheen appeared on the surface of nearby waters in the hours after the collapse, prompting worries that the stricken ship was leaking hazardous fluid. Authorities deployed thousands of feet of booms to contain any spills. The sheen has since dissipated.

The massive vessel was carrying more than 4,000 containers at the time of the incident, according to the salvage operation's public affairs office. Of those, 56 contained hazardous materials, including corrosive and flammable substances, lithium metal batteries and other chemicals. The hazardous chemicals onboard that spilled from 14 damaged or destroyed containers consisted of soap products, perfume products and other unspecified resin.

Three rounds of water sampling conducted upriver and downstream of the site, though, showed no evidence of fuel spillage or the release of lithium or sulfur, according to the Maryland Department of the Environment. Fish consumption advisories weren't altered.

"At this time, there is no immediate concern of risks to the environment or public health," said Lt. Cmdr. Amanda Faulkner of the U.S. Army Corps of Engineers, the agency coordinating the recovery effort.

Crews have also worked to minimize the potential threat posed by a BGE natural gas pipeline that runs beneath the shipping channel in the vicinity of the crash site. The line has been shut off and the gas inside of it rendered inert to prevent any fire or explosions, authorities say.

Sediment

"Our biggest concerns moving forward are really related to the impacts of disturbing the legacy sediments we know are present in the harbor," said Alison Colden, Maryland executive director for the Chesapeake Bay Foundation.

Much of Baltimore Harbor's sediments contain a toxic cocktail of lead, copper, zinc and mercury, as well as organic chemicals such as PAHs (polycyclic aromatic hydrocarbons) and PCBs (polychlorinated biphenyls). While contamination levels can be dangerously high, they vary from place to place, researchers say.

The material inside the regularly dredged shipping channel tends to consist of fresher deposits and is, therefore, relatively clean. But the sediment in some locations outside those channels is so polluted that scientists have long admonished against disturbing it. Under normal circumstances, that's acceptable because the water on top of the contamination acts like a cap, keeping the pollution in a state of chemical equilibrium, experts say.

Efforts to unstick the ship from the mud and reopen the channel, though, could upend that balance.

Workers have opened three 20-foot-deep temporary alternative channels around the main channel to accommodate smaller vessels. A fourth temporary channel, 35 feet deep and able to accommodate some cargo ships, was expected to be ready by the end of April.

A permanent federal navigation channel, deep enough at 50 feet for the largest ships, is tentatively on track for reopening by the end of May.

"With the crashing down of the bridge and pulling the bridge out of the mud, those activities of recovery and rebuilding are going to cause a lot more disturbance than the natural processes that occur there," said Larry Sanford, a University of Maryland Center for Environmental Science sediment expert who has studied the harbor for decades.

The good news, said Jeff Cornwell, another UMCES sediment expert, is that the bottom sediment in the part of the river where the bridge collapsed is generally cleaner than it is farther upstream.

MDE has been testing the water for metals to assess whether any of the response activities might be causing contaminants in the riverbed to be resuspended. So far, no elevated levels have been detected, Faulkner said.

Aquatic life

Fish, crabs and other living creatures will probably emerge from the ordeal relatively unscathed, said UMCES President Bill Dennison. The biggest concern is the timing of the emergency dredging, he added. The Port of Baltimore typically winds up its routine harbor dredging program by the start of April each year to prevent impacts to growing underwater plants and heightened fish activity in the warmer months.

Dennison said he is confident the port will accomplish the work "in the most environmentally sensitive way possible with the technology at hand."

Rebuilding the bridge

It will likely take several years and hundreds of millions of dollars to reconstruct the vital transportation link. Members of Congress from Maryland have crafted a bill to have the federal government assume 100% of the cost of the building the replacement.

Environmentalists say they fully expect the environmental permitting for the project to be expedited to get the bridge reopened as quickly as possible. If that's the case, Proust said, "we don't want that to result in skipping any of the steps that would happen under a traditional review process." ■

View the photo gallery at bayjournal.com/multimedia.

EPA sets limits on 'forever chemicals' in drinking water

Nationwide enforceable limits replace state-by-state approach to PFAS

By Timothy B. Wheeler

The Chesapeake Bay watershed's checkerboard approach to "forever chemicals" is finally beginning to end. The cost to water utility customers — and the timeline for real action — remains to be seen.

After a long delay, the U.S. Environmental Protection Agency has finalized enforceable nationwide limits in drinking water for six per– and polyfluoroalkyl substances, highly persistent toxic chemicals known by the shorthand term PFAS.

"Drinking water contaminated with PFAS has plagued communities across this country for too long," said EPA Administrator Michael S. Regan in announcing the action on April 10.

The EPA's decision ends more than 15 years of studies, health advisories and deliberation by federal regulators amid growing evidence of harm and calls for action. In the absence of any movement until midway through the Biden administration, 11 states — including New York, Pennsylvania and Delaware in the Chesapeake region — acted to set their own limits on at least some PFAS, while other states waited for the EPA to tell them what they should do.

A family of thousands of synthetic chemicals, PFAS have been widely used since the 1940s in a variety of industrial and consumer products, including firefighting foam, nonstick cookware, water– and stain-repellant fabrics and some food packaging.

PFAS have been found in the drinking water or groundwater of nearly 2,800 communities nationwide, including dozens in the six-state Bay watershed. Much of the contamination has been found near military facilities or airports where firefighting foam laden with PFAS was deployed or stored.

Studies have linked long-term exposure to even low levels of some of the chemicals with serious health problems, including cancer and reproductive and immune system damage.

The EPA set maximum contaminant levels for two of the most studied compounds — perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS) — at barely detectable concentrations of 4 parts per trillion each. The rule sets a similarly low limit on mixtures of four other compounds: PFNA, PFHxS, PFBS, and GenX.

According to the EPA, the new limits should reduce PFAS exposure for about 100 million people nationwide who rely on public drinking water systems, preventing thousands of deaths and reducing tens of thousands of serious illnesses.

Environmentalists and public health experts hailed the EPA's action as historic if overdue. Ken Cook, president of the nonprofit Environmental Working Group, called the agency's action the most consequential decision to regulate drinking water in 30 years.

The American Water Works Association, which represents many utilities, contended that the costs of complying with the new limits could be three times higher than what the EPA estimates. It warned that many communities may not be able to afford that.

The EPA estimates that 6–10% of all public drinking water systems subject to this rule might have to take action. All public water systems have until 2027 to monitor for these chemicals, and they must inform their customers of their findings. Where PFAS is detected above the limits, they have until 2029 to reduce the levels.

New York and Pennsylvania previously set their own limits on PFAS in drinking water, but at levels higher than now required by the EPA. Delaware was in the process of setting limits but held off after the EPA announced its proposed limits in 2023.

In Pennsylvania, where the nationwide PFAS scare surfaced a decade ago in drinking water wells surrounding two former military bases, state Sen. Carolyn Comitta, a Democrat, called the announcement "a great day for clean water and the people of Pennsylvania."

The state Department of Environmental Protection estimates that one-third of Pennsylvania's 3,117 public water systems contains one or more of the contaminants. In 2023, when the EPA unveiled its proposed limits, DEP said that 93 water systems had PFOA and PFOS levels above them.

The EPA is providing $1 billion from the federal Bipartisan Infrastructure Law to help utilities nationwide test for and clean up any contaminants, as well as to provide for testing and treatment of private wells. About 3.5 million Pennsylvanians use such wells as drinking sources.

In Maryland, 64 community water systems already have been tested and

PFAS have been found in the drinking water or groundwater of nearly 2,800 communities nationwide, including dozens in the six-state Bay watershed. (Adam S. Keck/CC BY-SA 4.0)

found to contain PFAS levels above the EPA limits, according to Jay Apperson, spokesman for the state Department of the Environment. MDE has detected one or more PFAS in about one-fourth of more than 450 community water systems tested to date. The state has begun testing the rest of about 1,000 systems statewide affected by the rule.

MDE has worked with water systems showing elevated PFAS levels to find alternate water sources where available, Apperson said, and has provided a total of $46 million to 13 community water systems to address contamination.

In West Virginia, which has dealt with PFAS contamination in the Ohio and Potomac river watersheds, the state commissioned the U.S. Geological Survey to sample the finished drinking water of 37 public water systems previously identified as having certain PFAS compounds in their raw-water source. Twenty-seven public water systems were found to have detectable levels in their finished drinking water, and 19 had levels above at least one of the EPA's proposed regulatory standards.

In Virginia, the state Department of Health has been conducting PFAS sampling at selected public drinking water systems since 2021. As of December 2023, the effort had found concentration levels of concern at 18 systems — mostly in Northern Virginia and the Newport News and Roanoke areas. Those systems serve about 2.5 million people, or nearly one-third of the state's population.

David Sligh, conservation director of Wild Virginia, called on state regulators to follow up on the EPA's rulemaking by taking action to prevent PFAS releases to the environment through wastewater discharges and sewage sludge applied to farmland.

A bill passed by the legislature and signed by Republican Gov. Glenn Youngkin this spring requires the Department of Environmental Quality to investigate potential sources of PFAS whenever a water system reports levels above the federal limit. Any manufacturing plant suspected of being the source must self-report the types of PFAS compounds it uses.

In Delaware, the U.S. Geological Survey detected PFAS in more than half of the 30 wells it sampled, with two above EPA's maximum contaminant level.

And in New York, the state has provided $2.5 billion for upgrading water infrastructure. Hundreds of systems have detected unsafe PFAS levels. ■

‘Chop and drop’ tree felling improves stream ecosystems in PA

Land managers cut streamside trees to improve fish habitat and help manage sediment

By Ad Crable

To the unknowing angler or backwoods explorer, stumbling onto the scene can be jarring: mature hardwood trees growing along the banks of high-quality streams, chain-sawed at their base and intentionally dropped across the water. Exposed root balls winched into the streambank. During high water, the obstructions shunt water out of the stream and onto the forest floor.

Is it eco-vandalism? No. It’s a carefully orchestrated and increasingly popular stream improvement technique embraced by public land managers and conservation groups in Pennsylvania.

The practice is known officially as “large woody material stream restoration” but more commonly as “chop and drop.”

Advocates say it is a valuable tool to help build populations of disappearing native eastern brook trout, boost aquatic insects, reduce stream erosion and sediment buildup, and to generally improve the stream ecosystem.

“It’s one of the most effective methods for habitat improvement,” said Luke Bobnar, watershed scientist for the Western Pennsylvania Conservancy. “I think it’s growing because we now have a cultural recognition that wood is part of a vibrant ecosystem.”

The conservancy has carried out chop-and-drop projects on 56 miles of streams in the Allegheny National Forest, state game lands and other places.

Trees and branches have been dropping generous loads of woody debris into streams, without help from humans, for all of Earth’s history — until the last few centuries, when old growth forests virtually disappeared in a geological blink of an eye. And even where second-growth forests have taken their place, the trees are not old enough to regularly supply woody material to the streams.

Enter chop and drop, where teams of trained workers armed with little more than helmets, chainsaws and perhaps winches trek deep into the woods, where heavy machinery can’t go. There, they restore a long-missing link to high-quality streams, especially in inaccessible and vital headwaters.

“What we’re trying to do with this process is replicate what an old-growth forest would be doing naturally. We’re just speeding that up and accelerating the process,” said Michael Wright, who oversees resource management in the 90,000-acre Michaux State Forest in central Pennsylvania.

Michael Wright, an assistant district forester in Pennsylvania’s Michaux State Forest, points to an area where trees have been cut and allowed to fall across a trout stream. (Ad Crable)

Allegheny National Forest staff and Pennsylvania chapters of Trout Unlimited were the pioneers for chop and drop in the state, treating more than 70 miles of streams in its only national forest. The work has attracted volunteer groups as well, such as Backcountry Hunters and Anglers.

Chop and drop is not a new concept. It has been around for 20 years or so, first used in Western states and now in the East. But only eight years ago, it was not permitted on Pennsylvania streams.

Advocates of the technique with the Pennsylvania Fish and Boat Commission and the Pennsylvania Department of Conservation and Natural Resources persuaded the state Department of Environmental Protection to permit chop and drop by classifying it as fish habitat enhancement.

“You couldn’t do these activities before because there was no permit for it. Now it’s exponentially growing every year,” said Mark Sausser, stream habitat chief for the Fish and Boat Commission. “This opened up a huge amount of forested watersheds all over the state.”

The Pennsylvania Game Commission is inviting chop and drop on its high-quality streams on the 1.5 million acres of state game lands.

During a drenching, early-spring rainstorm, Wright led a walk along Mountain Creek, a state-designated “exceptional value” wooded stream in Michaux State Forest that holds native eastern brook trout, the state fish.

Forester Michael Wright stands in floodplain wetlands created by cutting trees and allowing them to fall into an adjacent stream. (Ad Crable)

The water may be high quality but until three years ago, the stream channel was relatively straight and the surface glassy smooth — no riffles, plunge pools or woody debris where trout could hide from bigger fish and anglers.

But in 2021, a crew worked its way along both sides of the stream, selecting trees, most of them 15–18 inches thick, then felling them into the stream — about one tree every 100 feet. Evergreens were off-limits as they shade the water year-round.

Since then, Wright said, monitoring of the stream ecosystem and fish health has showed dramatic results. There are more and larger trout and their habitat has improved. The trunks and limbs embedded in the stream created new riffles, pools and undercut banks where fish could seek refuge and get out of fast-flowing current. Oxygen was plowed into the water. The sandy bottom was scoured away to expose a layer of gravel preferred by trout for spawning.

In the fall, leaf clusters collected by the branches contained stoneflies and other aquatic insects that trout feed on.

During the spring visit, Louisiana waterthrush were found nesting in a rootball. Wood turtles were using the sand pushed to the edges of the stream. Wright held up a shoot of greenbrier, a new vine grabbing hold in the streamside earth — and one favored by ruffed grouse, another keystone species in trouble.

Acorns and seeds washing downstream were taking root in the new openings left by the cut trees, increasing the diversity and age class of the forest.

During storms, water is now diverted onto the adjacent forest floor, creating wetlands that act as sponges and blunt the destructive force of floods. During droughts, that stored water recharges the stream as it ebbs. The wet spots are corridors for amphibians.

Hundreds of trees have been felled along Mountain Creek and its headwater tributaries in recent years. And there will be more to do. A 2023 federal grant from the National Fish and Wildlife Foundation will fund more chop-and-drop stream improvements in the state forest.

Other agencies are getting similar financial support. The National Fish and Wildlife Foundation, for example, recently awarded Trout Unlimited a grant from its Chesapeake Bay Stewardship Fund for chop-and-drop work on 24 miles of coldwater habitat in Kettle Creek and Pine Creek watersheds, two northcentral waterways valued for their trout.

“It’s very inexpensive and you can cover a lot of ground,” said Paul Thomas, a stream restoration specialist with Trout Unlimited. “To totally restore a watershed, this is the way to do it. ■

Restoration leaders, advocates divided on best path forward

Some say stay the course and tweak, others push for reset

By Karl Blankenship & Jeremy Cox

For decades, Chesapeake Bay policies and funding have largely focused on making sure that creatures in the deepest part of the estuary get enough air to breathe.

Should they pay greater attention to habitats more important to overall aquatic health and to waterways more important to the people living on its watershed?

Yes, according to many people trying to envision how the state-federal Bay Program partnership should evolve after it misses many key goals set for 2025.

But senior state and federal leaders so far have shown little desire in embracing what would be a sea change for the 41-year-old partnership, which over the decades has increasingly focused on reducing nutrient pollution in the deepest waters of the Bay as the primary means of improving ecosystem health.

The debates in coming months will have tremendous consequences for the nation's largest estuary and will affect how billions of dollars are spent and who benefits.

At issue is what comes after 2025. That's the self-imposed deadline for many of the goals set in the 2014 Chesapeake Bay Watershed Agreement that guides state and federal priorities.

While some goals have been achieved, several of the most far-reaching objectives, such as those covering nutrient reductions, wetland restoration and streamside forest buffer plantings, are far off track.

Some worry that momentum on Bay goals will lose further ground as other pressing environmental issues, particularly climate change, increasingly take center stage in the minds of the public and among advocacy groups.

