CHESAPEAKE
BAY JOURNAL

June 2021 Volume 31 Number 4

Independent environmental news for the Chesapeake region

Celebrating 30 YEARS

Picture of Chesapeake microplastics grows clearer

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Site focuses on Native American history PAGE 24

MATTAWOMAN CREEK

Proposal could weaken protection for creek PAGE 20

DISEASED DEER

Chronic wasting disease on the rise in Bay states PAGE 22

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Pennsylvania's Clean & Green Program provides tax breaks to farmers, but compliance with a state law that mandates farm conservation plans is not required for participation in the program. Some say it should be. Here, a pollution reduction practice directs manure from a small feed lot and barn to a containment lagoon on a farm in Narvon, PA.
See article on page 14. (Dave Harp)

ON THE COVER

Discarded plastic collects along a Baltimore shoreline. (Dave Harp)

Bottom photos, left to right, are courtesy of Virginia State Parks, by Dave Harp and by Tom Koerner, U.S. Fish & Wildlife Service.

CORRECTIONS

In a May travel article, the photo of Split-Rocker was provided courtesy of the Glenstone Museum.

In the May *Bay Naturalist* column, the estimated number of adult breeding birds in North America is a little more than 7 billion.

In the April *On the Wing* column, we misidentified the project leader of the Cornell Lab of Ornithology's NestWatch program. The quote should have been attributed to Jason Martin, the former project leader. The current project leader is Robyn Bailey.

We apologize for the errors.

EDITOR'S NOTE

The cost of consumption

Plastic is everywhere. Really. Everywhere. Not just the big pieces that we use in our kitchens and set on our desks, that we recline on, drink from and use to create toys and electronics. But the tiny, microscopic bits of plastic that many of these products become when we discard them. Microplastics also come from synthetic fabrics, like fleece, when we wash them, riding the wastewater into the larger ecosystem. A study led by researchers at Cornell and Utah State University, published in April, outlines how microplastics exist in the water, in the air and on land, continuously recirculating across great distances. Researchers have found microplastics in the atmosphere over remote locations, as well as in bottled water and tea bags. They've found them inside fish from the Susquehanna River and in the waters of the Chesapeake Bay.

The stunning, ubiquitous presence of microplastics is clear. What's unclear is their impact. Plastic often contains toxic components, which are part of the basic structure and added for special purposes. Toxins in the water or sediment from other sources can also attach to plastic debris and travel with it. And, those microscopic bits are being ingested by humans and wildlife. Does it matter? There are more questions than answers.

In this issue of the *Bay Journal*, reporter Whitney Pipkin offers a look at the effort to better understand the role of microplastics in the Chesapeake region. The work is gathering momentum, at a time when state legislatures have been increasingly willing to ban or reduce the use of some plastic products. Documenting impacts will take time. But while that challenge looms large, perhaps the greatest challenge will be to change our collective habit of consumption. Will we continue to look for quick, cheap, single-use products instead of those that take more time to create and care to sustain? Science will only get us so far. Lasting solutions depend on all of us.

— Lara Lutz

BY THE numbers

84%
Amount of East Coast river habitat largely closed to migratory fish because of dams

2,075
Miles of streamside buffers that would have to be planted across the Bay region annually to meet the 2025 planting goals

82%
Amount of the Bay and its tidal tributaries considered partially or fully impaired by toxic chemicals

852 million
Blue crabs counted in the Bay in the 1993 winter dredge survey, the most ever observed during the survey

251 million
Blue crabs counted in the Bay in the 2007 winter dredge survey, the least ever observed during the survey

26%
Amount of the Bay meeting water quality standards, 1985–87

38%
Amount of the Bay meeting water quality standards 2016–18, according to the most recent analysis

Embracing differences: Bay states & their governments

Maryland, Pennsylvania and Virginia are the states with the greatest amount of land in the Chesapeake Bay watershed. Over the decades, they have worked voluntarily to meet many goals to improve water quality and wildlife habitat, often coordinating efforts across state boundaries. But the characteristics of each state's population, geography and government vary. As a result, the challenges of passing laws and setting policies vary, too. The Chesapeake Bay Commission and Chesapeake Legal Alliance have been analyzing and summarizing some of the differences between the states, a portion of which is presented here.

	MARYLAND	PENNSYLVANIA	VIRGINIA
State population	6.0 million	12.8 million	8.5 million
Percent of state in the Bay watershed	94%	50%	54%
Percent of population in the Bay watershed	99%	30%	80%
Number of counties	24 **(including Baltimore City)**	67	95
Number of municipalities	157 **Cities, towns, villages**	2,560 **Cities, boroughs, towns and townships**	228 **Cities and towns**
Members of Senate	47 Senators **Each representing approx. 128,000 people 4-year term**	50 Senators **Each representing approx. 254,000 people 4-year term**	40 Senators **Each representing approx. 212,000 people 4-year term**
Members of House	141 Delegates **Each representing approx. 43,000–128,000 people 4-year term**	203 Representatives **Each representing approx. 63,000 people 2-year term**	100 Delegates **Each representing approx. 85,000 people 2-year term**
Length of state legislative session	90 Days	2 Years	60 Days (Even years) 45 Days (Odd years)
Number of bills per legislative session	Approx. 3,000 **28% became law in 2018**	Approx. 4,000 **6% became law in 2017–18**	Approx. 3,000 **33% became law in 2018**

LOOKING BACK

30 years ago

Cracking down on polluters

The Bay states and U.S. Environmental Protection Agency signed a long-term enforcement strategy to rein in polluters who violate their wastewater discharge permits. The goal was to eliminate chronic violations by July 1 and eventually eliminate all "significant noncompliance." ■

— Bay Journal, June 1991

20 years ago

Record-setting land conservation

The Piedmont Environmental Council announced that more than 17,700 acres in Virginia's historic Piedmont region were protected from development in 2000, setting a record for land conservation in the area. ■

— Bay Journal, June 2001

10 years ago

Sturgeon in the James River

An April fishing trip netted the first spawning female Atlantic sturgeon documented on the James River in years. The 6-foot, 200-pound fish was netted by watermen George Trice and Jimmy Moore. ■

— Bay Journal, June 2011

ABOUT US

The *Chesapeake Bay Journal* is published by Bay Journal Media, an independent nonprofit news organization dedicated to producing journalism that informs the public about environmental issues in the Chesapeake Bay watershed. The *Bay Journal* is available in print and by email and is distributed free of charge, reaching approximately 100,000 readers each month. The print edition is published 10 times a year, and bundles are available for distribution at offices, libraries, schools, etc. Material may be reproduced, with permission and attribution.

Bay Journal Media also operates the Bay Journal News Service, which distributes *Bay Journal* articles and op-eds about the Chesapeake Bay and regional environmental issues to more than 400 newspapers in the region.

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CONTACT US

by mail:
The Bay Journal | P.O. Box 300 | Mayo, MD 21106

by phone:
410-798-9925

by email:
llutz@bayjournal.com

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BAY JOURNAL NOTEBOOK

Bay Journal writer Whitney Pipkin won an environmental reporting award for her article, Look before you leap, *highlighting concerns about bacteria in popular swimming areas. (Dave Harp)*

Press organizations honor *Bay Journal* coverage

Springtime is award season for state press associations, and we were greatly honored that our staff garnered seven awards for work they did in 2020. The *Bay Journal* staff might be small, but the recognition helps confirm the quality and importance of the work we do to keep the region informed about issues affecting the Chesapeake Bay and its watershed.

We received several awards in the non-daily division from the Maryland-Delaware-District of Columbia Press Association. Tim Wheeler won first place for Environmental Reporting for his article, *Stream restoration techniques draw pushback*, about the controversy surrounding high-cost urban stream restoration projects.

Whitney Pipkin won second place, also for Environmental Reporting, for her article, *Look before you leap*, which highlighted concerns about bacteria in the water in many popular swimming areas.

One of the judges commented: "This category had so many good entries it was hard to pick just two. Kudos to all journalists who entered stories here. The *Bay Journal* pieces were uniformly excellent. Nice work."

In the Virginia Press Association contest, Jeremy Cox won first place for General News Writing in the specialty category for his article, *Chesapeake Bay restoration scrutinized for lack of diversity*. His work explored efforts by the Bay Program and Bay restoration community to grapple with diversity in both leadership and public participation.

Lara Lutz won second place in the Arts Writing category for her piece, *Where Land & Water Meet,* about Dave Harp's photo exhibit at the Chesapeake Bay Maritime Museum, which chronicled 40 years of his work.

Tim Wheeler won third place for In-Depth or Investigative Reporting in the specialty category for his stream restoration article.

In the niche category of Pennsylvania's Keystone Media Awards, Ad Crable won second place for Investigative Reporting for his article, *Costs clog efforts to prevent sewage overflows.* His article focused on combined sewer overflows in Pennsylvania, which has more of those antiquated systems than any other state in the country.

Ad also won an honorable mention in the News Feature Story category for his article, *Hope for hemlocks: New tactics found to fight deadly pest,* which highlighted new research in the battle against the hemlock woolly adelgid, a nonnative insect threatening the survival of Pennsylvania's state tree.

Congratulations to all of our winners!

— Karl Blankenship

NEWS briefs

LOCAL
REGIONAL
NATIONAL

John Warner, former VA senator, early Bay champion, dies

John Warner, a five-term Republican senator from Virginia who was an early champion of Chesapeake Bay restoration, died May 24 at his home in Alexandria, VA. He was 94.

A moderate Republican, Warner often worked on Bay issues with his friend Maryland Sen. Charles "Mac" Mathias, whose famous Bay tour in the 1970s helped to launch restoration efforts, including legislation that created the state-federal Chesapeake Bay Program.

Chesapeake Bay Foundation President William Baker called Warner an "original Chesapeake Bay champion." In 1984, a year after the Bay Program was launched, Baker noted that Warner helped to elevate the Bay as a national priority by urging President Reagan to call for the restoration of the Chesapeake in his State of the Union address.

First elected in 1978, Warner worked on a range of environmental issues over the years, from championing the removal of Embry Dam on the Rappahannock River to trying to find bipartisan solutions to climate change at the national level.

He was an advocate for the national parks, working with the late Sen. Paul Sarbanes to create the Captain John Smith Chesapeake National Historic Trail in 2006. He also worked to expand and enhance other parks over the years.

"Senator Warner was a devoted and powerful champion for the Chesapeake Bay and its rivers and was an advocate for national parks and public lands across the Commonwealth of Virginia and around the country," said Wendy O'Sullivan, superintendent of the National Park Service Chesapeake Office, who worked with the senator on a number of projects. "Senator Warner's passion for nature and history lives on in the many people he inspired and countless places he worked to protect."

After leaving the Senate, he became a board member of the Chesapeake Conservancy where he continued to be involved with conservation issues, such as the protection of Fones Cliffs along the Rappahannock River.

"He was one of the kindest men I've ever known," said Joel Dunn, president of the conservancy. "He frequently took the time to call me personally to discuss Chesapeake conservation priorities, sharing stories from his lifetime in politics and governance." ■

EPA evaluates Conowingo plan

The U.S. Environmental Protection Agency has completed its evaluation of a draft plan to compensate for more than 6 million pounds of Chesapeake Bay pollutants no longer being trapped in a reservoir behind the Conowingo Dam.

The plan was developed by a committee of representatives from the Chesapeake Bay Commission and each Bay watershed jurisdiction — Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia and West Virginia — in partnership with the Center for Watershed Protection.

The evaluation acknowledges that the plan lays out a scenario to fully offset the pollution load escaping from the reservoir, mostly through farm conservation practices in the Susquehanna River basin.

But it raises concerns that the effort might compete with existing Bay cleanup plans for the limited amounts of technical assistance, staffing and funding needed for various projects.

Although the financing strategy is still being created, the EPA said in its evaluation that there is "currently little confidence" that the plan could be implemented without dedicated funding mechanisms and an infusion of public funds.

The evaluation is available at epa.gov/chesapeake-bay-tmdl. ■

PennFuture lays out new policy plan for the Bay

The environmental organization PennFuture released in April a policy agenda designed to give Pennsylvania lawmakers a roadmap to help the state live up to its share of responsibility for restoring the Chesapeake Bay.

"Our report is intended to get Pennsylvania back on track toward meeting its clean water goals and, ultimately, saving the Chesapeake Bay," said PennFuture President and CEO Jacquelyn Bonomo.

The report, *Underfunded and Polluted: Solutions to Fund Clean Water in Pennsylvania and the Chesapeake Bay Watershed*, recommends policy and funding solutions that would reduce pollution from its major source — agricultural lands — as well as from stormwater runoff and forestry-related practices.

Among the proposed funding mechanisms: placing a severance tax on natural gas extraction,

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briefs

From page 5

eliminating the sales tax exemption for bottled water, levying a fee on single-use plastic bags and establishing a water use fee for large commercial operations.

"For far too long, Pennsylvania's legislature has failed to properly invest in our waterways," said PennFuture campaign manager Renee Reber, who wrote the report. "Our new report shows that making the necessary investments is possible, and we provide legislators with the tools to do so."

The report is available at pennfuture.org. ■

Campaign aims to plant 20 million oysters in Severn River

The Severn River Association and Oyster Recovery Partnership hope to raise $30,000 to plant 20 million oysters in the Severn River this summer.

The Build-a-Reef: Severn River project targets restoration on 11 reefs in the lower part of the river between the Naval Academy and U.S. Route 50 bridges. In 2018, with support from the Maryland Department of Natural Resources, the two groups planted 45.1 million juvenile oysters. Enough private funds were raised in 2019–20 to plant an additional 16.9 million spat-on-shell.

In 1911, when the river association was founded, there were dozens of oyster reefs in the Severn. Over time, declining water quality, overfishing and disease contributed to the collapse of the population. Recent environmental and regulatory advances have seen water quality improvements and opportunities to add millions of young oysters back to the river.

Smyth Jewelers is supporting Operation Build-a-Reef as a sponsor. The jewelry chain has committed to planting 1,000 oysters in the river for every engagement ring sold through Sept. 30.

Visit buildareef.org to learn more. ■

Bay Program names new deputy director

The U.S. Environmental Protection Agency announced in May that Martha Shimkin of the agency's Office of Wetlands, Oceans and Watersheds has been selected as deputy director for the Chesapeake Bay Program Office.

Throughout her EPA career, Shimkin has created and managed programs and policies, led regulatory development and developed plans for implementing new laws. She has held several leadership roles within the Office of Water. She has served as acting deputy office director, acting director for the Watershed Restoration, Assessment and Protection Division, and deputy office director for the Office of Wastewater Management.

"These opportunities have given Martha excellent insight and connection to EPA water quality protection programs and geographic programs," said Diana Esher, acting regional administrator for the EPA's Mid-Atlantic Region. "Martha is well-positioned to help support the Bay Program Office during this pivotal time."

Shimkin also has held management positions in the Office of Chemical Safety and Pollution Prevention, in both the pesticides office and the science policy office. She has supported programs in the Office of International and Tribal Affairs, served as division director in the Office of Children's Health Protection, and was a budget analyst and staff director in the Office of the Chief Financial Officer. ■

PA bill would earmark money to prevent farm pollution

Unlike Maryland and Virginia, Pennsylvania has no dedicated funding to help farmers pay for practices on their farms that prevent sediment and nutrient pollution.

A Pennsylvania state senator wants to change that. Sen. Gene Yaw has introduced a bill in the state legislature to fund what would be called the Agricultural Conservation Assistance Program. The money would go to county conservation districts based on crop acreage and livestock herd sizes near impaired streams. The program would cover the entire state, but counties in the Chesapeake Bay watershed would be targeted.

Conservation districts would have the latitude to meet with farmers and landowners and select projects that would have the most immediate impact on local water quality. Cover crops, streamside vegetated buffers and other conservation measures would be used.

The bill is supported by the Pennsylvania Farm Bureau and Chesapeake Bay Foundation.

"Agriculture is looked to for significant reductions to meet pollution reduction goals for the Chesapeake Bay and other major watersheds in the state," Yaw said. "Nevertheless, almost one-third of our commonwealth's streams do not meet standards for drinking, fishing or recreation, and agriculture remains one of the largest sources of impairment."

Yaw is vice-chair of the Chesapeake Bay Commission, a bipartisan body of state legislators from Maryland, Pennsylvania and Virginia who work on water quality issues in the Bay region.

"Everyone wants agriculture to succeed," added Shannon Gority, the Bay Foundation's Pennsylvania director, "and it is long past time that it gets the resources and technical assistance to finish the job."

The bill does not specify any funding source but allows it to come from a variety of places, including state tax dollars, federal funds and private investment.

The State Conservation Commission, overseen by the departments of Agriculture and Environmental Protection, would administer the program. ■

MD scales back planned widening of Capital Beltway

Environmentalists, some local officials still critical of project

By Timothy B. Wheeler

Facing stiff opposition, Maryland officials have scaled back their plan to widen the infamously congested Capital Beltway around the District of Columbia, along with its two-prong connection to Interstate 270. But truncating the project has failed to dim criticism of its impacts.

The latest plan, announced May 12 by the Maryland Department of Transportation, drops a major portion of the earlier proposal to widen 30 miles of the beltway north and east of the District. But it still calls for rebuilding the American Legion Bridge across the Potomac River and adding two, high-occupancy toll lanes in either direction along the westernmost segment and on part of I-270.

The original plan, pushed by Maryland Gov. Larry Hogan since 2017, had the backing of the region's business leaders. Transportation officials said it would reduce annual drive time for the typical highway commuter by 73 hours, and it wouldn't cost taxpayers because toll revenues would finance the project.

But many local officials, community leaders and environmentalists came out strongly against widening the highways, especially with toll lanes. They cited a litany of harmful impacts on local waterways, environmental justice concerns, displacement of homes, loss of parkland, and encroachment on cultural and historic sites. And, they argued that the project would increase emissions of climate-altering greenhouse gases without easing the traffic congestion it was proposed to relieve.

Still in the crosshairs of the scaled-down plan is the historic Morningstar Moses Cemetery, a burial ground for about 70 members of a small Black community founded in the late 1800s in the Cabin John area. The Beltway just north of the American Legion Bridge already grazes the cemetery.

Directly under the American Legion Bridge, and bound to be disturbed, is the western tip of Plummers Island, a wooded 12-acre island, owned by the National Park Service, that has been a research preserve for the Washington Biologists Field Club since the early 1900s. More than a third of the island would be taken or disrupted, plans showed. An MDOT spokesman said the agency was working to minimize impacts on both sites.

In its announcement, MDOT said the new version of the plan would still address existing and long-term traffic issues and enhance trip reliability along the highways. It also said the new plan would be more pedestrian– and bicycle-friendly, enhancing the connectivity of area sidewalks and trails, notably with the addition of a multi-use trail on a new, wider American Legion Bridge.

Critics remain unswayed by MDOT's move. Josh Tulkin, director of the Maryland Sierra Club, said that while the proposed project is smaller, its original flaws remain.

"The planned toll lanes will still harm communities, increase rather than decrease traffic congestion, and will not solve the environmental justice problems with this project," he tweeted.

MDOT and the U.S. Federal Highway Administration plan to draft a supplemental environmental impact statement on the scaled-back project by late summer.

Officials also didn't rule out future plans to widen the rest of the state's portion of the beltway. MDOT said that "consideration of improvements to remaining parts of the interstate system would advance separately, subject to additional environmental studies, analysis and collaboration with the public, stakeholders and agency partners."

Opponents of the widening hope the Biden administration's commitment to addressing climate change and protecting the environment will persuade Maryland to go back to the drawing board and incorporate alternatives to paving the way for ever more vehicles.

"Isn't it time to consider prematurely discarded rail transit alternatives?" asked Gary Hodge, a former Southern Maryland official and now a policy consultant, in a letter to the *Washington Post*. "Isn't it time to respond to the 3,000 public comments on the draft environmental impact statement, and address the concerns of citizens whose lives will be directly affected?" ■

EPA considers Superfund cleanup for Bear Creek near Baltimore

Toxic pollution lingers from former steel operations at Sparrow's Point

By Timothy B. Wheeler

The historically Black neighborhood of Turner Station is seen here from the south side of Clement Cove, across Bear Creek from the former Bethlehem Steel plant on Sparrows Point. The EPA says it will recommend that Bear Creek be designated a priority Superfund cleanup site. (Dave Harp)

After years of debate and legal wrangling, the U.S. Environmental Protection Agency is planning to use the federal Superfund cleanup program to tackle extensive toxic contamination in the bottom of Bear Creek near Baltimore. The creek is a tidal tributary of the Patapsco River that has been fouled by decades of polluted runoff from the former steel mill at Sparrows Point.

EPA officials said they intend to propose adding the creek to the Superfund National Priorities List, which would allow for federal funding to address contaminated sediment in a 60-acre area of the creek. Sampling there has identified a variety of toxic metals and organic chemicals, including PCBs, arsenic, chromium and polycyclic aromatic hydrocarbons (PAHs). People living in the Dundalk area bordering the creek, including the predominantly Black community of Turner Station, use the creek for boating, fishing and crabbing, which has raised human health concerns.

Sparrows Point was used for making steel and building ships from the late 1800s until 2012, when the mill once owned by Bethlehem Steel Corp. finally closed. Under a consent agreement, the heavily contaminated 3,100-acre peninsula is being cleaned up by Tradepoint Atlantic, the company redeveloping the site. But its responsibility for dealing with offshore contamination is limited by the terms of Bethlehem Steel's bankruptcy.

Tradepoint Atlantic pledged $3 million in 2014 to investigate offshore issues, but Larry Bannerman, a board member of the Turner Station Conservation Teams, said the funds committed so far were "not [even] a whole drop in the bucket." He welcomed the EPA's move to make the creek a Superfund site, saying that for years, discussions about addressing the contamination were "just going around in a circle. We never got anywhere, and nothing ever happened."

Doug Myers, Maryland senior scientist with the Chesapeake Bay Foundation, said that he believed more investigation is needed to learn if contaminants in the groundwater pose a continuing threat to the creek. He noted that concentrations of some metals and organic chemicals found in monitoring wells were higher near the shoreline than farther inland.

Under the Superfund program, the EPA would shoulder 90% of the cleanup costs, with the state covering the rest. In a letter to the EPA, Ben Grumbles, secretary of the Maryland Department of the Environment, endorsed the agency's move, calling it "the next logical step toward remediating the effects of historic industrial operations and restoring the environment at Sparrows Point for the benefit of Marylanders." The EPA plans to formally propose Bear Creek for Superfund treatment in August, according to a letter from Diana Esher, acting Region 3 EPA administrator. ■

Bay Journal reporting sends ripples throughout the Chesapeake watershed

By Karl Blankenship

The Bay Journal was first published 30 years ago, in March 1991. This column is part of a series marking the Bay Journal's 30th anniversary, highlighting its coverage, its unique development as a nonprofit news source and our plans to continue serving readers in the years to come.

More than a decade ago, I drove over to the Conowingo Dam one spring morning to see biologists capture eels near the base of the 94-foot-high structure.

After swimming more than 1,000 miles from the Sargasso Sea, the young eels had reached a concrete roadblock on the Susquehanna River. Sometimes they would try to climb the dam, but it was a futile effort. Except for a few stocking efforts, Conowingo had left the Susquehanna largely eel-less for the last century.

Biologists from the U.S. Fish and Wildlife Service were trying to change that by capturing eels, roughly 6–8 inches long, and trucking them upstream for release. It was just the test of a good idea: There was no real funding for the project.

The ensuing *Bay Journal* article turned out to be important. The U.S. Army Corps of Engineers was looking to fund a project to offset the environmental impact of work elsewhere in the basin. They saw the article and gave the biologists a call.

Suddenly, there was funding to maintain the eel project for years. It ultimately demonstrated the feasibility of capturing and moving large numbers of eels, and that they thrived when returned to their upstream habitats.

Further, the eels play an important role in the complex life cycle of a once-common species of mussel in the river. Without eels, the population of those powerful water-filterers was plummeting in the Susquehanna; now there are hints that they are starting to come back.