The Bay Program has formed a "Beyond 2025" committee to craft recommendations for what happens after that pivotal year — whether there should be modest changes or a sweeping new state-federal agreement outlining new visions and goals for governors to sign.

"This will allow us to tell our internal and our external partners, 'Don't pull away. Don't redirect funding. We're not failing,'" said Anna Killius, co-chair of the committee and executive director of the Chesapeake Bay Commission, an advisory group that represents state legislatures on Bay issues. "But we are being honest about the challenges in front of us, and we're updating our plan to get there."

The committee has assembled five teams, made up of state and federal agency staff, nonprofit organizations, academia and others, to plot out what a future Bay Program should look like — and what its priorities should be.

To get ideas, they've held "listening sessions" on different themes that have attracted around 1,000 participants, and they have crafted lists of possible new directions — many of which would significantly alter the cleanup effort's trajectory.

Among the ideas: overhauling how money gets spent; putting greater emphasis on making tangible progress in streams and shorelines; prioritizing actions to reduce flooding and other consequences of climate change; elevating support for historically underserved communities; and giving citizens a greater role in decision making.

"Sunny day" high water inundates a street in Crisfield, MD. An increased focus on climate change resilience is among the suggestions coming from the Beyond 2025 committee. (Dave Harp)

"People want to see results," said Kristin Reilly, a member of the committee and head of the Choose Clean Water Coalition, which represents more than 200 local conservation groups. "When people are seeing habitat and wildlife returning to their communities, and their basements aren't flooding, it's real. If that's something we re-center our work around, we'll have the nutrient reductions we need, but it just won't be the center of our world."

After it makes a report available for public feedback this summer, the Beyond 2025 committee will make its recommendations in December to the Chesapeake Executive Council, which sets partnership policy. The council includes governors; the U.S. Environmental Protection Agency administrator; the District of Columbia mayor; and the chair of the Bay Commission.

If the council embraces the changes, it will trigger the crafting of more formal language next year to put the recommendations in motion and guide future efforts.

Exactly how far the council will want to go is unclear. Senior state officials overseeing the Bay efforts recently expressed skepticism about sweeping changes, seeming to prefer smaller steps and updating deadlines for existing goals.

A change in emphasis?

At the heart of the debate is how to weigh the longtime main priority — controlling nutrient pollution — against other Bay objectives.

No one disputes that the nutrients nitrogen and phosphorus should be reduced. In the Bay, they spur algae blooms and

"We are being honest about the challenges in front of us, and we're updating our plan to get there," says Anna Killius, executive director of the Chesapeake Bay Commission and co-chair of the Bay Program's Beyond 2025 Committee. (Dave Harp)

lead to oxygen-starved "dead zones." They also trigger blooms in rivers and streams, including some that produce toxins harmful to people and wildlife.

But there's also concern that the nutrient emphasis, especially to improve deepwater areas, has produced few tangible results and has come at the expense of other actions that could directly benefit habitats, streams and people. It's a quandary that stems in part from an earlier Bay agreement.

The 1987 Bay Agreement, the first expansive pact, called for restoring the Bay's "living resources" — its fish, shellfish and other aquatic life — by reducing pollution, improving habitats, managing development and other actions.

But only nutrients had a measurable goal: to reduce nitrogen and phosphorus entering the Bay by 40% by 2000, a figure based on the estimated amount of reductions needed to eliminate the oxygen-starved dead zone in deep waters of the upper Bay.

The numeric goal did drive progress, especially with wastewater treatment plant upgrades, but it also led to nutrient reductions being prioritized over other actions that could improve the Bay, its habitats and watershed.

That emphasis grew in 2010. Facing pressure from lawsuits over repeated failures to meet nutrient goals, the region developed a more legally binding cleanup plan known as the Chesapeake Bay Total Maximum Daily Load, or TMDL, which set nutrient reduction targets for each state and major tributary.

Those targets were still driven largely by the amount of pollution reductions needed to improve water quality in deep waters. That's where improvements are the most difficult to achieve, but by concentrating on that area, the theory went, water quality in the rest of the estuary would improve as well.

Meeting those goals has proved elusive. Achieving nutrient reductions from urban areas and farms has been slow and costly.

The push to achieve the steep nutrient reductions needed for deepwater areas has often resulted in states favoring low-cost runoff control techniques over more expensive actions like wetland restoration, forest buffer plantings or establishing living shorelines, which provide a wider range of benefits for habitat, ecosystems and flood control.

A report from the Bay Program's scientific community last year said nutrient reduction efforts have been less effective than thought and resulted in less water quality improvement than expected. The report expressed doubt that the deepwater goals could be attained.

It recommended emphasizing water quality and habitat improvements in shallow water, which would likely yield quicker and more tangible results for the Bay's aquatic life. That's difficult, the report acknowledged, because the legal requirements of the TMDL "divert attention away from considering multiple means of improving living resources."

One of the reports prepared for the Beyond 2025 committee bluntly noted that state plans written to meet nutrient goals "have been successful focusing jurisdictions and local governments on [the] TMDL, but an unintended consequence is that we did not bring habitat and living resources along for the ride."

Further, the emphasis on deep, upper Bay areas results in more federal money flowing to Pennsylvania and the Susquehanna River basin. The Susquehanna has a disproportionately large impact on that area, but less impact on many shallow-water areas.

New approaches needed

Larry Sanford, a University of Maryland Center for Environmental Science professor who has been involved in the Beyond 2025 process, said the people most intertwined with the Bay Program and its nutrient reduction goals have difficulty envisioning other approaches.

He said he would like a new Bay agreement that retains the TMDL nutrient goals but puts the interests of the region's 18 million people first. "If you want people to stay engaged and feel like they're making progress on the environment, the water where they live is what they care about," Sanford said.

That's a common theme in the reimagining by some of the five teams convened to generate ideas for the Beyond 2025 project:

"If you want people to stay engaged and feel like they're making progress on the environment, the water where they live is what they care about," says Larry Sanford, vice president of education at the University of Maryland's Center for Environmental Sciences. (Dave Harp)

The region would still pursue nutrient reductions, but consideration of local and community goals, habitat and other benefits would have more weight in deciding what types of actions are promoted.

Such actions, according to those experts, could include measures to control local flooding, which is becoming more frequent as the climate changes; promote buffers and farming techniques that can serve as carbon sinks; promote actions that would more directly improve local stream health; and improve shallow water.

A heavy emphasis was placed on getting results that would be more tangible to people and provide a greater range of benefits to aquatic habitat, even if that means deferring deepwater improvements further into the future.

Some also called for placing a greater emphasis on working with local communities in establishing priorities. One panel suggested the entire Bay effort become more "people centered," with its formal decision-making process including citizens, not just government officials.

A key part of the citizen focus is ensuring that diversity issues get greater attention within the partnership, which many observers agree the Bay Program has struggled with. Proponents say the cleanup should institutionalize support for historically underserved communities.

Those communities have often been a casualty of the deepwater focus. Projects to address environmental burdens in those areas often yield relatively low nutrient reductions at great cost, even though other benefits could be substantial.

Brittany Omeleye-Hall, an education and training coordinator with the National Park Service's Chesapeake Gateways program, urged Beyond 2025 committee members at a recent meeting to push for what she called "radical realism" as opposed to "slow, incremental change."

For years, she said, communities of color have been marginalized by political forces that have sought to condition them to expect only gradual social and environmental progress.

Too much change?

But any backing away from the deepwater focus could entail some risk to states. Meeting the water-quality goals throughout the Bay is a legal requirement, and failing to do so opens up states to potential lawsuits.

At a March 12 meeting, senior state officials signaled they want to keep their primary focus on the nutrient goals, and several indicated the Beyond 2025 process had gone beyond what they felt had been authorized.

Scott Mandirola, deputy secretary of the West Virginia Department of Environmental Protection, said he envisioned the Beyond 2025 work to be more limited, focusing on how new advances in science and restoration could inform future nutrient control efforts.

"Do we really need to be expanding it so much?" Mandirola asked. "We're going to lose focus on what we're trying to accomplish here."

Andrew Wheeler, head of the Virginia Office of Regulatory Management at the time, said the Beyond 2025 effort was "great for brainstorming," but the state could not support many of the recommendations.

"The primary driver for that discussion was when are we going to meet the 2025 [water quality] goals, which we are required to meet under law," Wheeler said. "And if we don't meet them, we open ourselves up to litigation. So, it's important that we first focus on when we're going to meet the 2025 goals."

Until that happens, he said, "we can't in good conscience agree to any new requirements or obligations."

After feedback from that meeting, the Beyond 2025 group indicated it would likely recommend amending the current 2014 Bay Watershed Agreement, as opposed to writing a sweeping new document.

Killius insisted there is "a lot of room" to advance new ideas by offering amendments. "This agreement has produced a lot of progress," she said. "We have made change happen under its guidance. But it's going to take some updates to get us all the way to where we want to be. We're not slowing down or hitting pause." ■

Q&A with CHESAPEAKE LEGAL ALLIANCE

Land Use


(Dave Harp)

Bay Journal readers express strong interest in land use issues, both regionally and locally. Molly Brown, senior attorney and director of the Community Legal Education Center at the Chesapeake Legal Alliance, talked with the *Bay Journal* about the basics of land use issues and how community members can get involved at the local level.

How do land use decisions affect our environment?

Land use decisions have significant effects on water quality, natural resources and human health, but they vary widely depending on location. One of the most repeated sayings in the Bay advocacy community is that development represents the "death by a thousand cuts" of the Chesapeake Bay. The impact of a single project may seem small, but when you look at the bigger picture, the challenges to the environment are dramatic.

There are mainly two categories of impacts. The first is the effects of the development process itself — like habitat loss, deforestation and sediment pollution. The other includes impacts from permanent changes to the land. Replacing natural landscapes with constructed ones can increase polluted runoff, increase flooding and create urban heat islands. It can also reduce public recreational opportunities and have localized impacts on air pollution.

What is "smart growth"?

Generally, "smart growth" refers to policies that promote compact redevelopment and development near existing communities to preserve natural areas, open spaces and other areas, including farm landscapes and historic resources. The policies promote mixed-use, walkable neighborhoods with access to public transportation, schools, businesses and affordable housing opportunities.

Quite a few organizations spend considerable time and energy pushing for *more* — not less — smart growth because it reduces pressure on our remaining natural areas and tackles other critical problems like our shortage of affordable housing.

Who makes land use decisions?

Most land use decisions are inherently local. In Maryland, for example, most local governments create their own "comprehensive plan" for growth and development. The plan establishes the way development occurs in that area. Decisions about local planning and zoning, local utilities and other infrastructure are all made pursuant to that plan. State law requires certain minimum elements in the plans but leaves it to localities to develop them. The plan has to be reviewed and approved every 10 years.

Let's look at Anne Arundel County. You can find information about the county's plan from its Office of Planning and Zoning website. Its Development Division handles decisions about residential and commercial development, regional site plans and transportation projects. Under state law, its decisions must conform to standards in the comprehensive plan. They must also comply with federal laws and other state laws.

When a member of the public formally challenges a decision, it goes to the county Board of Appeals. The board isn't a court. It's an administrative body that makes final decisions about land use challenges. In some cases, if someone involved with the appeal is unhappy with the board's decision, they can take the issue to court.

How much do state and federal laws impact land use decisions?

State and federal laws regulate some environmental impacts of development but not the development or land use process itself. So, a development that would turn 100 acres of federal lands with old growth forest and wetlands into a landfill will certainly implicate many state and federal laws and require many approvals from state and federal regulators. Conversely, a state can encourage smart growth with tax breaks or by giving qualified projects fewer legal and regulatory obstacles.

How can the public get involved in local land use decisions?

Start by getting to know your local planning and zoning website. Read the comprehensive plan and explore how your local jurisdiction provides public notice. The website might list proposed zoning changes or subdivisions, so keep an eye on that. If there is an "interested party" email list, ask to be included.

Otherwise, be proactive in reading the development signs you come across or in the public notice section of newspapers. Some local environmental organizations send emails to their members notifying them of action alerts for particularly concerning proposals, so consider joining those groups.

Because there are so many local, state and federal approvals needed to move a development project forward, especially in sensitive areas, there are usually several opportunities for public input. Public participation rights, like public hearings and comment periods, are built into many local laws. In some cases, community members have the legal right to appeal development decisions.

And municipalities and state regulatory agencies are generally authorized or required to investigate pollution complaints from the public, like concerns about erosion and runoff from construction sites. The findings of those inspections are generally public documents and inspectors may be willing to follow up with the person filing the complaint.

You can influence the policies and laws that shape local development by following the activities of your town or county council, and by finding out when the comprehensive plan will be updated, then getting involved with community feedback.

Does the federal Clean Water Act or the Bay's "pollution diet" help control development impacts?

Yes. The U.S. Environmental Protection Agency was well aware of the impacts that development has on water pollution and living resources when it developed the Bay's total maximum daily load or "pollution diet." In the TMDL, the EPA said that states must account for growth in their required Bay cleanup plans. This means that states must plan on reducing pollution enough to offset the impact of new development.

The TMDL doesn't specify an amount but says that there must be "quantifiable and accountable offsets." The Clean Water Act also says that, for waterways under a TMDL, new or expanding sources of pollution are prohibited unless they are within the bounds of the TMDL. ■

For webinars and information on land use issues, visit the Chesapeake Legal Alliance at chespeakelegal.org and click on "CLA Resources." You can also contact Molly Brown at mbrown@chesapeakelegal.org.

Program that helps buffer military bases has multiple benefits

Sentinel Landscapes can offer protection to wildlife, rural lands

By Whitney Pipkin

Marines with Bravo Company, Marine Barracks Washington, hike through a forest during a squad competition at Marine Corps Base Quantico in Virginia in summer 2022. (Lance Cpl. Pranav Ramakrishna/ U.S. Marine Corps)

The spaces surrounding military bases in the Mid-Atlantic were largely rural and wild when their locations were chosen decades ago. In the years since, though, population growth has pushed development closer and closer to their boundaries, eventually encroaching on some of the buffer spaces needed to carry out missions safely.

That's why the Sentinel Landscapes program was first developed about a decade ago.

The program is a partnership between the U.S. departments of Defense, Agriculture and Interior, directing funding to landscape conservation that all three departments prioritize for various reasons.

Undeveloped buffers of land around military installations help prevent conflict between residential areas and noisy aircraft or training exercises. But these buffers also have secondary benefits: protecting working rural landscapes, such as farms, and preserving areas for wildlife and water filtration.

The Chesapeake Bay region already includes the Middle Chesapeake Sentinel Landscape, established in 2015 to protect land and waterways near Naval Air Station Patuxent River. And in mid-2023, the federal government designated two additional sentinel landscapes in Virginia that together encompass nearly 3 million acres of the Potomac, Rappahannock, York and James river watersheds.

This Virginia Security Corridor, made up of the Potomac and Tidewater Sentinel Landscapes, encompasses a wide swath of Virginia's Bay coast from Quantico to Norfolk. The corridor includes 10 military installations representing every branch of the U.S. Armed Forces.

The designation does not automatically mean that land will be preserved. But it does give the region "a collaborative and competitive advantage for federal funding," as Virginia Gov. Glenn Youngkin put it, when opportunities arise for large-scale land conservation.

One of the biggest first steps toward that goal is the hiring of coordinators for the two new sentinel landscapes. The coordinators for both the Potomac and Tidewater landscapes will be employees of the Virginia Department of Forestry. Assistant State Forester Terry Lasher said his agency expects to fill the positions this spring. The Potomac coordinator will be based at Marine Corps Base Quantico, and the Tidewater coordinator will be in Hampton.

Zack Greenberg, a U.S. conservation officer with the Pew Charitable Trusts, has been involved with establishing the new program because "there are inherent co-benefits that Pew, as a conservation organization, is interested in."

Sentinel landscapes can help marshal resources to address issues that have vexed military installations and their surrounding regions for years. In the Tidewater region, for example, the program could take aim at the problem of sunny-day flooding and sea level rise that is not only plaguing populated areas but also threatening access to military installations.