What started as an interesting project became a restoration priority. The recent relicensing of Conowingo Dam ensures funding is in place for the next half-century to give migrating eels a hand.

Would that have happened if someone at the corps hadn't read the *Bay Journal*?

When looking back over 30 years of *Bay Journal* articles and the hundreds of thousands of words our paper has published, I believe our work has tremendously improved the understanding of critical issues for readers, policy makers and even other journalists.

No other media outlet has come close to providing the range and depth of coverage of the Bay environment as the *Bay Journal*. Years before the Chesapeake ever had a "pollution diet," or total maximum daily load, we explained what that was, how it worked and how it could impact the Bay.

We provided the most comprehensive coverage of the controversy over whether a nonnative oyster from Asia, *Crassostrea ariakensis*, should be introduced to the Bay. The *Bay Journal* was pretty much the only place you could read about the mycobacteriosis infections that plague more than half of the striped bass in the Chesapeake, apparently killing many. The list goes on and on.

As with eels, the impact of that information can be important.

Once I spent days with a hand calculator and a stack of U.S. Department of Agriculture reports calculating changes in crop plantings over the years. It showed that the Bay Program at that time was underestimating crop acreage — and millions of pounds of associated nutrient runoff. The resulting article highlighted the need for the Bay Program to improve its tracking of agricultural land uses and was cited in Bay Program presentations in following years as it updated its methodology.

Fifteen years ago, as Pennsylvania began to establish a nutrient trading program, the initial framework would have allowed exchanges between "point source" dischargers like wastewater treatment plants and "nonpoint sources" such as farms in a way that seemed at odds with the Clean Water Act. I kept asking the U.S. Environmental Protection Agency questions about the problems. The agency finally concluded it couldn't approve permits under the trading program. An EPA official later told me that the issues raised by the *Bay Journal* had gone well beyond those flagged by others reviewing the program.

These eels were collected below Conowingo Dam by biologists. (Dave Harp)

Bay Journal articles have sprinkled the seeds for change throughout the watershed. One county official told us the paper was valuable to communities like hers "because it spreads news and innovative ideas that might not otherwise be shared across state lines." Another county official said that our articles about land use, forest management and Bay issues like the total maximum daily load have "proved to be beneficial in formulating policies and action plans to protect/improve the county's water resources and ultimately the Chesapeake Bay."

The total impact can be profound. Through a *Bay Journal* reader survey, 55% of responders said that information in the *Bay Journal* inspires them to take action. They reduce fertilizer use, pick up litter, write lawmakers and more.

More than 70% said that the *Bay Journal* provides them with information they use in conversations. ("Many articles I talk about and use in my classroom," one teacher has told us. Then, those 30 students talk to others, and so on.) Indeed, I like to think of information in the *Bay Journal* as a pebble tossed in a pond — the initial story ripples through to a wider audience by word of mouth, web shares or reprints by other news outlets.

Who knows where, along that line, a kernel of information leads to substantive change?

Such actions have happened a lot over the past 30 years — certainly to a much greater degree than we know. Who knows what wouldn't have happened if the *Bay Journal* had not been around to raise awareness of environmental problems, successful experiments and opportunities for action? And today, our work is more important than ever, as environmental reporting elsewhere has declined.

Anyone who doesn't think so should go ask an eel. ■

Bay Program struggles to fix lagging cleanup efforts

‘Strategy review’ session did generate ideas for stream buffers, wetlands

By Timothy B. Wheeler

Streamside trees create a buffer that helps prevent pollution from entering this Pennsylvania stream. (Dave Harp)

It’s going to take some time to figure out how — or even whether — lagging Chesapeake Bay restoration efforts can be put on track to reach their goals by the 2025 deadline.

With a third or more of the restoration efforts either struggling or in limbo, the federal-state Chesapeake Bay Program’s Management Board held a two-day meeting in mid-May to “clarify actions and roles” to meet the targets set seven years ago. But it didn’t come up with a clear game plan for addressing the underperforming efforts.

The virtual meeting included a brief rundown on the status of all 31 restoration outcomes pledged in the *Chesapeake Bay Watershed Agreement* to help restore and protect what it called “one of the most extraordinary places in America.” The agreement was signed in 2014 by the six Bay watershed states as well as the District of Columbia, U.S. Environmental Protection Agency and Chesapeake Bay Commission, a legislative advisory body.

An internal review earlier this year by some members of the Bay Program found that seven of those outcomes are “unlikely to be met without a significant change in course.” Among them are pledges to plant many more pollution-buffering trees in urban areas and along rivers and streams, restore wetlands, and rebuild the populations of brook trout and black duck.

Some other efforts, including increasing fish passages and restoring underwater grasses, also fall far short of their goals, while others lack sufficient data to tell how much progress, if any, has been made.

Participants hashed over some of those problems, but by the time the meeting ended they had brainstormed ways to catch up for just two of the lagging efforts — riparian buffers and wetlands.

Those two goals are most off track, yet they are considered keys to reducing water pollution and sustaining fish and wildlife throughout the watershed, especially as climate changes.

In the 2014 agreement, the states and the District vowed to plant a combined 900 miles of riparian buffers every year. Since then, they’ve averaged only about one-fourth of that rate and planted just 83 miles of streamside forests in 2019 — less than 10% of the annual target.

“We’re a long way off and have been for some time,” Sally Claggett, Bay Program staff coordinator for the buffer effort, told the group.

The jurisdictions also pledged to create or restore 85,000 acres of wetlands by 2025. As of 2019, they had added only 16,000 acres — less than 20% of the goal.

While some might question whether the wetland target is feasible, Christine Conn, co-chair of the Bay Program’s habitat goal team, said it represents less than 1% of agricultural land suitable for wetland restoration. Historically, she noted, the watershed has lost 1.5 million acres, and it has the potential to bring back as much as 1 million acres.

Similar challenges hamper both efforts. Most of the available sites for planting streamside buffers and creating wetlands are on farms, and farmers are reluctant to give up acreage used for growing crops or grazing livestock. Those and other Bay restoration efforts also struggle with inconsistent funding and staff shortages.

Claggett said the buffer-planting effort has been hampered by the often-confusing structure of the federal program that’s been the chief source of funds to pay for it, the U.S. Department of Agriculture’s Conservation Reserve Enhancement Program, or CREP. What’s needed now, she suggested, is a broader federal and state effort with some innovative private financing.

Meeting participants, who had been urged to “think big” about how to boost the buffer and wetlands efforts, suggested a variety of ways to offer greater financial incentives to landowners. But the session ended without any discussion of what would be done with those ideas.

Some participants questioned the lack of more in-depth discussion of all of the lagging outcomes. One participant complained that “we don’t spend right amount of time trying to come up with solutions.”

But the meeting organizer defended the format. Greg Barranco, an EPA Bay Program staffer who was co-chair of the meeting, said the session was more broadly focused on getting state and federal agency representatives to assess restoration progress through its “strategy review system,” which is designed to look at lessons learned and how the lessons can be applied in coming years. Boring in on the causes and remedies for all the flagging efforts will come later, he said.

“There’s still too much to dig into before we can have a meeting that is focused just on the outcomes,” he said in an interview after the meeting. “I think having a really deep dive is premature.”

Sean Corson, head of the small group of Bay Program participants who had warned that seven outcomes are unlikely to be met, said he still thought the meeting had been productive. At least for forest buffers and wetlands, he said, the message was clear that “we’re going to need some pretty new thinking to make the kinds of strides that we’ve got to make, given the current status where we are.” He said he was hopeful the brainstorming produced “a couple ideas that might really accelerate progress in those two areas.”

Beyond that, Corson said he believed the Bay Program’s leadership needs to find remedies for all of the lagging outcomes.

“A relatively small group is going to have to sit down and look for some practical and meaningful solutions that can be implemented over the next five years or so,” he said.

Barranco said Bay Program managers would review the ideas that came out of all the sessions, including the brainstorming groups, and figure out the next steps to take in the coming weeks and months.

“These are complex issues,” he concluded, “and we didn’t expect to have immediate solutions but to start the dialogue about getting to innovative solutions.” ■

Governors promote 'Billion for the Bay' to help Chesapeake cleanup

Advocates say funds would also help local economies recover

By Karl Blankenship

A boater leaves a blue wake during a sunset outing on the Chesapeake Bay. (Dave Harp)

As Congress considers a massive infrastructure spending program, Chesapeake Bay cleanup leaders are calling for lawmakers and the Biden administration to spend an additional billion dollars on efforts to help speed the recovery of the nation's largest estuary.

All of the governors in the Bay watershed signed a May 13 letter to Congressional leaders, urging them to ramp up federal support for a "bold plan" that would boost state and local economies while helping to "achieve the long-elusive goal of restoring the Chesapeake Bay."

The letter was vague on details, but most of the increased funding — $737 million — would be aimed at supporting conservation measures on farms, which are the largest source of water-fouling nutrient pollution in the Bay watershed.

The request was announced on Twitter by Virginia Gov. Ralph Northam. "Today, I joined our Chesapeake Bay watershed partners in calling on Congressional leaders to make bold investments in Bay restoration," he wrote. "Our Billion for the Bay Initiative will create jobs, stimulate economic growth, and protect the health of America's largest estuary."

Along with Northam, the letter was signed by Maryland Gov. Larry Hogan; Delaware Gov. John Carney; New York Gov. Andrew Cuomo; West Virginia Gov. Jim Justice; Pennsylvania Gov. Tom Wolf; District of Columbia Mayor Muriel Bowser; and Chesapeake Bay Commission Chair David Bulova.

The two-page letter provides little detail about how the money would be used or how many years the billion dollars would be spread across, but says the money would provide a "significant and much-needed infusion of new funds that will jump-start the final phase of Bay restoration." Thousands of jobs, it says, would be created by building clean water infrastructure, restoring natural landscapes and helping communities adapt to the impacts of climate change.

The letter notes that the region faces a 2025 deadline to implement all of the pollution control measures needed to clean up the Bay. Meeting that goal would require ramped-up efforts to control agricultural runoff, manage stormwater, protect forests, create wetlands and other actions that would help restore the health of the Bay and its 64,000-square-mile watershed.

The letter notes that "the lion's share" of the fiscal responsibilities for Bay restoration rests with the states, but that their budgets have been hard hit during the COVID-19 pandemic. Also, "many individuals, including farmers and ratepayers who must share in the cost of these upgrades, are also struggling," the letter stated.

The Chesapeake Bay Commission, which represents state legislatures, crafted an agriculture proposal as part of the billion-dollar effort. It calls on the U.S. Department of Agriculture to steer an additional $73.7 million annually over a 10-year period to help farmers implement the nutrient and sediment control efforts needed to meet Bay cleanup goals.

That request is on top of the $173 million annually that the USDA now spends to help farmers plant stream buffers, install manure storage facilities and take other actions that reduce runoff.

"Sometimes, the environmental community makes the mistake of thinking that a billion dollars is a lot of money," said Ann Swanson, executive director of the Chesapeake Bay Commission, noting that highway, bridge and airport projects typically cost much more. "In fact, spread out over time, it's not at all."

And, she said, the investments would produce benefits ranging from improved fisheries to reduced human health problems. "There are so many really tangible economic gains associated with improved water quality."

The letter provides no detail about how the rest of the billion dollars would be used — whether it is only for pollution reduction efforts, or if it could also be used for related Bay initiatives such as oyster restoration and land conservation.

"The point is to make sure that Congress is thinking about the Chesapeake Bay when they start handing out infrastructure dollars," Ann Jennings, Virginia deputy secretary of natural resources for the Chesapeake Bay, told the Bay Program's Citizens Advisory Committee.

Bay supporters say the infusion of money is critical. "As we work to leave a legacy of clean water to future generations, investments such as those proposed in the Billion for the Bay initiative are essential," said Mariah Davis, acting director of the Choose Clean Water Coalition, which represents more than 250 conservation groups working in the watershed.

The coalition recently sent its own proposal to Congress to increase Bay spending. It called for boosting the amount the U.S. Environmental Protection Agency receives by $132 million — to $220 million — mainly to support grants to states and groups working to implement on-the-ground projects. It also called for $75 million a year to support the Chesapeake WILD Program, which is aimed at improving fish and wildlife habitat.

In a statement, Chesapeake Bay Foundation President William Baker praised the billion-dollar initiative, saying, "the future of the Chesapeake Bay is now in jeopardy" and efforts to restore it must be accelerated. He said the majority of the new funding should be directed toward Pennsylvania, which generates the greatest amount of water-fouling nutrients sent to the Bay and is the furthest behind in meeting cleanup goals.

At the same time, Baker said the EPA must "hold the states accountable" — especially Pennsylvania, whose cleanup plan only achieves 75% of the state's nutrient reduction goal and identifies a funding shortfall of more than $300 million a year.

Joel Dunn, president of the Chesapeake Conservancy, said the funds were urgently needed and would "dramatically reduce pollution, create jobs, protect nature and help prepare Bay communities for the challenges of climate change."

"Communities throughout the Chesapeake Bay and its tributaries rely on the Bay for fishing, for tourism and for outdoor recreation," he said. "A healthy and restored Chesapeake Bay is paramount for the future economic well-being of these communities and for the health of the 18 million people who live in the watershed."

According to a report submitted to Congress last fall, federal agencies spent about $505 million on Bay-related programs during the fiscal year that ended last Sept. 30.

It would not be the first time the Bay region made such a request. Bay region governors in 2005, facing a need for more money to meet 2010 cleanup goals, launched a campaign to raise $1 billion for the Bay from the federal government. In the end, the region struggled to maintain existing federal funding. ■

Survey yields mixed verdict on Chesapeake's blue crab stock

Juveniles hit record low, spawning-age females remain abundant

By Karl Blankenship

The harvest of blue crabs from the Chesapeake Bay is regulated to limit the catch of female crabs. (Dave Harp)

The number of blue crabs in the Chesapeake Bay this winter plummeted to the fourth lowest on record, driven largely by the worst-ever showing of juvenile crabs since an annual Baywide survey began in 1990.

Though the juvenile drop is concerning, fishery managers say the number of adult females remains robust. They hope the females will produce a better crop of juveniles when they breed later this year.

This year's winter dredge survey, which provides an annual snapshot of the health of the blue crab stock, estimated that the Chesapeake had 282 million crabs, the lowest number since 2007. That figure includes just 81 million juveniles, the lowest in the survey's history.

But the number of young crabs naturally varies from year to year. Females release their larvae near the mouth of the Bay in the fall, which then float into the ocean. The number of juvenile crabs that survive and return to the Chesapeake is highly dependent on weather conditions, currents and other variables outside the Bay each winter.

Because those conditions cannot be controlled, fishery managers in 2008 adopted a strategy aimed at ensuring enough adult females survive harvest pressure each year to produce a robust crop of eggs. The hope is that the large number of eggs they produce — a single female can produce between 750,000 and 2 million eggs a year — will encounter favorable coastal conditions often enough to keep the overall population healthy.

In 2020, Aubrey Vincent, sales manager of Lindy's Seafood in Wolford, MD, coped with market uncertainties and a worker shortage due to the COVID-19 pandemic. Preliminary data shows that harvest in the Bay region was among the lowest on record, largely because COVID-19 reduced demand. (Dave Harp)

The survey found a healthy population of females: 158 million, the 10th best number since the survey began, and well above the 72.5 million threshold, the minimum number scientists believe is needed to protect the stock.

"We're comfortable with where we are currently with the abundance of females," said Mike Luisi, director of the Maryland Department of Natural Resources fisheries monitoring and assessment division.

"What we want to do is to make sure there are enough females and enough males to provide for a juvenile year class And sometimes it's good, sometimes it's less than good. This year, it wasn't good."

But because the number of female crabs remains high, fishery managers say they have no immediate plans to change crab harvest rules, though they will monitor information about the crab stock during the course of the summer.

"Given the survey results, we will not be expanding the crab fishery this year," said Steven Bowman, head of the Virginia Marine Resources Commission.

While management has focused on protecting the abundance of female crabs, another figure from this year's survey could raise concern: It found just 39 million adult male crabs, well below the long-term average of 77 million.

"The results of this year's survey are definitely a mixed bag," said Chris Moore, senior regional ecosystem scientist with the Chesapeake Bay Foundation. "The increase in the number of adult female blue crabs in the Bay is a good sign that fishery management focused on a robust female population is paying off."

But, he added, "the reduced abundance of juveniles and males could make crabs scarce later this summer into the fall for those who enjoy eating crabs and indicates we should remain cautious in our approach to managing this valuable fishery."

Meanwhile, preliminary data showed last year's blue crab harvest was just below 37 million pounds, among the lowest on record. Fishery managers said COVID-19 played a major factor in the decline by reducing demand from restaurants and picking houses.

The Chesapeake Bay Stock Assessment Committee, made up of fishery scientists and managers and administered by the National Oceanic and Atmospheric Administration Chesapeake Bay Office, will review the dredge survey data and issue a report later this summer.

The winter dredge survey, conducted each year by the Maryland DNR and the Virginia Institute of Marine Science, samples blue crabs at 1,500 randomly selected sites throughout the Bay. ■

Historic Black town in MD seeks justice for stormwater discharge

Pipe 'likely contributing' to frequency of damaging floods

By Jeremy Cox

A Maryland power plant has been releasing stormwater for years into a small Patuxent River town founded in the late 1920s as a vacation resort for Black professionals. The outflow has intensified floods and damaged the stream that the community relies on to drain heavy rains, town officials say.

A resident of the town, Eagle Harbor, spotted a culvert in a wooded area earlier this year that appears to feed stormwater from a Pepco-controlled portion of the Chalk Point generating station into the town's drainage system.

An official with the Maryland Department of the Environment confirmed in a follow-up investigation that the previously undocumented culvert is "likely contributing" to flooding in the town and "has created an adverse impact" on the stream it flows into.

The MDE inspector, Renato Cuizon, declined to cite Pepco with a violation, though. The water flows off the company's 140-acre switchyard, which, as a type of industrial activity, is not required to get a stormwater permit, said MDE spokesman Jay Apperson.

But in his four-page inspection report, Cuizon urged both Pepco and GenOn Holdings, which owns other portions of the Chalk Point facility, to make amends for the situation. Among other steps, he told the companies to stop the discharge into Eagle Harbor and work with the town to fix the damage it had caused.

James Crudup, Eagle Harbor's mayor, said that the discovery of the 36-inch culvert helps explain why flooding has worsened in the community in recent years. A powerful storm last fall left parts of the town covered in sand, silt and other debris. Crudup said it was the worst flooding he had seen in his 50 years in Eagle Harbor.

To him the affair looks like a classic case of environmental injustice.

"Until we get to the bottom of it, I'm pissed," Crudup said. "They just thought, 'Well, here's a small, Black, dumb township. We'll just stick the pipe in, and they won't do anything about it.'"

James Jones discovered the culvert dumping stormwater from the Chalk Point power plant into Coleman Creek, lined by the phragmites behind him. His property floods during heavy rains, when Coleman Creek experiences flash floods. (Dave Harp)

Jamie Caswell, a Pepco spokeswoman, said the electric utility only became aware of the culvert's issues during an April 20 inspection of the site with representatives of the MDE and GenOn Holdings.

Pepco "will work cooperatively with [the MDE] to complete any maintenance or necessary adjustments, if needed, to address this situation," Caswell said in a statement.

GenOn attorney Daniel McDevitt told the MDE in a letter that the stormwater is flowing "solely" from Pepco's share of the power plant property, and it is that company's responsibility to address the problem. McDevitt declined to comment for this article.

The pipe is the latest chapter in a long and fraught relationship between Chalk Point and Eagle Harbor.

The town was incorporated in 1929 on the western shoreline of the Patuxent River at the southernmost tip of Prince George's County, about 40 miles southeast of Washington, DC. During the Jim Crow era, it evolved into a quiet getaway for Black families, many of them seeking to escape the heat of the District's sticky summers.

With 69 current residents, it remains one of the smallest towns in Maryland to have its own government — a mayor and a four-member town commission, but no full-time, paid staff. There are no businesses, so the town's revenues are drawn exclusively from property taxes, Crudup said.

It has been nearly 60 years since Chalk Point was built on Eagle Harbor's doorstep, but many locals still consider its presence a blemish on the community they have long referred to as "Paradise on the Patuxent."

In 2003, the U.S. Public Interest Research Group, an advocacy organization, included Chalk Point on a list of "America's Dirtiest Power Plants." Crudup said the community has battled soot emanating from the plant for years.

A victory of sorts now looms. GenOn announced last year that it was planning to shut down the plant's two coal-fired units this month. The company said the decision was forced by "unfavorable economic conditions" and "increased costs associated with environmental compliance." The company will continue operating the generators that are powered by natural gas and fuel oil, it said.

Eagle Harbor, meanwhile, has long struggled with flooding. During heavy rains — which appear to be increasing in frequency and intensity, Crudup said — stormwater rolls down the hill above town and overwhelms its main water artery, Coleman Creek. Over the years, the surges have scoured the creek's channel deeper and eroded its banks.

In 2017, the town won a $100,000 coastal resiliency grant from the state Department of Natural Resources to design the stream's restoration. The project seeks to reconnect Coleman Creek with its floodplain, giving the water places to stop on its fast-paced journey through town to the Patuxent, Crudup said.

The effort has been slowed by the process of getting signatures from property owners along the creek's path. One of them, James Jones, decided to see for himself why Coleman Creek was so easily flooded. So, earlier this year, the retired DC Water inspector trudged along the stream in search of its headwaters.

"When I got to the end, I looked and saw a 36-inch culvert pipe coming in from the woods," Jones said. "The water coming off their plant was tearing the creek up and bringing the silt down from their property into the river."

The MDE inspection found significant evidence of erosion where the plant runoff meets Coleman Creek. So much of the hill has washed away at the spot that groundwater is now seeping out, Cuizon wrote in his report. The report makes no mention of any water quality testing having been conducted on stormwater from the plant that reaches the town, except to say that no petroleum could be seen or smelled.

Patuxent Riverkeeper Fred Tutman was consulting with the town on the stream restoration project when the culvert issue cropped up. He is less concerned, he said, with how it got there than with making sure it gets removed and the damage it caused is fixed.

"I'm thinking this is something somebody overlooked," he said. "We can argue they didn't know [about the culvert], but to me the test of that theory is how fast they fix the damn problem."

In a May 24 letter to the MDE, Pepco outlined specific actions to address the state's concerns. Pepco said it would perform engineering work to slow the speed of the stormwater and reduce the amount of potential sediment flowing toward Coleman Creek. The company also vowed to repair the channel leading from the switchyard's outfall to the creek.

Crudup, in an interview, called Pepco's response "presumptuous" and pressed for the company to cease entirely its stormwater discharges into the town. He suggested it should also help with fixing Coleman Creek and paying restitution to property owners who have been affected by flood damage over the years.

Crudup said he hoped that the town and Pepco could resolve the dispute through negotiation. ■

Groups want PA farm tax breaks tied to conservation plans

Mandatory compliance sought for Clean and Green program

By Ad Crable

Farms are an integral part of the landscape in Narvon, PA. The young trees and shrubs in the foreground were planted as buffers for the small stream that flows into the Conestoga River. (Dave Harp)

Nearly a half-century ago, Pennsylvania began offering a 50% break on real estate taxes to farmers who enrolled in its Clean and Green program aimed at keeping subdivisions and shopping centers from sprouting up on farm fields.

But now, as the state struggles with meeting its pollution reduction goals for the Chesapeake Bay, some contend that too many of the 5.3 million acres of farmland enrolled in the tax break program statewide are not required to be particularly clean or green.

Participation in the Clean and Green program does not hinge on having basic state-mandated conservation plans designed to prevent soil erosion and stem the runoff of manure, fertilizer and other pollutants into local streams and ultimately the Bay.

Having conservation plans for nearly all farms in Pennsylvania — any land that disturbs at least 5,000 square feet for agricultural products — has been state law for decades. But that requirement, until recently, has been often ignored except by the 5% of largest farms that fall under more strict regulations.