Projects could include conservation and restoration work to preserve forests and coastal habitat, Greenberg said, describing what he called "tools in the toolbox of a sentinel landscape."

Building resilience against climate-induced hazards like flooding is a priority in the Virginia Security Corridor. Protecting forests from wildfires and ensuring they remain to improve air quality also means that Marines at Quantico will still have plenty of room to train outdoors. The program's efforts to preserve open space could also have benefits for water quality and wildlife in a significant portion of the Bay watershed.

"Conserved areas provide the space necessary to meet [the] mission," wrote Tom Crabbs, military liaison for Virginia, in an email. "With programs like Sentinel Landscapes, we guard the [installations] from encroachment, manmade and natural, and keep our collective eye on the space needed for future mission requirements."

Some projects already in the works are the types that could help the program proliferate. Shoreline erosion along the York River was becoming a growing problem at Naval Weapons Station Yorktown. So the Navy partnered with the Virginia Institute of Marine Sciences and U.S. National Park Service to secure funding for an oyster reef installation along the coast that carried additional benefits for each of the partners.

"Sentinel landscapes are meant to enable that communication," Greenberg said. "It's hard to understand what [the Department of Defense] is doing on the other side of the fence line. But there is a relationship with the community that's important, and the Sentinel Landscape program can help them address a shared concern."

The Virginia Security Corridor overlaps with a region of the state where the population continues to grow, especially near military installations. That can put pressure on both military bases and natural resources. Lands in the area are also in demand for data centers, transmission lines and solar installations, which can squeeze out natural areas and working rural lands.

One of the big-picture benefits of the two new sentinel landscapes in Virginia — which are among 13 such zones nationwide — is that they fill the gap between the existing Middle Chesapeake and Eastern North Carolina zones.

Taken together, the East Coast sentinel landscapes cover a large piece of the Coastal Plain, where conservation efforts can create corridors for migrating wildlife, help buffer the region against rising sea levels and preserve recreational areas near urban centers. Maps of the new landscapes identify where they also overlap with areas prioritized for conservation because of special resources, such as wetlands or longleaf pine forests.

They also create a roadmap for other government agencies, nonprofits, civic groups and tribes that might want to partner on preserving lands in those areas for a range of other uses.

"This is an exceptional opportunity," said Lasher of the Virginia Department of Forestry, "to achieve landscape-scale conservation projects that improve the lives of Virginians and positively impact our installation partners." ■

After slow start, MD urban tree planting picks up steam

Federal funds boost effort to reach 500,000 tree goal in underserved areas

By Timothy B. Wheeler

As a famous poet once said, spring is when one's fancy turns to thoughts of love. It's also a time to get young new trees in the ground.

For Camerio Graves, a crew leader for the Baltimore Tree Trust, the two go together.

"I love what I do," he said as he staked and mulched a Princeton elm, one of a half-dozen or so large saplings his crew was planting along a treeless stretch of McClean Boulevard in northeast Baltimore. "It's not just a job."

All across Maryland, community groups, nonprofits, government contractors and countless volunteers are turning out this spring to plant thousands of trees in neighborhoods like this. They're working to fulfill Maryland's Tree Solutions Now Act passed in 2021, which calls for planting 5 million trees statewide by 2031.

It's a massive undertaking, but one aimed at helping the state deal with a changing climate. As trees and the canopy they provide grow, they absorb climate-warming carbon dioxide, provide cooling shade from extreme heat and soak up potential floodwaters.

To distribute the arboreal benefits more equitably, the law also requires that 10%, or 500,000, of those trees be planted in urban "underserved areas." Those are U.S. Census-defined neighborhoods with high unemployment, household incomes below 75% of the median or a history of racially discriminatory home lending practices known as redlining.

The overall 5 million tree effort is underwritten by $15 million a year in state funds. But it has also managed to corral other sources of money, last year tapping into more than $34 million in federal urban forestry funds provided via the Inflation Reduction Act. It also brings together state, local and federal agencies, as well as nonprofits and community groups.

The campaign has taken some time to get in gear. In 2021, the year the law passed, about 1,200 trees got planted in underserved areas. The next year, it shot up to 18,500 trees. The tally fell by roughly half in 2023, but some plantings may not have been reported yet, according to Marie Panday, tree data and program officer in the Maryland Department of the Environment, which is responsible for tracking the progress of the tree initiative.

Louis Middleton, a Baltimore Tree Trust crew member, removes the protective covering of a sapling to be planted in the Hamilton Hills neighborhood in Baltimore while, in the distance, crew leader Camerio Graves rakes mulch around a newly planted tree. (Dave Harp)

As of March 2024, the reported total of urban plantings stands at 36,745. To reach the 500,000-tree goal by 2031, the pace of plantings needs to be at least triple what it has been until now.

Secretary Josh Kurtz of the Maryland Department of Natural Resources said he's confident the campaign's goals can be reached. Campaign leaders focused at the beginning on "building the internal infrastructure," he explained, by hiring and assigning staff and connecting with and enlisting other government agencies, nonprofits and community groups.

"We're just scratching the surface, frankly," he added, "in building deep relationships in some places and being able to do that in others."

A few places have gotten a fast start, though. Largely rural Washington County in western Maryland has planted 12,204 trees in underserved areas — roughly one-third of the total statewide. Baltimore, by comparison, has reported putting just 4,008 trees in the ground so far.

While Baltimore may be more urban overall, Washington County has significant underserved areas in the city of Hagerstown and in towns such as Boonsboro, DNR officials said.

The tree planting opportunities in those places are very different from those in Baltimore, where it is harder to find room for large-scale plantings. In Washington County, the underserved areas aren't as dense and feature some large open spaces. As a result, little seedlings can be planted more thickly, while the more developed areas usually require larger, hardier saplings.

An excavator operated by a crew from Blue Water Baltimore cuts tree pits in 2022 in the concrete sidewalk in Easterwood, a West Baltimore neighborhood near Coppin State University. (Dave Harp)

Working with partner organizations, DNR arranged the planting of 12,075 seedlings in four large projects around Hagerstown, said Anne Hairston-Strang, director of the Maryland Forest Service. All but about 1,000 of those fledgling trees went into a single 40-plus acre tract in the city, she noted.

Tree planting in more developed areas like Baltimore is also more costly and laborious. It takes more preparation and requires planting larger saplings rather than seedlings, which are less likely to survive.

Overall, plantings in the city cost about $700 per tree — a figure that accounts for larger trees, site preparation and maintenance for two years after planting. Reforesting open land costs a fraction of that per tree: more than 400 seedlings can be planted per acre at a cost of $5,000–6,000, according to Rachel Lamb, senior climate adviser to MDE Secretary Serena McIlwain.

Many of the trees in Baltimore are planted along city streets. Residents are usually canvassed door to door in advance to see if anyone objects to having a tree in front of their home. Some voice fears that roots will clog sewer lines or break up the sidewalk. Neither is likely, officials say, but they avoid putting a tree where it isn't wanted.

Additionally, in dense blocks of rowhomes, before any planting can proceed, heavy equipment must break up the sidewalk to make pits large enough to sustain a tree.

For the Baltimore Tree Trust, the leading tree-planting nonprofit in the city, the state initiative has been a shot in the arm.

In 2022, the trust's crews planted about 1,700 trees in targeted communities, but that doubled to 3,400 trees in 2023, according to spokesperson Ryan Alston. In addition, she said, the extra funding has allowed the trust to double its team of neighborhood foresters, raising their pay well above minimum wage and offering year-round employment with benefits.

The Hamilton Hills neighborhood in northeast Baltimore is more suburban than a lot of the city, with neat one-story bungalows set back from McClean Boulevard by lawns and wide green rights of way. Though household income there is above the statewide average, so is unemployment, which qualifies it as an underserved area. And while there is some tree canopy, it is spotty.

Graves, the tree planting crew leader, said the residents there welcomed the plantings.

"A lot of people are requesting more trees," he said, "which is a plus for me."

This spring, the Chesapeake Bay Trust, the nonprofit issuing grants for plantings in underserved areas, has lined up some 30 groups to put about 18,000 trees in the ground, according to Jana Davis, the trust's executive director.

"Hopefully by June, when the spring planting season is done," MDE's Panday predicted, "we can see a much higher total on the ground." ■

Peregrine falcons return to old rocky roosts in the region

World's fastest birds slowly restored to cliff faces along rivers

By Whitney Pipkin

This popular view from the Maryland Heights Trail above Harpers Ferry, WV, includes the confluence of the Shenandoah and Potomac rivers, as well as the occasional peregrine. (Whitney Pipkin)

A sign explains that a portion of the Maryland Heights cliff face near Harpers Ferry, WV, is closed to hikers and rock climbers to protect a nesting pair of peregrine falcons. (Whitney Pipkin)

Real estate high above the confluence of the Shenandoah and Potomac rivers is certainly desirable. But a stretch of rocky cliffs in Maryland, overlooking Harpers Ferry, WV, is currently off limits to everyone — except peregrine falcons.

In 2021, for the first time in 70 years, a pair of peregrine falcons successfully fledged a chick in a nest tucked into the Maryland Heights rock face. They've been making themselves at home ever since. The pair fledged three more chicks in 2022 and another three in 2023. This year, the National Park Service closed part of the area to hiking and rock climbing from mid-February until July 31 during the peregrine nesting season. But the main trail is unaffected, and peregrines can sometimes be seen from above or below.

The Maryland Heights cliff is one of only two natural nest sites known to have been used by peregrines in Maryland since reintroduction efforts began there in 1975. But more of the birds are returning to historic nests, known as aeries, and recolonizing pockets where they had once been considered extirpated.

Having the birds nest again at Maryland Heights was "a real milestone for the population," said Bryan Watts, founder and director of the Center for Conservation Biology at Virginia's College of William and Mary. "It's a tremendous conservation success story."

In places like Maryland Heights — with the birds again nesting where they long had a foothold — that finally appears to be happening.

Many of the aeries in the region are located along prominent geologic landmarks where visitors can catch a glimpse of their progress. Peregrines nests are monitored at several national parks that have suitable rock formations, including Virginia's Stony Man and Knob mountains, visible from popular trails at Shenandoah National Park. Great Falls National Park on the Potomac River historically had nesting peregrines.

The location of their nests, in crevices near wide stretches of powerful rivers, has nothing to do with fish. Rather, the bird's-eye view gives peregrines, known as the fastest birds in the world, a high angle of attack on their main prey: smaller birds that dare to fly across the open space.

Of the 35 breeding pairs Watts monitors in Virginia, most still use towers that are made specifically for peregrines, or they make use of nest boxes and other structures on the sides of bridges and buildings. But a growing number are taking advantage of the cliffs created in rock quarries.

Peregrine falcons are still considered rare in Maryland and West Virginia and threatened in Virginia. The Migratory Bird Treaty Act protects the species wherever it is found. But the steady presence of a pair near Harpers Ferry, a nexus of national parks and trails, means more visitors could get a view of the fast-diving birds and their fledglings.

Watts said most nesting activity tends to take place in May, when peregrine parents are busy flying back and forth to feed their young. By June, some young birds are learning to fly and hunt for themselves, creating worthy watching for patient onlookers. A good pair of binoculars doesn't hurt, either. The birds are not only fast but also blend well into the rocky backdrop of their homes.

Despite their proximity to watery expanses, peregrines eat not what swims but what flies. Smaller-bird lovers need not worry though, Watts said. Peregrine

This female peregrine falcon was photographed near her Maryland Heights nest in 2021, the year she and her mate fledged a chick there for the first time in 70 years. (Matt Olear/NPS/VIP)

numbers in the region are not nearly high enough for that to be a problem for most other bird species.

The Eastern U.S. was estimated to have historically supported about 350 breeding pairs of peregrines. Today, that population has made a strong comeback but still has a long way to go. Virginia supported 35 breeding pairs in 2023, the highest number since the birds' midcentury decline, with pairs concentrated in the Coastal Plain but also present in the Piedmont and mountains, according to an annual report by the Center for Conservation Biology.

Peregrines have begun to ruffle a few feathers in Virginia's eastern plains, where the birds have had a strong recovery. Their breeding patterns in that area have shifted, Watts said, to match their peak feeding periods with the migration of hundreds of thousands of shorebirds that come through the area. That means a few shorebirds of conservation concern, such as red knots, have ended up in the bellies of peregrines.

Watts said "purists" might point out that the cliff-dwelling species wouldn't have had such a strong presence along the coast without intervention. But this point in the peregrine's regional story is still mostly "positive," he said, and the once-threatened bird of prey is migrating slowly back toward the mountains.

"We've restored them and they're increasing and moving back into their historic mountain range," Watts said. "Having these historic aeries being slowly recolonized … that's really what the goal was." ■

PA researchers test new strategies to fight deadly bat disease

Cooling and spraying bats' hibernation roosts offer hope against white-nose syndrome

A colony of mostly little brown bats hangs on a wall during winter hibernation in a cave in Blair County, PA, once mined for limestone. (Ad Crable)

Top left photo: Technicians with the Pennsylvania Game Commission capture bats in a former limestone quarry to examine them for white-nose syndrome. (Ad Crable)

Top right photo: A little brown bat appears to grimace as a Game Commission worker holds it up for a close look. (Ad Crable)

By Ad Crable

In 2009, an insidious fungus that causes white-nose syndrome spread through Pennsylvania's bat colonies like a plague.

Within a few years, the disease had killed more than 99% of five bat species in the state, including big brown, little brown, tri-colored, northern long-eared and eastern small-footed bats. In some cases, they piled up in mounds by the thousands at the mouths of caves, railroad tunnels, abandoned mines and old quarries. At the time, those species represented the majority of bats found in the entire state.

In a period that is almost overnight from a biological perspective, those five common species became state-listed endangered species, their existence hanging on by a thread. A sixth species, the Indiana bat, had been struggling before the arrival of the disease.

"It was very scary when we first heard about it. We just didn't know what to think," recalled Pam Shellenberger, a wildlife biologist in the Pennsylvania field office of the U.S. Fish and Wildlife Service.

But now, the Pennsylvania Game Commission, the agency required to manage mammal populations, is working with Lock Haven University and Temple University to pioneer two strategies against white-nose syndrome that may be game changers in the nationwide battle to save bats.

One approach proving successful is spraying the surface of bat roosts with a petroleum-based, non-toxic compound found in such common products as toothpaste, dandruff shampoo, makeup and COVID vaccines.

Polyethylene glycol, or PEG, inhibits the growth of the fungus that causes white-nose syndrome. That means roosting bats don't get as infected during hibernation. In turn, they are less likely to be awakened and burn off precious energy reserves, a response to white-nose syndrome that causes many to starve. Research shows bats can exhaust up to 90% of their fat reserves when roused.

Another tactic introduced by the Game Commission and its research partners is the manipulation of air flow in roosting sites to lower temperatures, which makes the fungus less potent.

That also spares bats from awakening during their down period in winter. Consequently, they are more likely to survive the hibernation period until they fly out in the spring. Then, within several weeks, their bodies beat back the fungus as their immune systems kick in with warmer body temperatures of 101 degrees.

Still, wildlife managers agree that the effort to bring back bats in the 40 states where white-nose syndrome has spread will be a long haul with no single solution.

But the two new tools out of Pennsylvania, already fortified by several years of follow-up studies, have raised optimism that bats will not disappear from the landscape.

"The Game Commission from the beginning has been on the forefront for bringing solution-oriented research and finding innovative ways to fight white-nose syndrome," Shellenberger said. "I think it will help to minimize impacts for the future to give bats a little bit of breathing room to get over the hump."

The Game Commission is also building the region's first artificial bat cave with temperature controls. That work is slated for this summer. The pre-cast concrete structure will have a maze of chambers.

And commission technicians are attaching tiny transmitters to bats. The wired bats are followed by scientists on the ground and others in airplanes to discover previously unknown colonies. Last year, they found a dozen new ones.

Why save bats? Although bats may not score high on most people's list of favorite animals, their value to humans is vast.