By failing to make the creation and implementation of conservation plans a condition of the widely used tax break program, many say the state has lost important leverage in getting a huge swath of farmland to follow rules aimed at reducing pollution.

"I think it's fairly reasonable to say if you want to receive these tax benefits and be a good neighbor, that you should be a good steward of the natural resources we all share," said Ezra Thrush of the environmental group PennFuture. The group is calling for the Clean and Green program to make conservation plans mandatory.

A state legislator has introduced a bill that would deny the tax breaks to landowners unless they have approved conservation plans.

"I just can't imagine there is a program where somebody gets a tax break without meeting the standards of existing laws," said state Rep. Mike Sturla, a Democrat from the city of Lancaster who has introduced the bill a handful of times. The previous bills have all died in the House Agriculture & Rural Affairs Committee without reaching a vote.

"I'm not trying to 'get' anybody," said Sturla, who grew up among Lancaster County farmland. "This is the easiest thing we can do to relieve the pollution load flowing into the Bay. This is just helping people be good stewards."

PA far behind schedule

To some, requiring Clean and Green participants to comply with environmental laws could be an important way to help reduce nutrients — nitrogen and phosphorus — entering the Bay from Pennsylvania.

The Keystone State is far off track to meet its nutrient reduction goals by the 2025 cleanup deadline. From 2010 through 2019, it reduced its annual nitrogen discharges by just 2.5%, from 113.2 million to 110.4 million pounds, according to computer model estimates from the state-federal Chesapeake Bay Program.

By 2025, the state is supposed to cut that to 73.1 million pounds a year, and the vast majority of that must come from farmland. The state has not yet devised a plan showing how it would fully meet that goal or pay for needed actions. Its most recent plan identified an annual funding gap of $324 million a year.

That lack of progress spurred the states of Maryland, Virginia and Delaware, along with the District of Columbia and the Chesapeake Bay Foundation, to file suit last year trying to force the U.S. Environmental Protection Agency to prod more action from Pennsylvania.

Those who want to strengthen Clean and Green requirements include some legislators and environmental groups frustrated at the state's inability to reach Bay commitments. Even other farmers who have dutifully created the conservation plans and made environmental improvements on their farms are resentful.

"Farming is so challenging," said Matt Ehrhart of the Stroud Water Research Center. "It's an incredibly hard job that's more than full time and also marginally profitable in a lot of years. You can't blame them for not wanting to add one more thing that might complicate an already complicated life.

"But we have great planners, lots of cost-sharing, and we have a 50-year-old requirement. There's not a lot of patience for farmers who are saying, 'I just don't want to hurry up and comply with this law.'"

Ignored law

Under the Clean Streams Law, Pennsylvania has required erosion and sediment control plans since 1988 and manure-management plans since 1997. The plans typically cost $1,000–$2,000 for experts to prepare. Runoff-control practices often cost thousands more. But cost-sharing is usually available to cover all or a portion of the costs.

Many farmers, though, never created the plans. Others got plans but didn't fully implement them. And there was little checking to see that they did.

In 2016, federal frustration over Pennsylvania's unmet Bay-cleanup goals led the state Department of Environmental Protection to launch on-site inspections of the 33,000 farms in the Bay drainage area.

Those inspections — of 11,162 farms so far — found that 39% did not have manure-management plans and 38% did not have erosion and sediment control plans, despite warning letters sent out months ahead of the inspections. Based on those compliance rates and the numbers of farms left to check, there could be more than 8,000 additional farms, for a total of approximately 12,500 farms, that still do not have conservation plans in Pennsylvania's portion of the Bay watershed.

But the results also show that many farmers with plans have not followed through on them. For example, some have not installed manure storage pits, stormwater runoff controls, barn downspouts, stream buffers, swales and other conservation measures required to stop polluted runoff.

Under a new phase of the state crackdown, inspectors will return to farmers a year after they filed plans to make sure they are implementing the on-the-ground steps that were part of the plans.

"This program has been viewed as leveling the playing field so farms who are not doing their part to protect the environment are held accountable and not tarnishing the reputation of the whole ag community," said Christopher Thompson, head of Lancaster County's conservation district.

Compliance unknown

While saying that many Lancaster County farmers have been leaders in conservation practices, Thompson supports the bill to require Clean and Green farmers to comply with the mandate for having and implementing conservation plans.

Lancaster County, which delivers more water-fouling nitrogen to the Chesapeake than any other county in the Bay watershed, has 362,619 ag acres in Clean and Green, the most in the state. The DEP farm-by-farm compliance inspections have led more than 1,000 farms to create conservation plans over the last two years.

No one knows precisely how many farms in the Clean and Green program don't have conservation plans — those records are not kept. And even in the new, state-run crackdown on farmers without conservation plans, local conservation districts don't keep statistics from the initial farm contacts.

"If we made a list, it would be subject to right-to-know and could be used by disgruntled neighbors, radical environmentalists, etc., to paint a disparaging picture of what is actually happening," said one official involved with the inspections, who asked not to be named.

The state Department of Agriculture, which runs the Clean and Green program, has never examined how many participating farmers do not have conservation plans.

When Pennsylvania drew up its latest Watershed Implementation Plan to meet its Chesapeake Bay cleanup commitments, some state officials considered pushing Clean and Green reform as a top priority. In the end, the plan instead urges more cost-share money and education as incentives for compliance.

The Pennsylvania Farm Bureau has strongly opposed legislation to bar farmers from receiving tax breaks for failure to have conservation plans. Such an approach would be "punitive" and "counterproductive," pushing more already-struggling farmers into selling to developers, said spokesman Liam Migdail.

Indeed, when Clean and Green was signed into law in 1974, it had a different priority. The goal was to keep farmers from being tempted to sell to developers. The program sought relief for farmers and owners of forested land so that they paid real estate taxes based on the actual use of the land rather than the land's fair market value, which is constantly driven up by development pressure.

Clean and Green has been immensely popular, with roughly 10.8 million acres of forest and farmland enrolled. About 5.3 million acres of the state's 7.3 million acres of farmland are in the program.

Even supporters of beefing up the Clean and Green requirements worry about the costs and personnel that would be needed to enforce the use of conservation plans. "You're talking about a whole new army of inspectors here," said Lamonte Garber of Stroud.

But Garber and Ehrhart said that if conservation plans had been enforced from the beginning, it would have resulted in major reductions to both impaired streams in Pennsylvania as well as soil and nutrient loadings in the Bay. If those plans were fully implemented, the state estimates they would achieve about 4.5 million pounds of the state's nitrogen reductions annually.

"If, in fact, we had a robust compliance effort that was actually working across the board, then people might not be looking at other solutions to the problem," Garber said. "Achieving widespread soil conservation planning and implementation is

Native trees, shrubs and grasses were planted to reduce erosion and absorb runoff along the small tributary of Conestoga River that runs through Raymond King's farm in Narvon, PA. (Dave Harp)

Corn was just planted on this no-till field on Raymond King's farm in Narvon, PA. The no-till conservation practice has been in use on the farm for nearly half a century. (Dave Harp)

the single-most important tool, among many, to achieve our Chesapeake Bay requirements."

When the DEP recently announced a major $5 million restoration of Hammer Creek, a wild trout stream in Lebanon County, it estimated that getting all 70 famers to comply with their conservation plans would achieve about 25% of pollution reduction goals.

Groups act on their own

While the state has not acted through Clean and Green, other groups are using compliance with conservation plans as a requirement to participate in their own programs.

Lancaster Farmland Trust, a private group that preserves mainly Plain Sect farms, started requiring in 2019 that farms have approved manure management plans before being considered for conservation easement purchases. Most Plain Sect farmers take advantage of the Clean and Green tax breaks.

"We just decided it was the right move to make sure the farms we preserve have those plans in place," said Jeff Swinehart, chief operating officer. "First, for the stewardship of natural resources and second, to have plans followed because it's state law."

Similarly, the Lancaster County Preserve Board, which receives both state and county taxpayer funds for farm preservation, will this fall begin requiring proof of conservation plans in order to be considered for preservation funds, rather than just as a ranking tool.

"The ag preserve board, particularly farmer members, practice what they preach and believe it's just the right thing to do, besides being a legal requirement," said Matt Knepper, the board's director. "They basically said, 'If I can do it, so can you.'"

In a move some consider a model, Pennsylvania-based Turkey Hill Dairy is requiring all 160 of its milk suppliers in Pennsylvania and Maryland to have conservation plans and put in place such measures as barnyard stabilization, cover crops, manure storage and streamside buffers.

After all members are in compliance, they will be rewarded by being paid more for their milk.

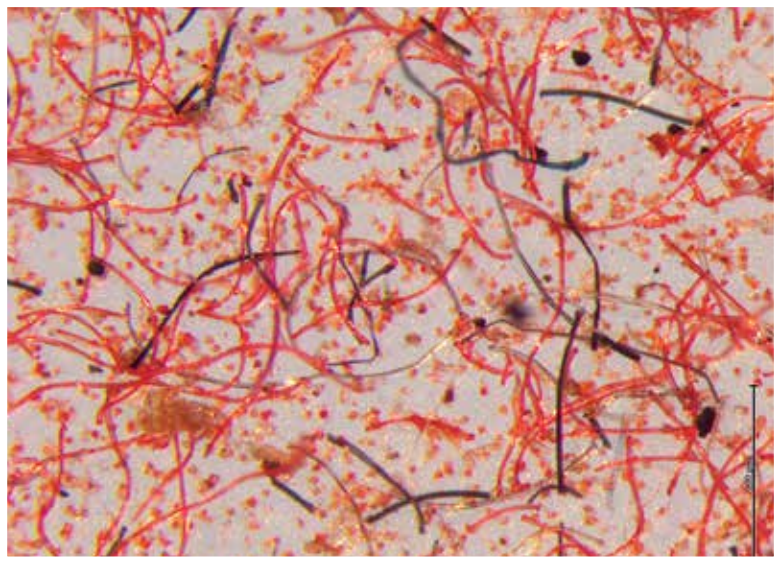
What is ironic about the resistance by some farmers, Ehrhart said, is that conservation plans are valuable management tools that help make their farms more productive, profitable and sustainable.

Case in point is Raymond King, the latest of three generations to run a small farm in eastern Lancaster County. Though his father was an early pioneer in the conservation practice of no-till farming, the farm did not have a conservation plan when King took over in 1992.

King hauled manure year-round and was disturbed by the runoff he saw. He attended a public meeting on the Bay and went on a trip to see the estuary for himself. He came back realizing his water was affecting watermen far downstream — people working as hard as him to make a living.

Working with Stroud and the county conservation district, King added manure storage, streambank fencing and spouting on the barn. He also created a terrace in a field to shunt water away from a neighboring farm. It was all part of his new conservation plan.

"I guess we can't ever be perfect, but we farmers can make a difference," King said. ■



Picture of Chesapeake microplastics grows clearer

New study looks at risks to striped bass

By Whitney Pipkin

Top photo: "COVID trash" is now a common element in waterborne debris. Masks and gloves are among the types of litter that degrade into microplastics. (Robbie O'Donnell)

Inset photo: Plastic microfibers, shown here under a microscope, often slough off from the washing of synthetic fabrics and make their way through wastewater treatment facilities to local waterways. Such fibers are thought to be among the most common plastics in many river systems. (Ocean Wise)

Scientists have long suspected that the tiny plastic particles floating in the Chesapeake Bay and its rivers — consumed by a growing number of aquatic species — are anything but harmless.

Now, studies by a regional workgroup are beginning to clarify the connections between the presence of microplastics and the harm they could be causing in the Bay region. This research, combined with international interest in microplastics, is setting the stage for more informed management decisions and a flurry of additional studies.

Globally, microplastics have been found in the air we breathe, the food we eat and in human organs — even in mothers' placentas. It's possible that humans are ingesting a credit card's worth of microplastics every week. One of the ways people consume plastics is by eating seafood, though the tiny particles can also be swirling around in tap and bottled water. Assessing the risk of plastic consumption by humans is one important research goal.

In the Chesapeake Bay region, researchers also want to understand how microplastics could be impacting local ecosystems and aquatic species. A workgroup of the Chesapeake Bay Program, a state-federal partnership that leads the Bay restoration effort, identified microplastics in 2018 as a contaminant of mounting concern. A 2014 survey of four tidal tributaries to the Bay found microplastics in 59 out of 60 samples of various marine animals, with higher concentrations near urban areas. A Bay survey the next year found them in every sample collected.

Microplastics are typically defined as plastic pieces between 1 micron and 5 millimeters in size. Smaller pieces are called nanoplastics.

Researchers classify microplastics in two ways.

"Primary" microplastics are tiny when they enter the environment. Examples include plastic pellets released by industrial facilities, synthetic microfibers in clothing released during wash cycles and tire fragments washed off of roads.

"Secondary" microplastics are created when larger plastic debris breaks down into smaller fragments as it's battered by wind, sun and water over time. Polystyrene (often known by the brand name, Styrofoam) food containers, plastic grocery bags and plastic water bottles are in the secondary category. They easily break down into smaller pieces, making them priority targets for legislation that reduces their use.

Focus on striped bass

In spring 2019, the Bay Program convened a two-day workshop to evaluate what local experts did and did not understand about the impact of microplastics in the Chesapeake region.

The participants concluded in a follow-up report that microplastics "pose a potential serious risk to the successful restoration of the Chesapeake Bay watershed." They recommended developing an "ecological risk assessment" for striped bass — a key Bay species, known regionally as rockfish — to provide a detailed look at how a living organism ingests microplastics and what happens when it does.

In response, the Bay Program formed a plastic pollution action team to head the risk assessment effort and produce strategies for reducing plastic pollution, a goal seeing revived political interest recently. The group also compiled standardized terms and measurements for

the region's scientists to use as they study microplastics.

And, after dredging up more questions than answers about microplastics, the 2019 workshop led the U.S. Environmental Protection Agency to contract with Tetra Tech Inc. to help produce a series of reports on the subject, including the risk assessment for striped bass.

Striped bass from the Potomac River were selected because, as one of the top predators in Bay tributaries, they consume and rely on other species and habitats whose progress is integral to the restoration effort. They are known to consume both blue crabs and forage fish. Once under a fishing moratorium, striped bass were considered a success story of the Bay because of their rebounding population. Recently, though, they have faced setbacks. Their habitat, preferred diets and populations have been well-documented, and striped bass continue to be closely monitored under a regional fishery partnership today.

The newly released risk assessment found a fair amount of circumstantial evidence, based on research involving other fish species, that microplastics could have harmful impacts on the Bay's most iconic recreational species and, potentially, on the people who eat them.

The scientists did not open the bellies of local striped bass to look for plastic. Instead, they combed existing scientific literature — some of it coming out while the work was under way — to discern data gaps and identify where future Bay-region studies should focus their attention.

The assessment found that microplastics can harm fish in several ways.

- Tiny plastic particles can physically block or fill up the animal's gut, potentially reducing its ability or desire to feed.
- Microplastics can cause behavioral changes as their presence changes a fish's buoyancy or swimming behavior, which can make the fish more susceptible to predators.
- Microplastics can also carry toxic chemicals into the fish's body, which could bioaccumulate as the fish consumes other prey that have ingested plastics.

While striped bass migrate outside of the Bay, they tend to remain in the estuary for the first few years of their lives, making them "an organism that can reflect the potential impact of microplastics in a specific location," the assessment states.

Martin Gary, executive secretary of the Potomac River Fisheries Commission, advocated for focusing on striped bass rather than oysters or blue crabs, as had been originally suggested, because their lifecycle makes the fish a fitting indicator of their environment. Gary said the Potomac River is the second-most valuable spawning area for striped bass along the Atlantic Coast, behind the Susquehanna River.

Discarded plastic objects wash into waterways and break down over time into tiny particles called microplastics. (Lara Lutz)

"Pretty much all life stages of striped bass use the [Potomac] river at some point, even the larger animals that come back," Gary said. "It's not a species with specific outcomes in the 2014 Bay agreement, but its life cycle includes the health of crabs and oysters and sea grasses. Everything is interdependent."

Small tire fragments used as bedding at playgrounds can wash into local waterways, where animals can mistake them for food. (Whitney Pipkin)

Also, because their numbers are once again in decline, striped bass also are "on everybody's radar right now," Gary said, as fishery managers consider whether to revisit an overarching management plan in light of recent declines in their population. If they do, microplastics could be a part of that conversation.

Eating plastic

Globally, researchers have found microplastics in the guts of enough aquatic species to assume they're nearly everywhere, both in aquatic environments and in the creatures that inhabit them.

Eastern oysters, which live in the Chesapeake Bay, have been shown to confuse microplastic beads for food in a University of Maryland lab, taking the particles into their gut.

A researcher in Delaware Bay recently looked for microplastics in juvenile and adult blue crabs in two of the bay's tidal creeks. Jonathan Cohen, an associate professor at the University of Delaware whose work has yet to be published, wrote in an email that his team found microfibers in 48% of crabs collected, mostly in their stomachs.

No one has done a survey on the stomachs of striped bass in the Potomac River yet, but evidence already exists that they would likely find microplastics. A study of microplastics uptake by species in the Lake Mead National Recreation Area in Nevada found tiny plastic particles in the guts of striped bass there.

Susanne Brander, a researcher at Oregon State University studying how microplastics impact black sea bass, spoke via video at the 2019 workshop about her findings, which could have some correlations to the Bay's striped bass. While at the University of North Carolina, Brander found microplastics in 60% of black sea bass she sampled in the wild during a two-year project. This important East Coast species also visits the Lower Bay.

Because striped bass consume a broad array of other species over the first three years of their lives, their diet, a major focus of the risk assessment, illuminates the many ways they could be consuming microplastics in the Potomac River. Striped bass could be exposed to microplastics via their gills or by skin contact in addition to consuming them. But the assessment assumes, based on existing research, that "trophic transfer" — eating other species that have eaten microplastics — is a major mechanism of exposure.

How microplastics get into the fish matters. Studies cited in the assessment show that mysids, small, shrimplike crustaceans

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that striped bass regularly consume, can contain large amounts of microplastics. The same research shows that fish that consume mysids tend to bioaccumulate those plastic particles — storing them in higher and higher concentrations — and transfer them to fish tissue.

The assessment did not focus on which types of microplastic striped bass would likely be consuming. Preliminary evidence suggests that microfibers, like those that are shed by synthetic clothing or fishing nets, could be more abundant than disintegrating plastic in river systems.

As researchers were working on this assessment, microplastics research continued to be published. One study came from students at Susquehanna University in Pennsylvania, who found microplastic particles in the stomachs of smallmouth bass taken from the mainstem of the Susquehanna River in 2019. Each of the 89 bass contained an average of 29 pieces of microplastics, predominantly fibers.

Overall, the striped bass assessment is a starting point for further research, its authors said.

"This is a framework that starts showing the potential of different sources of microplastic contamination … to striped bass," said Kelly Somers, physical scientist at the EPA and co-chair of the Plastic Pollution Action Team. "Naturally, it will inform us of other species on that pathway, like blue crabs or [underwater grasses]. This is the first iteration — that necessary groundwork we need to lay to better understand that."

Human impact

More information also is needed about threats posed to humans who eat the Bay's fish, including striped bass.

"Given that striped bass are a popular recreational and commercial fishery species, there is potential for humans to become contaminated with microplastics from eating striped bass," said Matt Robinson, environmental protection specialist for the District Department of Energy and Environment and a co-chair of the Bay Program's plastic pollution action team.

Granted, he said, research is pointing to a growing number of ways humans could be consuming plastics already. "Still, we are very concerned here in DC about people eating plastic when they eat fish."

Despite the ubiquity of microplastics, researchers and advocates are far from throwing in the towel. The plastic pollution action team also published in May a document that lays out what future microplastic monitoring should look like in the Bay watershed — and potential strategies for curbing sources of plastic pollution closer to the source.

A plastic grocery bag floats across a sidewalk in the District of Columbia. The District was one of the first localities to pass a 5-cent fee on the use of plastic bags. (Whitney Pipkin)

The report suggests an overarching monitoring program for microplastics that dovetails with existing monitoring programs and falls under the purview of the Bay Program. A subset of fish monitoring programs that collect and analyze stomach contents, for example, could also be used to garner microplastic ingestion data. The report also suggests collecting enough microplastic data that the Bay Program could set a related pollution reduction goal for the region or states could use it to inform their own policies and practices.

Globally, the production and disposal of plastics has continued to skyrocket in recent decades, with an estimated 33 billion pounds of plastic entering the marine environment from land-based sources every year, according to the nonprofit Oceana. The group says that's roughly the equivalent of dumping two garbage trucks full of plastic into the ocean every minute.

Despite growing awareness about plastic pollution in recent years, the COVID-19 pandemic seems to have temporarily cemented reliance on certain plastics. A data analysis published in *ScienceDirect* indicated that the pandemic would "reverse the momentum of a years-long global battle to reduce plastic waste pollution." Another study found that the virus triggered an estimated global use of 129 billion face masks and 65 million gloves every month, enough to cover the landmass of Switzerland over the course of a year.

Volunteers who clean up trash along the Anacostia River had to create a new category for the sudden uptick in masks, gloves and other "COVID trash" they were finding floating in the water and stuck to the shorelines.

"That was one of the main things people picked up," said Robbie O'Donnell, watershed programs manager for the Anacostia Riverkeeper.

Katie Register, executive director of Clean Virginia Waterways at Longwood University, said that, in some ways, 2020 felt like a lost year in plastics advocacy. But, in other ways, a lot of ground was gained.

"People used to sit in a restaurant eating off plates, and then for a year all that food has been in single-use plastics, for the most part," Register said. "But, in spite of that, we've seen some real changes."

Some are driven by new legislation.

New laws

Even as the research continues, recent legislation is attempting to reduce sources of plastic pollution.

Virginia Gov. Ralph Northam issued an executive order in March that lays out a plan for state government facilities — including state universities — to stop by midsummer the use of plastic bags, straws, cutlery and other items. The order, which cites concerns for the health of the Bay and wildlife, also includes a plan to phase out use of all nonmedical single-use plastics and polystyrene objects by 2025.

Virginia also approved in March a plan to end the use of polystyrene cups and food containers. Food chains with 20 or more locations will not be able to package food in such containers as of July 2023 without being fined, while remaining vendors have until July 2025. The bill also restricts nonprofits, local governments and schools from using polystyrene takeout containers after the 2025 deadline.

The state also passed a local option to add a 5-cent tax on plastic bag use at grocery, convenience and drug stores as of this year. In May, the Roanoke City Council was the first to approve a local version of the tax.

Maryland lawmakers did not act this year on a proposed ban of plastic bags, but they did join Virginia and became the sixth state in the country to ban intentional balloon releases. Pennsylvania authorities completed a littering study in 2020 and began work in May on a Littering Action Plan intended to curb trash closer to its source.

Across the nation, California and Oregon lawmakers reintroduced an expanded federal bill called the Break Free from Plastic Pollution Act. The bill would require producers of plastics to help fund recycling programs while banning certain single-use plastics nationwide, placing a moratorium on new plastics production facilities and calling for additional research, among other measures.

"I credit a lot of this to growing concerns among people of all ages," Register said. "People are more aware that plastic pollution is increasing, and it's got serious impacts." ■

Environmental justice in VA not just 'a box to check'

New officials will strive to look at needs of all in the community

By Whitney Pipkin

Renee Hoyos, the new director of environmental justice at the Virginia Department of Environmental Quality, worked for 14 years as executive director of the Tennessee Clean Water Network. (Submitted photo)

Jerome Brooks, the new deputy director of environmental justice at the Virginia Department of Environmental Quality, has worked at the DEQ for 15 years. (Submitted photo)

The Virginia Department of Environmental Quality has tapped a Tennessee clean water advocate with experience in community engagement to head the agency's new office of environmental justice. Filling the director position is a long-anticipated step toward cementing environmental justice as a priority for the regulatory agency and a capstone of recent reforms.