Among mammals, bats are second only to rodents in terms of sheer numbers. And their single-minded appetite for insects is invaluable to food production. By eating insects that can destroy crops, bats save farmers $3.7 billion–$5 billion in pest control costs annually, according to studies cited by the U.S. Geological Survey.

Bats also help reduce the population of mosquitoes and other biting insects.

A clue from South America

Like many other researchers around the country, Barrie Overton, a mycologist and biology professor at Lock Haven University in Pennsylvania, was looking for chemicals that might control the fungus that causes white-nose syndrome.

Then he read about a study that used the PEG compound along with a fungicide to keep fungal plant pathogens from rotting the stored seeds of rubber trees in South America. The study had isolated PEG from the toxic fungicide and found it still controlled the fungus, though not as well.

Despite skepticism from colleagues, Overton went to work in the lab and found that applications of PEG to the white-nose syndrome fungus keep molecules from taking up water needed to grow.

"It does not kill the fungus. It just keeps it from growing," Overton said.

Just as importantly, research was showing that the compound was harmless to amphibians, aquatic insects and the bacteria found in soil and on cave walls.

Overton and colleagues published their findings. Grants followed, and soon he and the Game Commission were testing PEG in bat roosts. Out of an abundance of caution, they have only sprayed artificial structures such as tunnels and quarry sites and not older caves where systems of microbes have built up over thousands of years. But, so far, the research suggests they won't be harmed.

Six years into testing, the results are unmistakable.

In a cave in Canoe Creek State Park in Blair County, white-nose syndrome had knocked the winter roosting population down from 32,000 to a mere 72. Today, after several years of spraying, the population has climbed back to 2,000 and is growing.

The work has gotten attention. Temple University, under a 2023 grant from the National Fish and Wildlife Foundation, will expand its spraying this year in 40 bat hibernacula in Pennsylvania, Ohio and West Virginia. In September, four hibernation sites in Pennsylvania will be sprayed for the first time.

"This is a tool that we now have. It's one of the first to help us with white-nose syndrome. It can't be used everywhere, but we've effectively delayed exposure. We're just trying to buy bats time to give that recovery a leg up," said Greg Turner, the Game Commission's state mammalogist and a wildlife biologist.

"I think this has nationwide application for sure," said Mike Scafini, a wildlife biologist and the Game Commission's endangered mammal specialist.

Cooling it down

Around the same time that the spraying experiments began, the Game Commission began a trial program to manipulate air flows in bat roosts. The strategy was based on a laboratory study that found the fungus was less contagious and weaker in cooler temperatures, ideally between 36 and 42 degrees.

On a recent March morning, Scafini and five wildlife disease technicians marched up a steep mountainside in Canoe Creek State Park and removed several heavy metal slats that barred access into the ridge's inner sanctum.

After carefully picking their way over a jumble of boulders, their headlamps revealed a large cavern, dripping with moisture. Here, in the 1800s, workers mined limestone

Mollie Byrne (right) of the Pennsylvania Game Commission uses a pole to capture a hanging bat while her colleague Greg Turner holds a safety net. (Ad Crable)

around the clock. The material was taken to a nearby kiln where it was heated and transported by train to feed the bustling steel mills in Pittsburgh.

At some point the entrance was sealed up with dirt. But several varieties of bats enter a vertical shaft to access the subterranean rooms heavily used as winter roosting sites.

Like elsewhere, white-nose syndrome decimated the colony. One winter survey found a mere five bats inside.

But acting on research that showed colder temperatures suppressed potency of the fungus, the Game Commission, along with Temple University, excavated the quarry's former main entrance in 2015, leaving enough space to keep colder air bottled up inside.

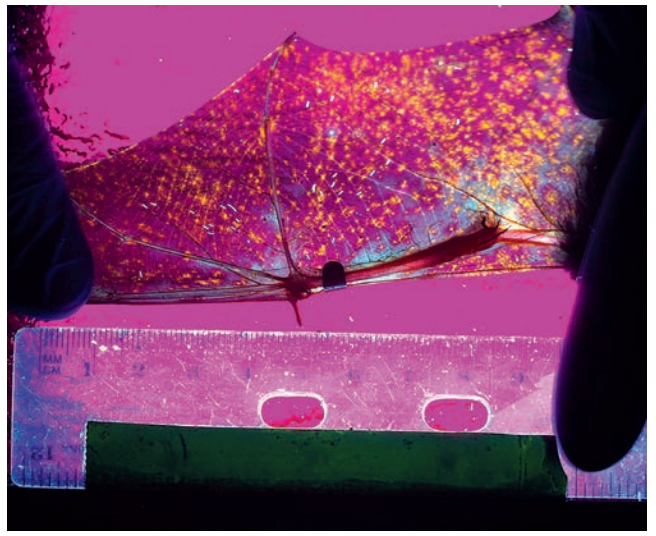
Inner temperatures dropped significantly while bat survival rose. A winter survey in 2023 turned up 230 bats. By this February, the colony had swelled to 753. It is now the third-largest bat hibernaculum in the state and has the largest known concentration of tri-colored bats.

On this day, Scafini and the technicians entered the darkness for another round of data collection on the bats' survival rate. The air was just shy of 47 degrees.

Scafini and technician Mollie Byrne quickly found three species of bats clinging upside down on the damp walls, 15–30 feet off the quarry's floor, which still had some rail car cross ties embedded.

Byrne lengthened an extendable painter's rod with a ball of medical gauze taped to the end and slowly pushed the ball in front of the bats. The goal was to awaken the bats and irritate them just enough to latch on to the gauze by biting it.

But sometimes the bats are too lethargic to bite. So, in case they fell, Scafini stood ready to catch them with a



Researchers examine the wing of a live bat with ultraviolet light, under which the deadly fungus shows up as orange and yellow spots. (Pennsylvania Game Commission)

safety net fashioned from plastic garden fencing and two plant stakes. It all worked quite well.

The captured and often complaining bats were placed in paper bags and shuttled over to a foldable table where technicians Robyn Crouthamel and Chelby Sherwood weighed and sexed them, measured body mass and took swabs from their wings to collect DNA. Then they slid tiny identification tags onto a wing muscle so that, if the bat is recaptured, researchers will know where it came from and how long it had survived the disease.

At a processing station in another chamber of the quarry, technicians Levi Johnson and Katie Emery spread each of the bats' wings under an ultraviolet ray analyzer machine. White-nose syndrome infection shows up as orange and yellow splotches. The photos will be forwarded to Temple University where a percentage of infection will be determined.

Twenty-five little brown bats (each about the weight of two pennies), 14 tri-colored bats and a single big brown bat examined this day were infected with white-nose syndrome. But, more importantly, not greatly so. That suggests they could survive another year — and, they hope, reproduce.

In addition to this quarry, the Game Commission has lowered temperatures in three mines, an abandoned railroad tunnel and even an active tourist cave.

"They're all working. Some better than others," Turner said. "We are seeing bigger numbers in all, and some are getting different species come in."

Turner is pleased to find that bats are not only seeking out the colder parts of roosts but feeding more before hibernation. That boosts their chances for survival.

"They are adapting to the fungus," Shellenberger said. "We are starting to see adaptations, which takes time to see in the natural environment."

All this buoys the spirits of researchers in Pennsylvania who only a decade ago feared entire bat species would go extinct in the state.

"There's promise and hope out there," Shellenberger said.

"I feel optimistic that they're starting to recover. I think we are doing some really good things to get them started in the right direction and then they can grow exponentially from there," Scafini said. ■

Don’t want to scoop poop? There’s someone you can call

Bacteria, nutrient pollution from pet waste can be a problem in waterways

By Jeremy Cox

Stephen Shivery of Maryland-based Poop Happens breaks his routine as the company's office manager to de-poop a customer's back yard on Kent Island. (Dave Harp)

Stephen Shivery, left, and fellow Poop Happens employee Rico Spellman restock bags at a self-service pet waste station at a community on Kent Island. (Dave Harp)

After three decades of working long hours as an accountant for technology companies, Chris Buckley was fed up with all the numbers. Now, he only concerns himself with No. 2.

Buckley founded an enterprise in 2018 called Poop Happens. Based in Odenton, MD, the company deals in removing pet waste — primarily dog droppings — from the lawns of people’s homes and neighborhood common areas across the Annapolis-Baltimore metro area.

He found no shortage of demand for his services. The company quickly grew to a dozen employees and a portfolio of more than 700 clients. And on a personal level, Buckley found the work easily more fulfilling than his old career.

“I know it’s poop scooping, and a lot of people laugh that, ‘Oh, you went from a white-collar job to poop scooping,’” said Buckley, 52, who founded the company in 2018, “but it has a big impact.”

Authorities have long struggled to persuade pet owners to pick up their animals’ mess. (About 40% of pet owners don’t, surveys show.) But for a growing cadre of startups around the Mid-Atlantic region, that “business” is big business.

About 65 million households nationwide own a dog, or about half of all homes, according to the American Pet Products Association. And where there are dogs, there is dog waste: A typical 40-pound dog produces about 274 pounds of poop annually, the U.S. Environmental Protection Agency estimates.

Dog feces can pose significant environmental and health hazards, experts say. Rain can whisk the nutrients from the poop into nearby waterways, triggering algae blooms that degrade water quality. The waste also carries nearly twice as much fecal coliform as human excrement, making it more likely to cause illnesses in anyone who comes into contact with it.

Locally conducted research suggests the Chesapeake Bay region is far from immune. For example, Maryland’s South River, with a drainage basin that includes portions of Annapolis, is listed as impaired by fecal coliform. More than half of that bacteria load can be traced to pet waste, according to computer modeling led by Anne Arundel County.

Pet waste removal companies have been around for a few decades. But their numbers have leapt forward in lockstep with the pet industry’s overall growth in recent years.

Chester Lenon said his business, Poop-Scoop Troopers, got its start in 2010 as a side service to an existing pet-sitting operation. Soon, picking up waste took center stage. “One client turned into two, and then I found there was a need,” said Lenon, who is based in Woodbridge, VA.

Now, he oversees 15 employees and a fleet of 14 trucks. They will visit a house as often as twice a week or as little as every other week. Some clients only request one-time visits. Once there, Lenon’s “troopers” use skinny rakes and bags attached to dust pans to scoop up the mess. To ensure they get it all, they walk a grid pattern — “Just like you’re mowing the lawn,” he said — across the grass.

The cost depends on the size of a property and how much waste has piled up. But it typically runs between $20 a visit for small yards to $1,000 for entire subdivisions, Lenon said.

Apparently, one of the simple joys of owning a poop removal service is getting to name it. No scatological pun is safe. Examples in the Bay watershed include DoodyCalls (a national chain that was founded in Virginia), Urban Landmines, It Happens, PoopHappens, Mr. Pooper Scooper, POOP 911, Pet Butler, Super Duper Scoopers, ScooperHero and Doggie Doo Dude.

A full bin of pet waste bags awaits disposal at the Kent Island community. (Dave Harp)

Jennifer Sparks took over an existing business, so she can’t take credit for coming up with “Little Landmines.” It’s a family affair. Her husband and their three sons are all involved. Some of the customers in her central Delaware service area have physical limitations that prevent them from cleaning up after their dogs. But many are simply families with too much else on their plates.

“In today’s busy world, many people just don’t have the extra time to do this chore, and we can come in and help,” Sparks said. “We can help the homeowner and the environment. It’s a win.”

She is confident her business growth will continue, pointing to trends such as increasing pet ownership, the frenetic pace of life, the aging population and the spread of pet-friendly public spaces.

“Not to mention,” Sparks added, “there is a growing emphasis on environmental sustainability and responsible waste management practices, and people want to be a part of that.”

The pet waste removal industry’s environmental pitch aligns neatly with one of the main goals of the multi-state and federal cleanup of the Chesapeake Bay: reducing nutrient inputs into the estuary. That policy centers on reducing the size of the annual “dead zone,” a blob of oxygen-starved water where virtually no aquatic life can survive, in its deepest channels.

“What people don’t realize is, just like a fertilizer would, the contaminants of pet waste make their way into our water system,” Buckley said. “Just because you’re not walking your dog near the Bay doesn’t mean your pet waste isn’t having a negative effect on the Bay itself.”

The disease-causing agents in dog waste make it a tricky candidate at best for composting. So, Buckley, like most waste removal service operators, bags up the poop and takes it to a landfill.

He had never heard of the sector until he searched the web for “small business ideas,” and it popped up. It seemed like a good fit for someone looking for a fresh start, he recalled.

“I wanted to do something where I had an opportunity to be humble and give back to the community,” he said. “I felt like scooping up dog poop was fairly humble, and it also helped keep the community safe and disease-free.” ■

Chesapeake photographer says he 'picked the right path'

Jay Fleming documents islands, watermen during changing times

By Jeremy Cox

Editor's note: This interview is the fifth in a series highlighting professionals at work in the Chesapeake Bay arena. Listen to the full interviews in our Chesapeake Uncharted podcast.

For Jay Fleming, a body of water is his body of work. Over the past decade and a half, the Annapolis native has devoted himself to visually documenting the Chesapeake Bay. His Nikon camera freezes in time indelible images of life on and underneath the water: sea-cured men dredging for oysters, blue crabs bobbing, wading birds wading, and skipjacks casting rippling reflections in the tide.

Along the way, Fleming, 36, has established himself as one of the region's top nature photographers. He has compiled his photographs into a pair of books: *Working the Water* (2016) and *Island Life* (2021). His work has also been seen on display at gallery exhibits and gracing the walls of countless businesses and homes.

His mother is an official with the Maryland Department of Natural resources, and his father is a former *National Geographic* staff photographer. It might seem like he was practically born into the business, but his initial path was circuitous.

Fleming graduated from St. Mary's College in Southern Maryland with a degree in economics. After stints with the Maryland DNR and the National Park Service at Yellowstone, he found his calling as a photographer for Maryland's seafood marketing program. Within a few years, he left that job to concentrate on his own photography full time.

In addition to selling his prints, he shoots assignments for glossy magazines and leads photography workshops on the Bay and around the world.

"Every time I'm out on the water and I can watch the sun come up, I consider myself fortunate," he said. "When I'm out on the water on a Monday and I think about all the people I know who have to sit in an office, I know that I picked the right path for myself."

The *Bay Journal* caught up with Fleming during a rare moment on land at his office and gallery on Maryland's Kent Island. This interview has been edited for length and clarity.

As the son of a photographer and a state wildlife official, Jay Fleming came naturally to his passion for photographing nature and people on the Chesapeake Bay. (Dave Harp)

Question: How did you end up pursuing the Bay as the subject of your art?

Answer: I grew up in a photography family. My dad [Kevin Fleming] was a photographer. He basically shot for about 50 years, and he worked for *National Geographic*. My dad was over in Delaware, and we would always go out shooting together. And it got to a point where we got really competitive when I was, like, 15 years old.

Sometimes, I was actually shooting better pictures than him, which bothered him. But we still enjoyed it. At a certain point, I realized I needed to find my own territory. I had grown up on the Bay fishing and crabbing, kayaking, all that, so that's when I kind of took a deep dive into what was going on in the Bay.

Q: Did you ever take any formal photography classes?

A: Nope. I took AP studio art in high school. But other than that, no formal training — just learning on my own and learning by mistake.

Q: You've been successful working your way into the waterman culture. How were you able to win that trust?

A: What I do is an incredibly valuable marketing tool for the seafood industry. It's bridging the gap between the seafood harvesters, the seafood processors and then the consumer. So, it's educating people as to where the product is coming from, the process by which it's being brought to shore and the people who are involved with it.

Q: So, you call up a waterman and say, "Hey, can I hop on your boat with you at 5 a.m.?"

A: Pretty much, yeah. There's a little more to it than that. But finding the right boat to go out with involves finding the people who are following the [regulatory and legal] rules because people who aren't following the rules — they're not going to want to be photographed.

Q: Tell me about your first book, *Working the Water*.

A: That idea of documenting the whole seafood industry was really inspired by a couple of people. Art Daniels, who was a skipjack captain on Deal Island, was the first one who led me out to shoot pictures on a workboat. I went out dredging with him in the winter. I connected with him through his grandson, Lee Daniels, who works for the state now. I got to see that whole process, and I really became interested in seeing more of it.