Renee Hoyos worked for 14 years as executive director of the Tennessee Clean Water Network — and ran in 2018 to represent the state in Congress — before joining the Virginia regulatory agency in late April. Jerome Brooks, who has worked at the DEQ for 15 years, is helping to lead the office of environmental justice as its deputy director.

Two weeks into their new roles, the *Bay Journal* met virtually with Hoyos and Brooks and discussed what the pair hopes to accomplish in the coming months. The interview has been edited for brevity.

What experiences from your career do you bring to your new position?

Brooks: [My work in environmental justice] goes back to 2000. The executive order from President Clinton had come out, and people began to take it seriously. That's when DEQ actually introduced [the concept], and we had training in 2000, three years after I came to the agency. … For me that was intriguing. And it was personal, because I came from that background. I lived in public housing as a child for a while, and I've seen a few things.

Hoyos: Like Jerome, I got started in environmental justice [in 2000]. I was a special assistant for Mary D. Nichols, the secretary of the California Natural Resources Agency. At the time, it was really new, and a lot of folks didn't know what to expect. I would be in meetings with people who were obviously resistant to the idea of having to do anything extra outside of the regulatory requirement. … Over these past 20 years, it's been great to see a change in peoples' perspectives on environmental justice — and certainly in the past year with the pandemic. I think the wave of renewed interest and understanding of social and racial justice has [put] environmental justice really in the forefront of peoples' minds.

The Virginia DEQ has taken significant steps over the last decade to better incorporate environmental justice into decision-making and regulatory processes. What are the biggest gaps that still exist or gray areas that still need defining?

Hoyos: We want this to be an outward facing role into the community. We are working now to get to know all the players in the community and find out more fully what their experiences have been and the changes they would like to see happen and see if we can make those changes happen. … Then, internally, we're going to review all of our policies and procedures to see if we can create space for community voices in DEQ actions.

Brooks: A lot of that is going to be education. I don't just mean of our staff. I mean education of industry and education of citizens. Because what I've come across is that people really don't understand or are misinformed about what our agency does, what our agency is charged with under law, what our obligations are under law. … Even in talking to some of the groups recently, there is still a gray area in that understanding. When does DEQ come into play in the permitting process? What is DEQ supposed to do? DEQ is charged by law to issue permits. We're supposed to mitigate impacts as best we can.

Many have pointed to the recent court decision on the Buckingham County compressor station — and the judge's comment that "environmental justice is not merely a box to be checked" — as a turning point for environmental justice efforts in Virginia. How should that decision impact future permitting decisions?

Hoyos: We agree with the judge. It's not [just] a box to check, and this department exemplifies that. We're going to be working with communities to make sure there are no surprises, working internally to make sure everyone's apprised of community needs and conditions, and trying to move forward with better engagement and better relationships with our partners in the community. … We can walk and chew gum at the same time. So, for some permits in the pipeline that have already gone down the road, we'll say, "From here on, let's try these things." For some permits coming up, they may be going to public notice already, but how can we start engaging the community? There's no hard start date for us to begin our work. We are picking up things as they are identified to us.

Brooks: It's not easy. Renee has a good vision. She started engaging community groups on day two. She was on the phone. We met with groups yesterday. We want to make sure that we have their perspective, what they'd like to see, before we get to the education process. There are some things that they ask for that we don't have the statutory authority to provide. Then it's directing them to a legislator so they can put something before them for the next session. Maybe that's how we redirect. … A regulatory agency is bound by what you can do by law. That's a piece we really need to put forward. If you want to change the process, you have to do it in the ballot box. ■

Development fight erupts over protected MD watershed

Airport expansion, industrial jobs proposed along Mattawoman Creek

By Timothy B. Wheeler

On a warm spring morning, the fish were literally jumping in Mattawoman Creek. Anglers, both human and avian, flocked to the Potomac River tributary in Southern Maryland to try their luck as carp thrashed about in a mating frenzy.

Fishermen cast their lines from kayaks, powerboats and the shore. Herons and egrets stalked in shallows carpeted by vast green beds of spatterdock and wild rice. A bald eagle swooped from the cloudless sky to snatch a silvery morsel from the murky water.

Five years ago, after intense debate, the elected leaders of one of Maryland's fastest growing counties took the unprecedented step, for them, of restricting development on 37,000 acres of land to protect this creek, which was described then as one of the state's healthiest and most threatened water bodies.

Now, in what some critics fear is the beginning of a retrenchment, Charles County officials are eyeing a policy change that would relax those restrictions on a 558-acre chunk of the Mattawoman watershed to promote industrial development around a small private airport.

Proponents say the move will help sustain the once-struggling aviation facility and bring much-needed jobs to a mostly rural portion of the county. But environmentalists and many local residents warn that clearing the forest and adding pavement in the heart of the Mattawoman watershed could irreparably harm the creek, renowned for its fisheries and biodiversity.

"This is not just a Charles County treasure. This is a national and world natural treasure," said Anne Stark, a Waldorf area resident and avid kayaker who describes the Mattawoman as the best Chesapeake Bay tributary she's paddled. Allowing industrial development would be a "great ecological tragedy," she said at a May 3 public hearing.

At the direction of Charles County's board of commissioners, the planning commission is weighing a proposed change to the county's long-term growth plan to remove the land around Maryland Airport from the watershed conservation district. It's become a hot-button issue, reigniting a long-simmering tug of war between environmentalists and advocates for economic development.

Privately owned Maryland Airport near Indian Head aims to extend its runway to accommodate bigger private planes, especially jets. Charles County is considering designating 558 acres of land around the airport for "employment and industry." (Dave Harp)

Rapid growth, prime habitat

Charles is Maryland's second-fastest-growing county, a bedroom community south of Washington, DC, with a population that's swelled more than 25% since 2000. But it also has some of the state's best habitat for fish, birds and wildlife, as well as a newly designated National Marine Sanctuary at Mallows Bay on the Potomac.

At its May 3 hearing, the seven-member planning commission heard passionate pleas from nearly two dozen residents opposed to redesignating the land around the 220-acre airport for "employment and industry." Only two speakers supported the move — one a former consultant to the airport's previous owner and the other part-owner of one of the tracts of land that would be opened to development.

"It's a plus for the county, certainly a plus for the western side of the county," said Bob Shanholtzer, the airport manager, in an interview.

The airport, which employs four people, has been there since the 1940s but fell into bankruptcy several years ago and was sold to a new owner. After the turnover, takeoffs and landings of prop planes and a few small jets grew from 13,000 to 17,000 a year as other small private airstrips in the area closed, according to the county. Many users are local residents, the airport manager said, but some out-of-towners have flown in to visit the District of Columbia or to try their luck at the MGM National Harbor casino, which is a 25-minute drive away.

Activity has fallen off since the coronavirus surged, averaging just 20 flights "on a good day," according to Shanholtzer. But the facility's owner has federal approval and is seeking federal funds to extend the runway from 3,700 to 4,300 feet to accommodate bigger planes, particularly jets.

The runway was extended in 2013, a project that filled in a stream valley over environmentalists' protests. The airport's manager contends that the facility is a model of environmental sensitivity, and that letting industry locate next to it will yield jobs and other economic opportunities. He noted that other localities in the region have permitted similar development around their small, civil-aviation airports.

Katherine Davies, who shares ownership of a former "spoon factory" just west of the airport, argued at the hearing that allowing some development wouldn't harm the creek. Davies, who grew up in Charles

Lucidity Information Design, LLC

County but now lives in Bethesda, MD, said the county is losing tax revenue by limiting development of the tract once used to manufacture coffee stirrers, ice pop sticks and wooden ice cream spoons. She said the former factory property, dormant since the 1960s and since cleared of buildings, is paying one-third the taxes it did before being down-zoned.

"Nobody wants to hurt the Mattawoman, but I think you can use proven techniques to protect the [creek] and yet have some economic development," she said.

Opponents of the land use change say they're not against economic development but the Mattawoman is too valuable an ecosystem to be put at risk. They contend there are sites and vacant buildings elsewhere that could accommodate new workplaces.

Near a 'tipping point'

Much of the land at issue is part of what the Maryland Department of Natural Resources has designated as a "targeted ecological area," part of a statewide network of "lands and watersheds of high ecological value that have been identified as conservation priorities."

It's also one of the healthy Bay watersheds that the federal-state Chesapeake Bay Program has committed to keeping that way.

Among those warning against easing development restrictions is the DNR, which submitted written comments prior to the hearing. The department had joined with other state and federal agencies nearly a decade ago in producing a report detailing the high-quality forest and wetlands habitat found in the Mattawoman watershed and warning that it was at an ecological "tipping point" from the impacts of rampant development.

That report ultimately helped to persuade Charles County's elected board of commissioners to vote 3–2 in 2016 to place a little more than half of the river's watershed in a conservation district, which limits development and caps homebuilding to one unit per 20 acres. The commissioners subsequently down-zoned land in the district, including that around the airport. Since then, though, new county commissioners with a more pro-growth bent have been elected.

In its comments, the DNR said that the watershed still "hangs in a delicate balance and remains in need of sound management to assure [its] unique ecological condition." The reason for limiting development density in the watershed, the DNR noted, was to slow the growth of buildings, parking lots, roads and other impervious surfaces that could increase the runoff of sediment and pollution into the creek.

Research has shown that fish and aquatic life decline in water bodies when impervious surfaces cover more than 10% of their drainage area. The DNR estimated that the Mattawoman was at about 6%. On average, it noted, industrial parks cover 55% of their sites with hard surfaces.

County Planning Director Jim Campbell said officials recognize the importance of protecting the Mattawoman's natural resources and have permanently protected 8,800 acres within the watershed, with plans to do more through the state's Rural Legacy Program.

Any development around the airport would have to comply with forest conservation and stormwater management requirements, Campbell said. The county also anticipates setting limits on impervious surface, he added.

But the DNR warned in its comments that may not be enough. "Attempts to mitigate damage through best management practices can successfully address some issues," the DNR wrote, "but rarely offset enough damage to keep watersheds functioning naturally."

Given that uncertainty, the state agency recommended keeping the watershed conservation district intact, saying it was the best way to sustain the ecological health of Mattawoman Creek.

Wayne Magoon, chairman of the planning commission, questioned the warnings about a tipping point during a meeting in mid-April. "Just because you say it doesn't make it true," he said.

Other commissioners, though, seemed to want more information about the issue, as well as the assertion that jobs would materialize around the airport. A nearby technology park had failed to get off the ground, and a marketing study drafted in 2015 found little reason to believe the airport could attract development. County officials say prospects have improved since then and have ordered a new study, which they say will be ready by the time the planning commission must decide.

Environmental advocate Bonnie Bick and her friend, Anne Stark, paddle through spatterdock, a broad-leaved plant that blankets the shallows of Mattawoman Creek in Southern Maryland. (Dave Harp)

Concerns for people, ecosystem

There are environmental justice issues in the mix. The neighboring community of Bryans Road is predominantly African American, with a pair of schools close to the airport. Residents testifying at the planning commission hearing spoke out against having more air and vehicular traffic and the attendant air pollution.

Dyothia Sweat, president of the county's NAACP chapter, wrote in asking if the county intends to perform an environmental impact study, especially of the public health ramifications of the development. She also asked for more details to back up assertions that the move will bring jobs to the area.

Those who frequent the Mattawoman say it's in need of more protection, not less.

At the planning hearing, Scott Sewell, conservation director of Maryland BASS Nation, called the Mattawoman "a rare gem."

A turtle suns itself on a fallen tree in Mattawoman Creek. The Maryland Department of Natural Resources warned that the ecologically rich Potomac River tributary "hangs in a delicate balance." (Dave Harp)

"It's home to such a wide variety of species that spawn there and live there," he said, "and fishermen come from all over the country to fish, especially for the bass tournaments [for] largemouth bass that live there.

He noted that bass anglers also used to frequent Piscataway Creek, a Potomac tributary to the north, but stopped as the water quality and fishery declined. Recently, Sewell said he'd seen troubling signs as well in the Mattawoman. At a recent fishing tournament in the creek's upper reaches, he said he didn't get a single bite.

"What I did notice is the water is not as deep and clean as it used to be," he said. The indications of siltation he saw "should be an alarm ... that something is going on."