Q: The number of watermen on the Bay continues to dwindle. Sea level rise threatens many remaining islands. Does that drive you, this idea that "if I don't do this now, it may be lost to history"?

A: Absolutely. That was how I felt about my [second] book, *Island Life*, even more. Smith Island and Tangier Island [the Bay's last inhabited offshore islands] have changed a lot since I started working on that book in 2010. I shot a picture of the last house on Holland Island about six months before it went into the water [in 2010]. That picture's become somewhat of a historical piece because it was, like, the last time anybody went out there and really documented that house before it was completely gone.

Q: It gives you an appreciation for what the future might be.

A: I saw Holland Island foreshadowing what could happen to Smith Island and Tangier Island. A lot of other islands in the Bay have disappeared or are disappearing, so it's not a new phenomenon. But the idea of having these active communities with a working seafood economy still happening on them going away within our lifetimes is pretty scary. And I knew that I needed to document that.

Q: Is there anything we can do to help these communities?

A: Buy local seafood and ask where your seafood is coming from. As an individual, that's what you can do to support the seafood industry: Buy local seafood.

Q: The current Chesapeake Bay cleanup agreement expires in 2025. Do you have any advice on restoring the Bay going forward?

A: I think a lot of emphasis needs to be put on these [invasive] blue catfish. I think we spend a lot of effort and money on projects that really have no tangible deliverables. There's nothing where we can say, "Oh, look what we've done." You need some sort of suppression program, [so] you could go and say, "Look, we killed 2 million blue catfish." ■

Listen to the full interview at bayjournal.com/podcasts.

Not so fast: MD high-speed train project hits the skids

Route uncertainty, water quality concerns keep proposed maglev project in limbo

By Jeremy Cox

One of the main selling points for constructing a $13 billion magnet-propelled train line between Washington, DC, and Baltimore is speed. Proponents envision levitating train cars going 300 mph and higher, reducing the travel time between the two cities to a mere 15 minutes.

But those go-fast ambitions have collided with the go-slow realities of acquiring state and federal permits. The mounting difficulties threaten to derail the high-profile project.

First came the Federal Railroad Administration's decision in 2019 to pause the five-year, $28 million study of the project's potential environmental impacts, citing the need for additional engineering and design details. After work on the study restarted, the FRA initiated a second pause in 2021 without finalizing a preferred route.

Nearly three years into the effort's current suspension, an FRA spokeswoman told the *Bay Journal* in April that "there are no updates available." The study must be completed and federally approved for the project to move forward.

Now comes another big wrench in the works: Northeast Maglev, the private company leading the project, withdrew its application in late December for a water-quality certification from the Maryland Department of the Environment. The move came after MDE indicated it was poised to reject the request, pointing to a bevy of missing details, such as finalized design plans and stormwater discharge totals.

Northeast Maglev didn't make a representative available to comment for this report. But the company has notified MDE that it intends to reapply after it acquires more engineering and design information.

Some environmental groups, including the Chesapeake Climate Action Network, have thrown their support behind the project. They say the high-speed train will result in a net win for the environment by removing millions of polluting car trips from area roadways, leading to improved air quality.

But many conservationists remain opposed. Among them: the Anacostia Watershed Community Advisory Committee, Sierra Club's Maryland chapter, Beaverdam Creek Watershed Watch, the Maryland Ornithological Society and the Friends of Patuxent Research Reserve. They greeted the permit withdrawal announcement with cautious relief.

A maglev train at the Pudong airport in Shanghai. Magnetic levitation technology is more common in Asia. (Kallerna/CC BY SA 4.0)

"We were very excited," said Rhonda Kranz, president of the Maryland Coalition for Responsible Transit, an anti-maglev community group. "We spent so much time going to hearings and writing a 600-page report. They can still come back with this, but I think it was a real win."

Critics have raised myriad objections to the project.

Although the train itself doesn't emit greenhouse gases, opponents contend it would still need enormous amounts of electricity derived from fossil fuels. They also take issue with Northeast Maglev's preferred route, which would slice through several federal properties, including portions of the Patuxent Research Reserve. And with an expected average fare price of $60, they say it would be a viable option only for the wealthiest commuters.

"At its core, our big concern with the maglev project is it requires extensive amounts of new infrastructure to do basically the same thing that MARC [Maryland Area Regional Commuter] and Amtrak are currently doing," said Kyle Hart, Mid-Atlantic program manager for the National Parks Conservation Association.

The train's special U-shaped guideway would run mostly through tunnels bored up to 320 feet below the surface. About 70% of the 40-mile route would be underground, but it would emerge above ground as much as 150 feet overhead along "viaducts" perched on concrete piers. The service would operate between dedicated new stations at Mount Vernon Square in DC and the Cherry Hill neighborhood in Baltimore, with a single stop at Baltimore-Washington International Airport.

Japan, which pioneered maglev technology in the 1970s, has pledged $5 billion toward the U.S. construction project. Backers hope to eventually extend the route to New York City. A full trip between there and DC, roughly 200 miles, would take just an hour, they say.

Maryland's water-quality certification process is triggered whenever a new project is expected to discharge polluted stormwater into waterways protected by the federal Clean Water Act. Northeast Maglev's permit application identifies seven Chesapeake Bay tributaries to be affected, including the Anacostia, Little Patuxent and Severn rivers.

The project would require about 450 acres of trees to be cleared. About 22 acres of wetlands and nearly 13,000 linear feet of streams would be impacted. Northeast Maglev told MDE it would use state-approved treatment practices during construction and in the installation of stormwater facilities to ensure that the discharges meet water-quality standards.

In a Dec. 22 letter to Northeast Maglev, Danielle Spendiff, head of MDE's regulatory division, wrote that even after receiving additional details from Northeast Maglev, the agency still "does not have a reasonable assurance that this project will comply with water quality standards."

She pointed to several flaws in the developer's request. Those included that the project's layout remains conceptual, efforts to address floodwaters with underground storage may be "challenging or infeasible," and the scant details on how sensitive species, such as freshwater mussels, will be impacted.

Less than a week later, Northeast Maglev notified the agency that it was pulling the application but would "reapply when the project documents are detailed enough to address MDE's comments."

Spendiff replied that "it is strongly recommended (although not required)" that the developer wait until the federal environmental impact study resumes and there is more certainty surrounding the preferred route.

"I read that as, 'Please don't waste our resources,'" said Dan Woomer, a past president of the Coalition for Responsible Transit. His organization, he added, supports enhancements to MARC, Amtrak and other public transportation options to help relieve the region's congestion.

It is unclear when or if the federal environmental impact study will restart. The effort has run out of federal funding, and any further work would require additional outlays, said Nora Corasaniti of the Maryland Department of Transportation in a September 2023 email to state Democratic Del. Nicole A. Williams of Prince George's County, who had requested an update on the project. ■

Food supply for Bay's predatory fish seems adequate, for now

But report cautions that hardened shorelines are taking bite out of key habitat for forage species

By Karl Blankenship

When it comes to important but unheralded Chesapeake Bay species, it may be time to praise the polychaete.

The bottom-dwelling worms turn out to be the most important food for a wide range of important fish predators, and their abundance seems to be holding steady in recent decades.

On the other hand, there may be reason for concern about lowly mysids, small shrimplike crustaceans that are a tasty treat for many Bay fish but have been in decline for years.

One thing is certain: There is cause to worry about the shoreline hardening around the Bay and its tidal tributaries. Despite efforts to promote "living shorelines," the spread of bulkheads and riprap is taking a bite out of critical habitats for polychaetes, mysids and many other forage species that constitute the lower levels of the Chesapeake's food web.

Those are some of the findings from a recent *Forage Status and Trends Report* from the state-federal Bay Program. It's the first attempt to analyze if the Chesapeake is producing enough food for striped bass, weakfish, summer flounder, Atlantic croaker and other predators.

"We still can't answer that question directly," acknowledged Bruce Vogt of the National Oceanic and Atmospheric Administration Chesapeake Bay Office, who chairs the workgroup that produced the report. "What we say is that we have a better handle on it."

The reason for the murkiness is that the Bay's food web, which fuels more than 500 million pounds of seafood harvests a year, is incredibly complex.

The prey near the bottom of the web includes such things as bay anchovy, polychaetes, mysids, amphipods, sand shrimp, macoma clams and other species that most people would never recognize and have likely never heard of. Yet they are critical for the Bay's productivity and constitute the bulk of the diet of its predatory fish.

As far back as 1993, a Bay Program report recognized the role that zooplankton, silversides, hogchoker and a host of other "ecologically valuable species" play in the Chesapeake ecosystem.

"No matter what is done to control nutrients and improve habitat conditions," it warned, "there must be an adequate base of zooplankton, forage fish and [benthic animals] to support healthy and productive populations of recreational and commercial finfish."

Many types of 'forage' — the worms, insects, clams and small fish near the bottom of the food web — begin disappearing when as little as 10% of the shoreline in an area is hardened with riprap (shown here) or bulkheads. (Dave Harp)

But it wasn't until the 2014 *Chesapeake Bay Watershed Agreement* that forage species received a goal of their own. The agreement recognized the importance of protecting "habitats and ecological relationships" to sustain fisheries and called for an assessment of the Bay's forage supply.

Studies cited in the new report suggest that the overall abundance of forage over the last few decades has been relatively constant, but what makes up that food base changes over time.

It found that the total amount of invertebrate biomass — things like clams, insects and worms, which make up the vast majority of what is consumed — appears stable in recent decades, though there were changes within the group.

Polychaetes, which studies suggest are the most widely consumed forage, have remained steady. Meanwhile mysids, which are also very important in predator diets when available, have declined. The abundance of small forage fish, bay anchovy and menhaden has generally been low for the last two decades.

The report suggests that predators appear to adjust their diet depending on what's abundant and available.

The reasons for some of the increases and declines are unclear, but in some cases the changes seem to be tied to specific weather patterns that can persist for decades. Water quality and a changing climate play a role, too.

"I don't think there's any red flag right now to say that, aside from maybe mysids, that we have a real problem when it comes to forage availability," Vogt said. "But we can't say more directly that there's plenty of forage out there for the predators that we are trying to manage. We can't make that leap yet."

That's a daunting challenge. Simply knowing the abundance of forage doesn't necessarily mean it's adequate. It also must be available at the right place and right time for predators. Different types of forage may have different nutritional values.

"There are a lot of variables here," said Mary Fabrizio, a fisheries scientist with the Virginia Institute of Marine Science who worked on the report. "A number of factors all have to line up."

The report suggests that more work is needed to determine if the health of predatory fish is changing over time, something that could provide a signal about whether changes in diet could affect their overall condition.

"Body condition would be something that's fairly easy to track," Fabrizio said. "You could look at that and any changes through time."

Still, that wouldn't explain why the abundance of certain types of forage are increasing or decreasing. And it wouldn't show whether the timing and location of forage production shifts as climate changes — which could have major impacts.

"We maybe don't spend the time that we need to learn about all these components because they are complex," Fabrizio said. "When you start talking about long-term populations like this, and responding to environmental change, that's hard."

The report highlights that reducing nutrient pollution alone — the focus of much of the Bay restoration effort — is not enough to ensure that adequate habitats exist for forage species, citing studies showing the negative impact of shoreline hardening.

Many of the most sensitive forage species are gone when 10% of an area's shoreline is hardened, and even many of the more-tolerant species disappear when that amount reaches 30%.

"Overall, hardened shorelines negatively affect key forage species at both Baywide and tributary scales," the report states.

The lower James River, much of the tidal Potomac River, the lower Patuxent River, and most of the upper Bay from the Choptank River to the Gunpowder River are areas where shoreline hardening puts forage abundance at risk, according to the report.

That echoes the finding of a report from the Bay scientific community last year that suggested putting more focus on improving shallow water habitats to increase direct benefits to aquatic life.

"That's one of the major findings that we're trying to communicate," Vogt said. "This is another indicator that hardened shorelines are not great for the ecosystem." ■

‘Nature’s refrigerator’ has been a fascination for centuries

By Ad Crable

Looming over a ghost town in the rolling mountains of West Virginia’s Eastern Panhandle lies Ice Mountain, whose once mysterious ability to store ice and breathe out cold air much of the year has fascinated travelers and historians for two centuries.

Adding to the oddity of Ice Mountain — declared a National Natural Landmark in 2012 — are a handful of alpine plant species, normally found at higher altitudes and in colder climates such as Alaska and the Canadian Arctic, which grow near the vents of cool air.

Not odd, but embellishing the allure of the Ice Mountain Preserve, is a mountaintop rampart called Raven Rocks that sports one of the best views in that part of the Mountain State.

Thanks to the Nature Conservancy, which saved 149 acres of the mountain from development in 1989, you can get a free guided tour to the vista and stick your arm into the mountain to feel the tingle of cool air. To protect the sensitive natural area, no unescorted visits are permitted. Tours are by appointment only but offered year-round if a volunteer docent is available. About 500–800 people make the trip annually.

On a cloudy morning in early March, I pulled up to the Ice Mountain trailhead in the ghost town of North River Mills. Located on an old wagon road and once bustling with three mills, the town was home to 100 families who thrived there in the 1850s. A couple of old stagecoach inns, the former post office and a general store are still intact, preserved by locals who care about the site.

My guides were Ken Caldwell, a 76-year-old transcendental meditation teacher, and Steven Kite, a retired geology professor from West Virginia University who has studied what makes Ice Mountain tick for 23 years.

In a nearby field, framed by a majestic oak tree, was North River Mills United Methodist Church, built in 1889 and still holding services on two Sundays a month. The congregation used to have summer picnics, using ice from the mountain to make ice cream and chill lemonade.

A reputation as “nature’s refrigerator” is at the core of Ice Mountain’s mystique.

“This most extraordinary and wonderful work of God’s creation certainly deserves the highest rank in the history of the natural curiosities of our country,” gushed historian Samuel Kercheval in *A History of the Valley of Virginia* in 1833.

By removing stones at the base of the mountain, Kercheval wrote, someone can find “the most perfectly pure and crystal-looking ice, at all seasons of the year.”

Kercheval described a local property owner who had excavated stones and built a small log structure into the mountain in which milk, butter and fresh meats could be preserved year-round.

Civil War soldiers also took advantage of the free cold storage. Earlier, Native Americans used the mountain for the same purpose.

Folklore has swirled around the source of the long-lasting ice. Some thought there was an underground glacier. Others theorized the North River flowed under the mountain. Still others believed a massive underground cave provided the escaping cool air.

Ice Mountain looms behind North River Mills United Methodist Church in West Virginia. In the past, congregants there would retrieve ice from the mountain for use in lemonade and ice cream at summer picnics. (Ad Crable)

The truth, Kite pointed out, was nailed early on by a scientist, C. B. Hayden, who wrote in the *Southern Literary Messenger* in 1843 that Ice Mountain was simply a giant refrigerator.

In 2003, one of Kite’s students, Kevin M. Andrews, completed a thorough investigation of Ice Mountain to bring a scientific understanding to its lingering mysteries.

Andrews called Ice Mountain a cold air “sponge.” Perhaps as long as 250 million years ago, a landslide from the North River ate into the side of the mountain causing a thick layer of loose talus sandstone rocks to collect on a slope at the bottom of the mountain.

Snow and rain infiltrate the talus slope at the top, causing ice to form at the bottom during winter. In addition, colder air from the top of the mountain flows down and into the crevices

Top photo: Geologist Steven Kite (background) and Ken Caldwell, a volunteer with the Nature Conservancy, take in the view from Raven Rocks on West Virginia’s Ice Mountain. (Ad Crable)

Geologist Steven Kite stands on top of a 60-foot-thick talus slope that allows ice and cold air to form at the bottom of West Virginia's Ice Mountain. (Ad Crable)

where it drifts to the bottom, helping to maintain cold temperatures year-round, Andrews reported.

"If you want to sum it up, cold air sinks. That's what's going on at Ice Mountain," Kite added.

The thick accumulation of talus sandstone rocks at the bottom of the mountain insulates the ice, and the northwest-facing slope of the mountain shields the cold deposits from the warmth of the sun.

Over the summer, hotter air gradually warms the icebox but may still allow ice to persist, according to Andrews.

Since 2002, Kite has used probes to record temperatures inside the cold-air vents every half hour. After more than 2 million readings, he's found that the average annual temperature coming out of the openings is 38 degrees. In late summer, the air seeping out of the mountain tops out at 52 degrees.

But Kite questions if ice can still be found in the vents in late summer. Only twice has he found ice in the vents he monitors during June.

Is climate change warming the innards of Ice Mountain?

A qualified yes, Kite said. He has found the average temperature rising by about a tenth of a degree each year. For comparison, Kite said a change of 1 degree is like moving 53 miles farther south, at the same elevation.

But he noted that climate change may also bring bigger snows, in which case more ice might build up in the bottom of the mountain, cooling temperatures for years to come.

Hugging a trail along the scenic North River through rhododendron bushes pushing up tightly wound blossoms, we arrived at the first vent — one of about 160. It was a football-size opening in the moss-covered jumble of the talus slope.

The ambient temperature was 51 degrees, but my arm quickly noticed the surge of colder air ejecting from the mountain. A thermometer Kite placed inside the vent registered 32.2 degrees, and another device measured the speed of the air flow at 1 mph.

I stuck my hand into what was probably the coldest air in West Virginia.

Next we visited what Caldwell calls the Grand Vent, an opening 4 feet wide by 1 foot high. The breeze blowing from the vent formed snaggletoothed icicles from the water dripping from the hole. A foot into the opening, Kite got a reading of 24 degrees.

Kite has never once found air being sucked into the vents. "It's a one-way system. It's always going out or not moving at all," he said.

A fence has been placed on the hillside around the vents to keep people from stepping on alpine plants such as bristly rose, twinflower, bunchberry and Appalachian wood fern. The bristly rose is common in Siberia and the Canadian Yukon, and it is the provincial flower of Alberta.

The plants are remnants of an ecosystem that dominated the Appalachian Mountains at the end of the Ice Age around 11,000 years ago.

From the bottom of the mountain, there is a consistent but not-too-steep climb to its pinnacle and a prominent outcropping of Oriskany sandstone known as Raven Rocks, because ravens often nest nearby.

At 1,230 feet, the high ground was used as a lookout during the Civil War. But we were relaxed visitors to the ramparts and took in the view of the meandering North River and surrounding mountain ridges.

Caldwell, who is well-versed in the area's history, folklore and geology, leads about a dozen groups a year to the base and top of Ice Mountain. He usually gives up a day of his weekend to lead the trips as a volunteer.

"I like showing people stuff they normally aren't exposed to," he explained. "When you get down to the vents, that's a whole different world to people. It's maybe 80 degrees outside, and they feel the cold air coming out. People are really wowed by it." ■

The boreal twinflower is among the handful of arctic plants that live near the mouths of cold-air vents in Ice Mountain. (Kent Mason/The Nature Conservancy)

Ken Caldwell, a docent for the Nature Conservancy, measures the air temperature coming from a rock vent at the base of the once mysterious Ice Mountain. (Ad Crable)

IF YOU GO

Guided trips to Ice Mountain, about 4 miles northwest of Capon Bridge, WV, are offered by appointment year-round. The trips are free and led by a trained docent for the Nature Conservancy. The hike to see both the cold air vents with rare arctic plants and the Raven Rocks vista takes about two hours and involves a roughly 2-mile moderate-grade climb.

To arrange a trip, contact Steve or Terry Bailes at 304-496-7359 or bailessteve@yahoo.com. Web search "Ice Mountain North River Mills" to find its Facebook page.

For the Bay's future, we need collaboration and good science

By Kate Everts

It's clear that 2025 is not the finish line for Chesapeake Bay cleanup efforts.

The Chesapeake Bay Program estimates that Bay jurisdictions will collectively fall short of their water quality goals for 2025, which were established in the 2014 *Chesapeake Bay Watershed Agreement.* It's estimated that Maryland, for instance, while expected to meet its sediment reduction targets, will not hit its targets for reducing nutrient pollution (nitrogen and phosphorus).

But there is no time limit on environmental stewardship — even if Maryland or other Bay jurisdictions were to meet their water quality goals for 2025. Unanticipated challenges, such as population growth, development and loss of working lands, have continued to arise since Bay jurisdictions signed the 2014 agreement, to say nothing of the first agreement in 1983.

Generally speaking, the new challenges compound and add to the complexity of achieving nutrient reduction targets. New challenges will continue to arise after 2025, and we must be willing to meet them.

In addition to unmet goals and new complexity, we face the great challenge of this generation: climate change. The Bay Program has acknowledged that climate change threatens our ability to meet Bay goals. It emphasizes that continued progress will depend on more research on climate change impacts and many other topics related to Bay cleanup.

There's always more to know about land use changes, forests and agro-ecosystems in the effort to offset adverse impacts on the environment. The mitigation of climate change and the achievement of Bay nutrient reduction goals will hinge on a steady flow of innovative and unbiased scientific research, the results of which must be shared and applied in a timely manner. This should be a priority moving forward.

It will take a large-scale effort, similar to the overall struggle to reduce nutrient loads to the Chesapeake, to minimize the impacts of climate change. It's a problem more significant than any one person, place, or entity — yet all of us in the Bay watershed are impacted by it, sometimes in different ways.

Challenges to restoring the Chesapeake Bay have continued to arise since the signing of the first cleanup agreement in 1983. (Jeremy Cox)

The Harry R. Hughes Center for Agro-Ecology is a nonprofit organization affiliated with the University of Maryland College of Agriculture and, since 1999, we have worked to find viable solutions to problems that face Maryland's working landscapes through the development of consensus between interests in agriculture, forestry and environmental communities.

The center was founded by the late Gov. Harry R. Hughes, who signed the first multi-state Chesapeake Bay agreement in 1983. He served as president of a 16-member board for the center, which consisted of Marylanders who represent diverse voices and are united by a common interest: stimulating new cooperative approaches for preserving Maryland's farms, forests and other open-space industries.

Now, the Hughes Center is led by nearly two dozen board members from across the state, led by former state Sen. Mac Middleton, a Southern Maryland farmer, as president. Our mission continues to promote environmentally sound yet economically viable agriculture and forestry, as Maryland's preferred land uses, through scientific research, outreach and collaboration.

The strong spirit of collaboration Hughes brought to the table as board president remains a cornerstone of our work. He recognized the interconnectedness of conservation and agriculture, understanding that preserving profitable farms was essential for environmental health and long-term food security.

In addition to his reputation as a champion of the Chesapeake, he had a steadfast commitment to bringing people together for any common cause. And what greater existential cause for the Bay jurisdictions is there than ensuring the health of the economic engine and ecological wonder that is the 64,000-square-mile watershed?

As we inch closer to 2025, there are two principles to keep topmost in mind: finding research-based solutions and collaborating with diverse stakeholders to implement them.

The efforts by Maryland and its agriculture community, urban cities, rural towns and counties to reduce their nutrient loads to the Bay have been an example of how a society can live and thrive more harmoniously with the environment. We're collectively making a positive impact on the Chesapeake, compared with our early efforts several decades ago. It is taking longer than planned, but the progress is real and measurable.

This January, the Chesapeake Bay Program released a report that acts as a roadmap to 2025 and recommends ways to accelerate progress toward water quality goals under the watershed agreement. There are nearly 200 recommendations on topics ranging from scientific monitoring to environmental justice to forest buffers and agricultural best management practices. Reading it can help you understand how far Bay cleanup has progressed — and how far it still has to go.

The will of the general public and public officials to see a healthy Chesapeake remains strong. Let's sprint past this 2025 "finish line," even if it's just the first lap. And let's do it together because this, too, is bigger than any one of us. ■

Kate Everts, Ph.D., is director of the University of Maryland's Harry R. Hughes Center for Agro-Ecology.

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The *Bay Journal* welcomes comments on environmental issues in the Chesapeake Bay region.

Letters to the editor should be 300 words or less. Submit your letter online at bayjournal.com by following a link in the Opinion section, or use the contact information below.

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When it comes to oysters, diseases have to make a living too

By Tom Horton

The next time I see'd the boweevil
He had all his family there
Just a-lookin' for a home
Just a-lookin' for a home …

The genius of the old song about the devastating cotton pest is that it sees things from the "boweevil's" point of view … pests gotta make a living too.

Just so with oyster diseases that have ravaged the Chesapeake, according to Ryan Carnegie, a shellfish researcher at the Virginia Institute of Marine Science.

His publications, with titles like *Rapid Phenotype Change in Perkinsus Marinus,* won't soon be bestsellers. But as satisfying mystery stories, they're up there with the best detective writing.

Many know one of the worst things to happen to Chesapeake oysters in recorded history was the disease MSX, which came from introduced, nonnative oysters some 70 years ago. But few know that it didn't just kill our beloved oysters, it also threatened Dermo — historically the dominant disease of eastern oysters.

And Dermo, it turns out, would not take this dethroning by MSX amicably.

First, some brief history on MSX, which I'd argue claimed a human victim as it first emerged. It was late summer, 1956, and Clyde A. Phillips, an oyster planter out of New Jersey's Delaware Bay shore, went out for a preseason inspection of his oyster beds near the town of Bivalve.

Anticipating a good harvest, he'd incurred substantial debt building a new shucking house. But all he found that day were dead oysters — nothing but "boxes," as oystermen call the empty shells.

A day before oyster season opened, Clyde Phillips, sitting silently in his rocking chair, died of a heart attack: "The oysters were what killed him," his daughter-in-law told me several years ago.

Not the oysters, actually. A year or so later, Rutgers University shellfish scientists would identify the killer as a never-before-seen disease that they called, simply, "multinucleated spheres, unknown" or MSX, for the way it appeared under the microscope.

By the 1960s, MSX had spread into the Chesapeake, as far north as the Choptank River, rapidly killing up to 90% of the oysters where it flourished. The loss of oysters was universally lamented, a huge blow economically, ecologically, gustatorily.

Meanwhile, unnoticed, MSX was also making life miserable for Dermo, the "other" oyster disease. For as long as anyone knew, Dermo, formally *Perkinsus marinum*, had infected the eastern oyster, *Crassostrea virginica* — from Mexico to the Chesapeake and Delaware Bays.

Over time the disease had forged a working relationship with its host, killing up to 30% at worst — and killing slowly, giving the oyster a year or two to reproduce before succumbing.

That worked for the oyster, and it worked for Dermo, which has no alternate host. MSX messed with this nicely evolved accommodation two ways: It killed most of the oysters it encountered, and it killed them fast. Dermo, a slower spreader that depended on a relatively high density of oysters to make its living, was increasingly uncompetitive.

What's a disease to do?

Fast forward to the 1980s, when die-offs surged again, with an estimated 70% of harvested oysters coming up dead — again, as far up the Bay as the Choptank (the fresher water farther upstream is less hospitable to the diseases). Once more, oystermen began to worry that their way of life was literally dying.

"I think then if the government had wanted to buy us watermen out, they could have," Choptank oysterman Jeff Harrison told Dave Harp and me in our recent *Bay Journal* film, *A Passion for Oysters*.

There was a lot of speculation in the years that followed about the disease explosion, which by the 80s, strangely, involved Dermo more than MSX, and happened in estuaries along the entire East Coast. Nothing really added up, researcher Carnegie said.

A clump of oysters rests on the deck of oysterman Sidney Lauck's boat as he tongs for the bivalves off Howell Point on Maryland's Choptank River. (Dave Harp)

His search for the answer led him to "libraries" of oyster tissue preserved on slides at VIMS and other institutions, where he could look under the microscope at oysters infected with disease over the decades.

It would turn out that Dermo in the slides from the 1980s and later looked very different from the Dermo in the 1960s and before. And it was infecting the oyster in more vulnerable parts of its body than before.

Dermo had, at lightning speed in evolutionary time scales, mutated into a "new and improved" version that could compete with MSX. "We may never know how it happened," Carnegie said. "Was it a gene that was always [in Dermo] that arose to meet a new need? All we know for sure is *something* happened."

The new Dermo could infect faster, produce high intensities of infection and spread across greater distances — a success story deserving appreciation, if not celebration.

Today, MSX still lurks, as does the new and improved Dermo. And their good host the oyster? It, too, has pushed back.

"There is actually a lot of good news nowadays," Carnegie said. VIMS sampling in the Bay has shown an increasing trend of more market-size shellfish in their dredges, a trend that began in the late 1980s and continues through today.

Some of this progress can be attributed to human effort in both Maryland and Virginia: building oyster sanctuaries for natural oyster reefs, better regulating harvests and introducing disease resistance into farmed oysters.

But for Carnegie that doesn't entirely explain the comeback.

The oyster itself has adapted, developing resistance, figuring out how to live long enough to reproduce. "It's a whole bunch of changes that add up, and it's happening at the scale of the whole Bay," he said.

Ironically, the highest resistance to disease has developed in the saltier parts of the Bay that are most favorable to disease. The constant challenge to oysters there — toughen up or die — is a good thing.

By contrast, "naive" oysters (I love the disease guys' use of that word) in fresher parts of the Bay are more vulnerable, because they can go for years without being challenged.

What humans can do is the science that lets us follow the plot, that can show us the best places to build and protect populations of oysters to maximize opportunities for adaptation to new challenges.

And that is the only certainty in this complex tangle of disease vs. disease vs. oysters: More twists and turns lie ahead. ■

Tom Horton has written about the Chesapeake Bay for more than 40 years, including eight books. He lives in Salisbury, where he is also a professor of Environmental Studies at Salisbury University.

A Canada goose makes itself at home, however temporarily, on an osprey nest on the South River near Annapolis. (Michele Danoff)

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A lone cormorant shares a log with turtles in the James River near Buena Vista, VA. (Michele Danoff)

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CHESAPEAKE CHALLENGE

— Kathleen A. Gaskell

A

Tell-tail, not name, reveals fox's identity

The Chesapeake Bay is home to both the red fox and the gray fox. Taking their names at face value for identification is not always helpful, as the fur of a red fox (*Vulpus vulpes*) can be silver-gray, black, or even yellowish and white. Gray foxes (*Urocyon cinereoargenteus*) can be red or brown. Here are a few of their differences. Can you tell who's who, or will this quiz outfox you? Answers on page 36.

1. Look at the legs. One fox has long black legs. The other has shorter, rusty yellow legs.
2. No matter what color the rest of the fox is, one species' tail tip is always white, the other's always black.
3. One fox has a more catlike head shape; the other's is more doglike.
4. One fox's rotating forearms and hooked claws enable it to easily climb trees, sometimes as high as 50 feet. The other fox doesn't have much forearm rotation, but its strong hind legs allow it to leap as high as 6 feet and land on lower tree branches.
5. One fox typically dens in hollow trees, stumps or burrows that it takes over from other animals. Its tree dens may be as high as 30 foot above the ground. The other fox either digs out its den or appropriates another animal's burrow.
6. Although we do not recommend getting this close to a fox, one species' pupils are vertical ovals while the other's are vertical slits. Both open wider to allow in more light.

C

D

Title image: *Red fox. (Michele Danoff)*

A *Red foxes sun themselves on a rooftop. (Michele Danoff)*

B *A red fox mother watches over her kits. (Kathleen A. Gaskell)*

C *A gray fox rests on a rock. (Renee Grayson/ CC BY 2.0)*

D *A gray fox eats bird seed near North Beach, MD. (Lynn Strauss)*

B

Foxes are copy cats

Young foxes are most commonly called kits (not pups). Foxes are members of the Canidae family (doglike carnivores, or canids), but they share many traits with cats.

Cat's eye: Instead of having round pupils, like all other canids, foxes have vertical slits or ovals, like domestic cats. These pupils, along with a mirror-like membrane behind their retinas, help foxes and cats see in low light.

They've got the cat's tongue: Foxes are the only canid with tongues covered by tiny spines or bristles. Rough tongues help foxes and cats remove parasites from their fur when grooming. Grooming others of their kind is also how they establish social bonds.

Wayfinding whiskers: All canids have whiskers, but those of a fox are extra-long, like a cat's. Foxes also have "whiskers" on their legs. These sensitive hairs help animals maintain balance as well as serve as navigational sensors in low-visibility situations.

Hunt solo: Unlike most canids, which hunt in packs, foxes (and most cats in the wild) are solitary hunters. They even stalk their prey like cats: quietly inching along, freezing, inching closer — then pouncing and dispatching with one quick bite. (Many other canids simply run down their prey and throttle it to death.)

Walk the walk: Foxes are the only canid with semi-retractable claws, like a cat's. Retracted claws allow them to stalk their prey more silently. Walking on the balls of their feet, makes their skulking even quieter.

BULLETIN BOARD

VOLUNTEER OPPORTUNITIES

WATERSHEDWIDE

Potomac River watershed cleanups
Learn about shoreline cleanups in the Potomac River watershed. Info: fergusonfoundation.org. Click on "cleanups."

PENNSYLVANIA

Middle Susquehanna volunteers
The Middle Susquehanna Riverkeeper is looking for volunteers in these areas:
- *Sentinels:* Keep an eye on local waterways, provide monthly online updates. Web search "Susquehanna sentinels."
- *Water Sampling:* Web search "Susquehanna Riverkeeper Survey."
- *The Next Generation:* Many watershed organizations are aging out. Younger people are needed for stream restoration work, litter cleanups.

Individuals, families, scouts, church groups welcome. Info: middlesusquehannariverkeeper.org/watershed-opportunities.

Nixon County Park
Volunteer at Nixon Park in Jacobus. Info: 717-428-1961, NixonCountyPark@YorkCountyPA.gov.
- *Front Desk Greeter:* Ages 18+ can work alone. Families can work as a team.
- *Habitat Action Team:* Volunteers locate, map, monitor, eradicate invasive species; install native plants; monitor hiking trail improvements. Info: supportyourparks.org, select "volunteer."

PA Parks & Forests Foundation
The Pennsylvania Parks and Forests Foundation, a Department of Conservation and Natural Resources partner, helps citizens get involved in parks, forests. Learn about needs, then join or start a friends group. Info: PAparksandforests.org.

State park, forest projects
Help with Department of Conservation and Natural Resources projects at state parks and forests: clear & create trails, habitat; repair & install plants, bridges, signs; campground hosts; interpretation programs & hikes; technical engineering, database assistance; forest fire prevention programs; research projects. Web search "PA DCNR conservation volunteers."

VIRGINIA

Leopold's Preserve
The White House Farm Foundation has several opportunities at Leopold's Preserve in Broad Run. Register: leopoldspreserve.com/calendar. Info: whfarmfoundation.org.
- *Conservation Corps:* 8:30–11:30 am Fridays. Ages 13+ Maintain trails, restore habitat, remove invasive plants, clean up trash.
- *Trail Maintenance Workday:* 8:30–11:30 am and/or 1–3 pm May 18. Ages 13+ (ages 13–17 w/adult).

Alliance workdays
Help the Alliance for the Chesapeake Bay maintain plantings. Volunteers, ages 18+ (ages 10+ w/adult), will plant native plants, weed, prune, water, spread mulch. Supplies, tools provided. Wear long pants, clothes that can get dirty, close-toed shoes (boots are best). Hat, sunscreen, gloves recommended. Bring water, water bottle. Registration required: Web search "Alliance for Bay events." Events are rain or shine.
- *Dogwood Middle School Garden Maintenance & Cleanup, Richmond, VA:* 4–6 pm May 22.
- *Lois H. Jones Elementary Reforestation Area Maintenance Day, Richmond, VA:* 4–6 pm May 23 & 9–11 am June 10.

Virginia Living Museum
Virginia Living Museum in Newport News needs volunteers ages 11+ (11–14 w/adult) to work alongside staff. Educate guests, propagate native plants, install exhibits. Some positions have age requirements. Adults must complete background check ($12.50). Financial aid applications available. Info: volunteer@thevlm.org.

Become a water quality monitor
Volunteer with the Izaak Walton League or train online to become a certified *Save Our Streams* water quality monitor. Follow up with field practicals, then adopt a site of your choice in Prince William County. Info: Rebecca Shoer at rshoer@iwla.org, 978-578-5238. Web search "water quality VA IWLA."
- *Stream Selfies:* Collect trash data, take photos of local stream.
- *Salt Watchers:* Test for excessive road salt in a stream.
- *Check the Chemistry:* Spend 30 minutes at a waterway with materials, downloadable instructions.
- *Stream Critters:* Use app to identify stream inhabitants.
- *Monitor Macros:* Become a certified *Save Our Streams* monitor. Learn to ID aquatic macroinvertebrates, assess habitat, report findings, take action to improve water quality.

Pond cleanup programs
Join a Prince William Soil & Water Conservation District *One-Time Pond Cleanup* in fall or spring. Kayaks needed. Volunteers also needed to take on longer-term commitments on various waterways. Info: waterquality@pwswcd.org.

Cleanup support & supplies
The Prince William Soil & Water Conservation District in Manassas 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@pwswcd.org. Register for an event: trashnetwork.fergusonfoundation.org.

Goose Creek Association
The Goose Creek Association in Middleburg needs volunteers for stream monitoring & restoration, educational outreach, events, zoning & preservation projects, river cleanups. Info: Holly Geary at 540-687-3073, info@goosecreek.org, goosecreek.org/volunteer.

Borrow cleanup supplies
Hampton public libraries have cleanup kits that can be checked out year-round, then returned after a cleanup. Call your local library for details.

MARYLAND

Potomac cleanup at Oxon Cove Park
Join the Potomac Conservancy for a trash cleanup at 9–11 am June 1 at Oxon Cove Park in Oxon Hill. Once registered, participants receive details on safety protocols, what to bring. Info/registration: community@potomac.org.

Eastern Neck refuge
Volunteer with Friends of Eastern Neck Wildlife Refuge in Rock Hall:
- *Visitor Contact Station & Gift Shop/Bookstore:* Answer questions, handle sales.
- *Butterfly Garden:* Pairs of volunteers are assigned one of the plots to plant, weed, maintain spring through fall.
- *Outreach:* Staff information at community events.

Info: Contact page at friendsofeasternneck.org.

Stream Link tree workdays
Stream Link Education needs volunteers to help establish 21 acres of resilient, biodiverse forest in Emmitsburg. Workdays take place 9–11 am. Info/registration: streamlinkeducation.org.
- *Nursery Teams:* May 11, 18, 25. Grow, prep trees at outdoor nurseries.
- *Tree Teams:* May 11, 18, 25. Maintain trees in ground.

Bay safety hotline
Call the Maryland Department of Natural Resources' *Chesapeake Bay Safety and Environmental Hotline* at 877-224-7229 to report: fish kills, algal blooms; floating debris posing a navigational hazard; illegal fishing activity; public sewer leak or overflow; oil or hazardous material spill; critical area or wetlands violations.

Chesapeake Bay Environmental Center
Volunteer at the Chesapeake Bay Environmental Center in Grasonville a few times a month or more often. Help with educational programs; guide kayak trips & hikes; staff the front desk; maintain trails, landscapes, pollinator garden; feed or handle captive birds of prey; maintain birds' living quarters; monitor wood duck boxes; join wildlife initiatives. Or participate in fundraising, website development, writing for newsletters, events, developing photo archives, supporting office staff. Info: volunteercoordinator@bayrestoration.org.

Chesapeake Biological Laboratory
Help the Chesapeake Biological Laboratory's Visitor Center on Solomons Island. Volunteers, ages 16+, must commit to at least two, 3- to 4-hour shifts each month in spring, summer, fall. Training required. Info: brzezins@umces.edu.

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.
June issue: May 11
July-August issue: June 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 kgaskell@bayjournal.com. Items sent to other addresses are not always forwarded before the deadline.

Answers to CHESAPEAKE CHALLENGE on page 35

1. Red: long, black legs
   Gray: shorter, rusty yellow legs
2. Red: white tip / Gray: black tip
3. Red: doglike / Gray: catlike
4. Red: leaper / Gray: climber
5. Red: earthen burrows
   Gray: trees
6. Red: vertical slit pupils
   Gray: vertical oval pupils

BULLETIN BOARD

Severn River Association
Volunteer at the Severn River Association. Visit severnriver.org/get-involved to fill out "volunteer interest" form.

Annapolis Maritime Museum
Volunteer at the Annapolis Maritime Museum & Park. Info: Ryan Linthicum at museum@amaritime.org.

Patapsco Valley State Park
Volunteer opportunities include daily operations, leading hikes & nature crafts, mounted patrols, trail maintenance, photographers, nature center docents, graphic designers, marketing specialists, artists, carpenters, plumbers, stone masons, seamstresses. Info: volunteerpatapsco.dnr@maryland.gov, 410-461-5005.

National Wildlife Refuge at Patuxent
Volunteer at Wildlife Images Bookstore & Nature Shop with Friends of Patuxent, near Laurel, for a few hours a week or all day, 10 am–4 pm Saturdays; 11 am–4 pm Tuesdays–Fridays. Help customers, run the register. Visit the shop in National Wildlife Visitor Center, ask for Ann; email wibookstore@friendsofpatuxent.org.

Ruth Swann Park
Help the Maryland Native Plant Society, Sierra Club and Chapman Forest Foundation remove invasive plants 10 am–4 pm the second Saturday in May, June and July at Ruth Swann Memorial Park in Bryans Road. Meet at Ruth Swann Park-Potomac Branch Library parking lot. Bring lunch. Info: ialm@erols.com, 301-283-0808 (301-442-5657 day of event). Carpoolers meet at Sierra Club Maryland Chapter office at 9 am; return at 5 pm. Carpool contact: 301-277-7111.

St. Mary's County museums
St. Mary's County Museum Division needs adults to help with student/group tours, special events, museum store operations at St. Clement's Island Museum or Piney Point Lighthouse Museum & Historic Park. Info: St. Clement's Island Museum, 301-769-2222. Piney Point Lighthouse Museum & Historic Park, 301-994-1471.

Maryland State Parks
Search for volunteer opportunities in state parks at ec.samaritan.com/custom/1528. Click on "search opportunities."

FORUMS/WORKSHOPS

Watershed Forum RFP
The planning committee for the 19th annual *Chesapeake Watershed Forum, Making It Last: Proven Tactics for Building Enduring Projects, Partnerships & Organizations*, is soliciting proposals for 60–, 90– and 180-minute sessions during the Oct. 18–20 forum at the National Conservation Training Center in Shepherdstown, WV. Sought are theme-related sessions that spotlight a case study or presentations that facilitate discussion and application to activities at the local level. Planners are interested in projects and organizations that have flourished for at least five years after establishment. Web search: "2024 watershed forum" for details or contact Jenny at chesapeakeforum@allianceforthebay.org. Submission deadline is May 19.

Livestock program
Join the University of Maryland Extension, Mountains-to-Bay Grazing Alliance, Natural Resources Conservation Service and producer Sarah Campbell to discuss finishing cattle on grass, genetic selection for grass-finished livestock, and pastured pigs at 6 pm May 16 at New Roots Farm in West River, MD. Registration required: https://go.umd.edu/pw-may, 301-432-2767. Event is outdoors; dress accordingly. Info: https://go.umd.edu/forageevents. Questions/accommodations: Amanda Grev at agrev@umd.edu, 301-226-7575.

EVENTS / PROGRAMS

VIRGINIA

Let's Go Adventures series
Virginia State Park *Let's Go Adventures* series teaches the skills to confidently participate in a range of outdoor activities. Learn the basics of each activity, how to select & use proper equipment, Leave No Trace Principles, park etiquette, safety guidelines. Activities include camping, kayaking, hiking, fly-fishing, orienteering and archery. Events are free w/park admission fee. Space is limited. To register/learn about upcoming adventures: virginiastateparks.gov/lets-go-adventures.

- *Let's Go Hiking:/Powhatan Run State Park, Powhatan:* 2–4 pm June 1.
- *Let's Go Camping/Twin Lakes State Park, Green Bay:* 11 am–12:30 pm June 2.
- *Let's Go Hiking/Twin Lakes State Park, Green Bay:* 2–4 pm June 2.
- *Let's Go Hiking:/Sweet Run State Park, Hillsboro:* 10 am–12 pm June 9.
- *Let's Go Camping:/Sweet Run State Park, Hillsboro:* 1–2:30 pm June 9.

Leopold's Preserve
Attend an event at Leopold's Preserve in Broad Run. Registration required: leopoldspreserve.com/calendar. Info: whfarmfoundation.org, leopoldspreserve.com.

- *Naturalist Walk/Treat It or Eat It:* 10 am–1 pm May 19. Plant exploration.
- *VA's Amazing Vultures!* 10–11 am June 1. Wildlife rehabilitator Heather Shank-Givens will discuss native vultures, how to mitigate human-vulture conflicts. Meet her non-releasable vulture wildlife ambassador, Vega.

MARYLAND

Youth Fishing
The Department of Natural Resources is working with organizations to offer free fishing opportunities for Maryland youths, ages 3–15. Participants learn basic angling skills, ethic of environmental stewardship. Registration required. Attendees should check contacts for cancellations or rescheduling.

Allegany County
- *Laurel Run:* 7 am May 18. Donna Thomas, 301-876-8614.
- *Lions Pond/Glendenning Park:* 9 am June 1. David Smith, 301-707-2668.
- *Midland Sportsmans Club:* 2 pm June 2. Sharon Merrbach, 301-463-2498.
- *Battie Mixon:* 7 am June 8. John Dawson, 240-727-0785.

Baltimore County
- *Hillcrest Park Lake:* 7 am June 8. Joan Mitchell, 410-887-6994.

Calvert County
- *Calvert Cliffs State Park:* 8 am June 8. Sandy Abell, 410-535-1600 x2829.

Carroll County
- *Krimgold Park:* 8 am May 19. Jamie Noel, 410-386-2103.

Garrett County
- *Potomac River, Kitzmiller:* 5:30 pm May 17. Heather Berg, 301-501-2038.
- *Accident Pond:* 8 am May 18. Machelle Bender, 301-616-1602.
- *Muddy Creek:* 9 am May 25. Jim Smith, 310-616-4754

Harford County
- *Bynum Run:* 10 am June 8. Bob Wall, 443-955-0484

Montgomery County
- *Kings Pond:* 5:30 pm May 31. Jennifer Scully, 301-528-3463.
- *Kings Pond:* 9 am June 1. Jennifer Scully, 301-528-3463.

Washington County
- *Cushwa Basin:* 9 am June 1. Johnathon Harrell, 301-988-0919.

Wicomico County
- *Tributary of the Wicomico:* 8 am June 1. James Simmons, 410-548-4900.

Pollinator plant clinic
Queen Anne's County Master Gardeners is presenting a free *Pollinators Plant Clinic* 9 am–12 pm June 1 at A Little Farm & Nursery in Stevensville. Master Gardeners will answer questions and offer tips on helping home gardens flourish, troubleshooting tricky situations, creating the perfect garden for your space. Info: facebook.com/QueenAnnesCountyMasterGardeners or Rachel J. Rhodes at 410-758-0166, rjrhodes@umd.edu at least two weeks before event.

CBMM cruises on Miles River
The Chesapeake Bay Maritime Museum offers a variety of cruises on the Miles River. Passengers have the choice of two cruise experiences aboard the museum's Chesapeake Bay steamboat, the *Patriot*. Narrated Historical Cruises highlight the historic homes and wildlife along the route, while weekend Island Music Cocktail Cruises are more laid-back trips with soundtracks. For prices/schedule/reservations, visit patriotcruises.com. CBMM is also offering private river cruises aboard its historic floating fleet vessels to watch log canoe races on the Miles River. There are a limited number of charters available. All cruises are dependent on marine conditions. Info: cbmm.org/cruises.

Patuxent Research Refuge
Patuxent Research Refuge offers free public programs on its North Tract [N] and South Tract [S] units in Laurel. Registration required except where noted (list special accommodation needs when registering): 301-497-5887. Info: 301-497-5772, https://fws.gov/refuge/patuxent-research/events.

- *Kids' Discovery Center:* 9 am–12 pm (35-minute time slots, on hour) Tuesdays-Saturdays [S] Ages 3–10 w/adult. Crafts, puzzles, games, nature exploration; free booklet. May: *Insects/Ladybugs*). June: *Reptiles/Salamanders*). Group special arrangements possible. Registration strongly urged: 301-497-5760 (this program only). If no answer, call 301-497-5772, leave info for Barrie.
- *Family Fun/Habitats & Adaptations at Patuxent & Around the World:* 9 am–4:30 pm Tuesdays–Saturdays (drop-in/independent exploration) [S]. All ages. Hands-on learning activities, games, crafts. No registration.
- *Raptors Rock:* 10 & 11 am May 18 [S]. All ages. Meet an American kestrel. No registration.
- *North Tract Bicycle Trek:* 10 am–12:30 pm May 18, June 8. Meet at Visitor Info Station. Ages 10+ See wildlife, plants, historical sites on 12-mile guided ride. Weather-dependent. Road unsuitable for narrow tires. Bring bike, snack, water bottle, helmet.
- *Welcoming Gentle Pollinators:* 2–3 pm May 18, June 1 [S]. All ages. Learn how to invite pollinators to your property. Talk w/free native plants. Visit Pollinator Habitat Garden.
- *Birds of North Tract:* 8–11 am May 25 (*Songbirds*) & June 8 (*Baby Birds*). Meet at Visitor Info Station. Ages 10+ Beginners welcome. Explore by car & short, easy walks. Learn about identification, habitats, birding trails. Bring water, bug repellent, sunscreen, a snack, binoculars if possible.

Drayden Schoolhouse Open Houses
Visit the African American Schoolhouse in Drayden during one of its free open houses 11 am–2 pm May June 1, 15, 16 & 19. Hear real stories about how students learned in this school up until the mid-20th century. School, bus/tour groups, or individuals who would like to schedule a visit outside of open house hours can contact the Piney Point Lighthouse Museum at 301-994-1471. Info: Facebook.com/DraydenSchool, 301-994-1471.

Lawn vs. habitat: changing our perception of the 'messy' yard

By Jake Solyst

This home in Harford County, MD, has a pollinator- and bird-friendly yard, planted as part of the University of Maryland Extension's BayWise program. (Diane Mitchell)

Around this time last year, I saw a local television news story out of Portsmouth, VA, that was more important to me than Chinese spy balloons, Barbenheimer box office sales or any other world event happening at the time.

The story involved a homeowner along the Elizabeth River whose next-door neighbor hadn't cut or trimmed the vegetation in his yard for more than four years. In the segment, a homeowner named Dennis Melms stands in the middle of his well-groomed backyard as he airs his grievances against the densely vegetated property over the fence. Included in Melms' list of concerns are the intrusion of snakes and raccoons, the lowering of his property value, the dangers posed to his granddaughter and the fact that he can't comfortably play horseshoes in his backyard anymore.

Melms ends the segment by announcing, "You need to cut your grass, Bill!" A literal shout into the void.

For me, this colorful local dispute gets to the heart of a perception issue that is critical to the future of the Chesapeake Bay and its wildlife.

On one side, you have the majority of people whose ideal yard is bright green, low cut and tidy, with perhaps some shrubs or a row of daylilies around the edges. The standard can be traced back to sprawling lawns in English estates and has been reinforced by decades of lawncare marketing — so much so that turfgrass is now the most irrigated crop in the country.

On the other side, you have the brave few who aim to break tradition and use their yard in ways that benefit the environment.

I can't say whether Melms' neighbor's overgrown property is out of a love for nature, or simply neglect, but there's a lot of benefit to it. The reason the neighbor can let his yard grow so lavishly is because it's in a Resource Protection Area due to its close proximity to the water. This means, under the law, he doesn't have to cut it if he doesn't want to.

Tall grass, shrubs and trees do a great job of absorbing stormwater runoff, which keeps nutrient pollution, chemical contaminants and sediment from washing into the river. Conversely, frequently mowed turf grass has shallow roots that don't absorb much stormwater.

But the benefits go beyond cleaner water. Bugs, bees and birds are dying off by the billions across the country because of dwindling natural habitat. Melms' yard, though likely a better place for a granddaughter to run around in, provides far less habitat for wildlife. The overgrown property, on the other hand, is likely bursting with insect and pollinator life, which is food for birds.

While I can't defend leaving your yard uncut for four years, I do encourage people to make room for more intentional vegetation in their yards in place of turfgrass.

Breaking the perception is going to require some trailblazers. To help you be part of the change, I have a few tips on how to maintain a more Bay-friendly yard.

- Choose plants based on the benefits they provide to wildlife. For example, a shrub like winterberry produces fruit for birds late into winter, while milkweed is the host plant for larvae of the beloved monarch butterfly. Also try to pick plants that bloom at different times of the year, thus providing different wildlife with habitat and food year-round.
- Where you must mow, set the mower height to 3.5 inches or higher, which will make your lawn healthier and more drought resistant. After mowing, spread some of those clippings back onto the yard as natural fertilizer — or better still, use a mulching mower, which does much of that work for you by leaving the clippings where they lie.
- Use as little chemical fertilizer as possible, especially during rainy seasons or when you're close to a body of water. Better yet, use only native plants, which often require no fertilizer at all.
- Consider giving your property a "mullet," by leaving the front yard with turf grass and dedicating the backyard to native trees, shrubs and other plants. Similarly, you could establish a "wild space" or two in the yard, where you let the vegetation grow and collect all of your fall leaves.
- Look into resources and programs near you to install rain gardens, pollinator gardens and other "conservation landscapes."

To be clear, there will be barriers to rewilding your yard. Replacing turf grass with new plants can be time consuming and expensive, and there's no guarantee wildlife will show up once you do.

The Orwellian elephant in the room — homeowner associations — can also be an obstacle, often requiring that grass be kept under a certain length and even dictating which shrubs and trees are permitted. These rules can often be at odds with environmental best practices.

At the end of the day, we need more middle ground. It's okay to leave space in your yard for kids to run around in, or to play horseshoes, but it's also okay to stand out from your neighbors and provide habitat for wildlife.

It's my hope that in my lifetime, homeowners will be proud of their yard not because it's close-cropped and bright green, but because it's attracting birds and soaking up runoff. We are in a time where smart land management is very critical, and we should all be on the same page about what we want to get out of our natural spaces. ■

Homeowner Rodrick West stands in his District of Columbia yard, where he has devoted most of the space to native plants. (Eric Braker/Alliance for the Chesapeake Bay)

Jake Solyst works for the Alliance for the Chesapeake Bay and is the web content manager in the Chesapeake Bay Program's Communications Office.

Great crested flycatchers: our backyard bug bombers

By Alonso Abugattas

They are the "tyrants" of the treetops — though, unless you're a bug, you might not see them as particularly tyrannical. I'm referring to the bird family *Tyrannidae*, the so-called tyrant flycatchers.

It's the largest bird family in the world, with more than 400 species in the Western Hemisphere, where they are exclusively found. The vast majority live in Central and South America, but we have about 30 species on our continent. One of the most common in the central and eastern U.S., in the spring and summer, is the great crested flycatcher (*Myiarchus cristatus*).

In addition to being the only crested flycatcher in the eastern U.S., it's also our only cavity-nesting flycatcher. It's a secondary cavity nester, which means it doesn't dig its own holes. Instead, it finds existing cavities — either natural ones in dead trees or those created and left up for grabs by woodpeckers.

It's a fairly large bird, as flycatchers go — about 8 inches from beak to tail — and it's also one of the most colorful of its local counterparts, with a bright yellow belly, olive brown or dark gray head, and pale gray throat and chest. It has a bright reddish-brown tail and wings, which are especially noticeable when the bird is in flight. The males and females are of similar plumage and build: long and lean, with broad shoulders and large heads.

Despite the name, the bird's bushy crest is not always evident, appearing most often when it is alarmed, curious or defending territory.

Despite great crested flycatchers' tolerance of people, their size and colorful plumage, they're not easy to spot, because they spend much of their time high in the tree canopy. It's their powerful call that gives them away. It's a raspy *wreep*, followed by a burst of as many as a dozen similar but shorter sounds. They are most vocal May through June but start to quiet down from July onward.

Living up to its name, a great crested flycatcher pauses on a twig holding its next meal. These birds catch bugs three ways: by catching them mid-flight, hovering and snatching them off leaves or bark, or pouncing on ground crawlers from above. (Isaac Sanchez/CC BY 2.0)

Like all tyrant flycatchers, these are skilled fliers. According to ornithologists Wesley Lanyon and Karl Miller, authors of the Cornell Lab of Ornithology's profile on the species, great crested flycatchers have three hunting styles, which they employ in roughly equal measure. From a perch on a branch, they'll dart out to catch a flying insect in midair (called sallying); they'll hover momentarily close to foliage or bark to snatch insects off the surface (hover gleaning); or they'll dive to the ground to catch terrestrial crawlers.

They also feed on lizards and other small creatures, and, like most birds, they supplement their diet with fruits and berries, particularly in their winter grounds.

These birds prefer edge habitats, open woodlands and mixed forests, usually avoiding dense woods. They tend to find natural cavities in deciduous trees. In conifers they are more likely to nest in abandoned woodpecker excavations, according to Cornell.

A great crested flycatcher perches on the branch of a pine tree. These birds prefer edge habitats, open woodlands and mixed forests, and spend much of their time on high branches. (Dennis Church/CC BY-NC-ND 2.0)

From early May through July, their breeding season, they spread across most of the central and eastern U.S. and into southern Canada, making it one of the more widespread flycatcher species.

Come September, they'll head back south, sometimes going only as far as Florida, although most go much farther to southern Central America and even Columbia and Venezuela. They have been known to occasionally show up in places as far as the West Coast and the Caribbean.

Whether they're coming or going, they normally migrate at night, making them more susceptible to fatal collisions with tall buildings and utility towers.

A great crested flycatcher is the only cavity-nesting flycatcher species in the eastern U.S. If it can't find a natural cavity like this one, or an abandoned woodpecker hole, it will make do with a birdbox or other infrastructure. (Andy Reago and Chrissy McLarren/CC BY 2.0)

The first order of business this time of year is finding a suitable cavity to nest in. This is not an easy task because they're competing with other secondary nesters, such as tree swallows, house wrens, bluebirds, starlings, even squirrels.

Being tolerant of people, great crested flycatchers readily accept nest boxes, as well as incidental human infrastructure, from mailboxes to rain gutters and open pipes. They've even been found nesting in the barrel of a cannon at a historic park.

Even though males arrive at the breeding grounds a week or so ahead of their mates, females choose the nesting site — often the same site as the previous year's and often, but not always, mating with the same male.

The female is the nest builder, employing a messy mix of twigs, grasses, fur, feathers, human trash — and frequently snakeskin sheds. One thought is that the use of snakeskin is meant to ward off predators. Others speculate that the female just likes having "crinkly" stuff in the nest, which would also explain her use of clear plastic wrap and onion skin.

The female lays four to eight eggs (typically five), usually one per day, then incubates them for about two weeks.

Both parents feed the hatchlings, though the male does it less frequently. Much of his time is spent aggressively defending the nest from predators and brood parasites. That may explain why cowbird parasitism is rare with these flycatchers. Their chicks fledge two to three weeks after hatching. Unlike their parents, they will not likely return to the same breeding ground the next year.

These birds fledge only one brood per season — although in the case of nest failure, usually by predation, they will rebuild a nest or start a new one, sometimes repeatedly, in a given season.

Because of their tolerance for being around people, great crested flycatchers have done well. They were more common a century ago, but the population stabilized in the late 1900s and is now estimated at close to 9 million, making it a species of least conservation concern, especially with its large geographic range. ■

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Feeders are great, but this time of year many birds need bugs

By Kathy Reshetiloff

A redwing blackbird, shown here with a captured dragonfly, feeds mostly on insects during its long (May–August) breeding season in the lower elevations of the Mid-Atlantic region. (Chad Horwedel/CC BY-NC-ND 2.0)

A male common yellowthroat, distinguishable from his mate by the broad black mask, perches on a branch with a captured larva. The species breeds throughout the eastern U.S. from late May to mid-July. (Bill Thompson/U.S. Fish & Wildlife Service)

The northern mockingbird, a year-round resident in most of North America, occasionally catches insects in mid-flight but more often hunts them on the ground. (Nathan Rupert/CC BY-NC-ND 2.0)

Many Americans enjoy attracting and watching birds with feeders filled with seeds. With warming temperatures, though, many birds turn to another high energy food source: insects.

Insects, one of the most diverse group of organisms on the planet, are crucial pollinators for plants and food for many animals. Insects live in natural habitats, such as wetlands, streams, meadows and woodlands, where they fly or waft upward and are eaten by birds and bats. In addition, many flying insects go through a caterpillar stage when they forage on plant parts such leaves, twigs, buds or stems.

A large majority of bird species depend on insects as their primary food source. For those birds, the ebb and flow of insect populations can greatly affect the timing, duration and success of their migration. In fact, the timing of bird migration greatly depends on when food resources will be abundant. Birds need to their replenish energy reserves at stopover sites to complete their migratory journeys.

Each species of bird has evolved over millions of years to eat certain foods. While most migratory songbirds eat a variety of foods, each species has a unique diet. As seasons change, millions of birds migrate to warmer regions where these foods are emerging, ensuring that they will meet their energy needs throughout the year.

For example, the common yellowthroat is an insectivorous migratory warbler, meaning it eats mostly insects, including grasshoppers, dragonflies, beetles, moths and caterpillars. Common yellowthroats winter in the southern U.S., Mexico and Central America and then migrate north to breed across most of the U.S. They need to follow the climate where these insect populations are booming to feed themselves and their nestlings.

Another example is the bobolink, a grassland bird that eats grains and seeds much of the year but feeds mostly on grasshoppers, beetles and butterflies during the nesting season and while feeding its young. Bobolinks winter in South America and migrate to the northern U.S. to breed.

Wood ducks, commonly seen throughout Chesapeake Bay states, forage in shallow waters, submerging their heads to eat aquatic plants, algae, small fish and insects. While the adults eat a mostly plant diet, they rely on insects to feed their young and seek out wetlands with these food resources to successfully raise their brood in summer.

And while you might know that hummingbirds feed on plant nectar, they also consume insects. Hummingbirds catch insects in midair or pull them out of spider webs. Ruby-throated hummingbirds sometimes take insects attached to sap on trees or pick small caterpillars and aphids from leaves.

Then there are the aerial insectivores — birds that catch and eat insects while flying around in the air. Aerial insectivores include swifts, swallows, martins, nightjars and flycatchers (See *On the Wing*, page 39 for a profile of the great crested flycatcher). They play an important role in ecosystems by reducing pest insect populations in agricultural and developed areas.

Unfortunately, aerial insectivores have shown the greatest population losses, with an estimated 73% of species in decline — representing an estimated loss of 157 million birds. Unless their decline can be stopped with conservation actions, many aerial insectivores may require protections like those provided by the Endangered Species Act.

There are many ways for individuals and communities to conserve beneficial insects and in turn conserve birds.

- Provide insects and habitat by planting trees, shrubs, grasses and flowers that are native to your area.
- Mow your lawn less in early spring to allow flowers to bloom and help early-season pollinating insects.
- Leave some leaves in the fall. Many beneficial insects rely on fallen leaves as habitat, especially over the winter.
- Stop using pesticides and herbicides, which kill the insects and plants that other wildlife rely on.
- Convert part of your lawn to a native plant garden. This brings insects, and it reduces the amount of lawn to be mowed — saving you time and money and reducing your carbon footprint. It's a win-win, helping you and wildlife.
- Turn off unneeded lights between dawn and dusk, especially during spring and fall when birds are migrating. Many birds travel at night and artificial lights can disorient them, increasing the likelihood of collisions with buildings. Artificial lighting also drastically affects the times when certain insects take to the air.

This year, World Migratory Bird Day is celebrated on May 11 in spring and Oct. 12 in fall. Visit migratorybirdday.org to learn about more ways to celebrate birds, including virtual webinars, birding events and spring festivals. ■

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