"If anything," he added, "you should be trying to preserve more land to filter the water. … You've taken a step forward with putting this land in preservation. Please don't take two steps back."

Bonnie Bick, a longtime environmental activist and advocate for Mattawoman Creek, said she believes that despite the county's protective actions in 2016, the creek has continued to lose ground from development in the unprotected upper portion of the watershed. "I've been working to save Mattawoman Creek for almost 30 years, and it's terrible to watch it decline mainly from stormwater runoff," she told the planning commission. "The tipping point is critically close," she warned. "Instead of removing the [watershed conservation district], additional efforts need to be made to save the Mattawoman."

If the planning commission recommends approval of the change, it then goes to the board of county commissioners for a public hearing and decision.

Anne Stark, the paddling enthusiast, said she's "just dumbfounded that people aren't outraged" by the move to allow more development. "We don't have many places like this left," she said. "You'd think we'd learned." ■

Wasting disease takes hold in Bay states' white-tailed deer

Herd reduction programs under way, but not universally popular

By Ad Crable

Chronic wasting disease, a fatal affliction, spreads among deer as they come into contact with each other's saliva, feces or urine. (Dave Harp)

They are hunted, fed and photographed. They cause motorists to swerve and gardeners to curse.

Whatever your interest in or aversion to white-tailed deer, you may eventually see fewer of them sprinting across the road, eating your cabbage or magnified in your rifle scope. The reason: chronic wasting disease, a fatal affliction that continues to spread through four states in the Chesapeake Bay watershed.

Hunters and wildlife managers in the region can do little but slow the spread, hoping to head off the kind of scenario that has devastated deer populations in a few other states.

Though the number of deer found with CWD in Bay watershed states is relatively low so far — a total of 1,309 in Pennsylvania, Maryland, Virginia and West Virginia — the disease is expanding into new areas of each state. (New York found five CWD deer on a captive deer farm in 2005 but no infected deer have been found in the wild. CWD has not been found in Delaware.)

Pennsylvania, the state with the nation's third-highest buck kill and second-highest number of deer hunters, has been particularly aggressive in thinning out deer populations to stop the spread in four affected areas in the state since CWD was first found there in 2012.

Yet, during hunting seasons last fall, the incidence of reported CWD rose in one disease management area to 14% of all deer shot, up from 8% the previous year. It was, said the Pennsylvania Game Commission's top wildlife manager, "a punch in the stomach."

"Unfortunately, the road you seem to be heading down right now will likely lead to a lot more of those punches in the stomach," warned Bryan Richards, a wildlife biologist with the U.S. Geological Survey's National Wildlife Health Center at a recent virtual forum about CWD in Pennsylvania.

In Virginia, where CWD was first detected in 2009, diseased deer have been reported in seven new counties over the last two years.

With no cure, or even a way to identify live infected deer, all wildlife managers can do to control the spread is dramatically reduce the size of deer herds. That's because contact with another deer's saliva, feces or urine appears to be the main path of transmission for the disease. Another method is to prevent deer from co-mingling, by prohibiting deer feeding and the use of bait like deer licks or lures made of deer urine.

Herd reduction is being accomplished mainly by increasing bag limits for hunters in affected areas and occasionally using sharpshooters at night. But that approach is hampered by expense and the fact that not all hunters believe that the wholesale killing of deer is a solution.

"We're approaching this realistically. I don't think we can stop it from spreading," said Brian Eyler, deer project leader for the Maryland Department of Natural Resources.

So far, no humans or livestock have gotten sick from eating or coming into contact with infected deer — unlike mad cow disease, to which CWD is related. But in one lab experiment, monkeys fed a diet of infected meat did contract the disease. As a precaution, national health officials advise against eating venison from a deer found with CWD. Some food banks no longer accept venison donations.

"It's a game changer if it spreads to humans," Eyler said.

"Based on what we know right now, CWD is among the greatest threats to the long-term health and stability of our deer herd," was the sobering conclusion from a 2018 report by Gray Anderson, chief of Virginia's Wildlife Resources Division. "CWD is essentially impossible to eradicate and very difficult to manage or contain."

Passion for deer

The white-tailed deer is the most sought-after big game animal in North America. Deer hunting is a huge, traditional pastime and money maker in the Bay region.

Collectively, nearly 4 million hunters in Pennsylvania, Maryland, New York, Virginia and West Virginia took to the woods last fall and winter to hunt deer with guns, bows and arrows, muzzleloaders and

This doe likely suffers from chronic wasting disease, which impairs the animal's brain and leaves it increasingly emaciated. The disease is always fatal. (Terry Kreeger)

crossbows. They shot 1.3 million deer that were turned into venison for year-round eating or donations to food banks.

In Pennsylvania, the tradition of deer hunting camps has spanned generations and, until the opening of gun season was changed two years ago to fall on a Saturday instead of a Monday, many school districts would close down for opening day.

Deer hunting pours billions of dollars into local economies. In Pennsylvania alone it has an annual economic impact of $1.5 billion, according to a 2016 study for the Theodore Roosevelt Conservation Partnership. That's not counting money spent by residents who feed deer, or photographers and others who "shoot" deer only with cameras.

Fallout from CWD is expected to reduce the sale of hunting licenses and the number of people who advocate for hunting. That will in turn pinch state game agency budgets, hampering their ability to care for and manage wildlife in general.

The disease

CWD is thought to be caused by malformed or "folded" proteins in the animal's brain, called prions, produced in the bodies of white-tailed deer and other cervids such as mule deer, moose, elk and reindeer/caribou. These aberrant proteins pass on the malformation to normal proteins, spreading the condition through the brain. The accumulating folded proteins riddle the brain tissue with tiny holes, rendering it sponge-like and increasingly dysfunctional. As the brain impairment progresses, it causes health effects such as emaciation, significant behavioral changes and invariably death.

Scientists say it is possible that prion-infected body fluids left behind by sick deer can remain viable on the ground or other surfaces for years, perhaps decades. There is no sign that deer are building up a resistance to the disease.

"Many hunters have never seen [an obviously] sick deer with CWD. It's hard for them to fathom this clinical killer is out there. But [it is]. CWD is a death sentence for every deer that catches it," said Richards of the USGS. The disease can take up to two years to kill an otherwise healthy deer. During that time, with associated brain impairment, the animal is much more likely to be hit by a car than a hunter's bullet.

CWD was first detected in North America in a mule deer at a government research facility in Colorado in 1967. Since then, it has spread to 26 states.

First detections were found in West Virginia and New York in 2005, Virginia in 2009, Maryland in 2011, and Pennsylvania in 2012. Approximately 717 infected deer have been found in Pennsylvania, 403 in West Virginia, 109 in Virginia and 80 in Maryland.

In chronic wasting disease management zones in Virginia and Pennsylvania, hunters are offered free testing by dropping off deer heads in pickup bins. (Ad Crable)

Infected deer have been found in 24 counties in Pennsylvania, nine counties in Virginia, five in West Virginia and two in Western Maryland. Shenandoah National Park in Virginia has not recorded any CWD deer, but it expects to and plans to reduce herd sizes on its borders when that happens.

In both Pennsylvania and New York, the first cases of CWD were found in captive deer. In Pennsylvania especially, fenced private hunting preserves and deer farms to supply them are big business, with deer being bought and sold among facilities from various states. Thirty captive deer facilities in Pennsylvania have been found with CWD since 2012. Some would like to see this "stocking" practice banned, as has happened in Virginia and Maryland.

No method has yet been found to detect CWD in live deer. Instead, brain matter in hunter-killed and road-killed deer are tested, as is that of deer that die on captive deer farms.

In late 2019, Dr. Frank Bastian, a neuropathologist then at Louisiana State University, announced that he had discovered that CWD is not caused by prions, but rather by a previously unknown bacterium. He said if he had financial support, he could develop a vaccine for CWD and that mass killings of deer would no longer be necessary.

But wildlife agencies have not embraced that theory. In response to Bastian's claim, the Association of Fish and Wildlife Agencies said it supports "the overwhelming scientific consensus that chronic wasting disease is caused by mutated proteins known as prions."

Male deer are the most susceptible to getting CWD because they tend to travel the farthest and their social behavior brings them into contact with more deer. Killing male deer, therefore, is believed to be more effective in controlling transmission. The management goal of protecting bucks until they have bigger racks, as has been the case in Pennsylvania, will likely be abandoned in infected areas.

How bad could it get? Wisconsin was the first state east of the Mississippi to have CWD, beginning in 2002. Despite culling efforts, it is now in 32 of 72 counties and hunters that venture out in CWD hotspots have a nearly 50% chance of shooting an infected deer.

In Colorado and Wyoming, an estimated 40% or more of free-ranging cervids in certain hotspots contract the disease and die from it.

Help needed from hunters

Cooperation from hunters will be absolutely essential for CWD to be constrained, say game managers in the Bay states.

"The only hope for making things better is for hunters to help wildlife managers," Richards said, but he added that the effort is undermined by misinformation and disinformation. "There are a lot of ulterior theories on the internet. Many believe there is no risk to deer or humans."

And killing deer merely to eliminate them, not eat them, doesn't sit well with many hunters either, he said. "Hunters are unlikely to kill more deer if you can't eat them," Richards said.

In Maryland, a ban on feeding and baiting deer was withdrawn in one disease management area "to keep hunters engaged," Eyler noted.

But wildlife officials from the Bay states say that, so far, hunters are stepping up to the plate.

"We can be heroes to society," said Kip Adams, a Pennsylvania resident and wildlife biologist with the National Deer Association.

Despite gloomy trends, Bay state game officials hold out hope that CWD can be minimized, if not eliminated.

"Is CWD the end of deer hunting? I'm going to say no," Adams said. "We must be vigilant to minimize transmission [in] existing areas and to prevent introduction into new areas. But I think we can beat this."

"The data don't look promising right now," Richards said, "but I would argue you can turn it around — but it will not be quick." ■

If you have questions about a specific hunting ground or want to report an unhealthy-looking or behaviorally abnormal deer, here are the numbers to call:

- *Maryland, 410-260-8540*
- *Pennsylvania, 833-INFOCWD (463-6293)*
- *Virginia, 855-571-9003*
- *West Virginia, 304-558-2771*
- *Virginia and Pennsylvania offer hunters free testing for CWD through drop-off head bins set up in disease management zones. For hunters who kill a deer outside the controlled areas, both states offer testing at affiliated labs if the hunter is able to drive the head to the lab. For testing information in Pennsylvania, visit padls.agriculture.pa.gov. In Virginia, visit dwr.virginia.gov/wildlife/diseases/cwd.*

Machicomoco State Park puts VA Indians at center of story

Site interpretation honors a history 'held hostage'

By Jeremy Cox

Machicomoco State Park opened in April 2021 as Virginia's 40th state park, the first to focus on Native American history. (Jeremy Cox)

When Machicomoco State Park opened April 16, it was ordained as Virginia's 40th state park. But in Stephen Adkins' eyes, it was the first — the first to fully commit to sharing the history of his people.

"Our Native culture has been sidelined, and the dominant culture story has just been repeated and repeated," the Chickahominy Tribe chief said during a dedication ceremony that day for the park, with Gov. Ralph Northam standing just feet away. "A history that's been held hostage for so many years, Gov. Northam, [that] you've helped to ransom."

To be sure, other state and federal holdings in Virginia touch on indigenous history — for example, the complex struggle between English colonists at Jamestown and the Native inhabitants of the area or the role of Indian fighters at the Yorktown battlefield. But none of those places tell this history completely or from the viewpoint of Virginia Indians, officials now acknowledge.

"Historic justice acknowledges that we have done an injustice by not fully honoring or telling a people's story," Northam said during his turn at the lectern. "And that is certainly true with regard to Virginia's Indians."

The 645-acre property is flanked by a mixture of farmland and rural subdivisions on the north bank of the York River, known to Native Americans as the Pamunkey. Its centerpiece is a corrugated-roofed interpretative pavilion designed to call to mind the longhouses that were the indigenous peoples' primary type of dwelling.

The walkway leading to and through the structure is embedded with engraved stone pavers that take visitors through a timeline of American Indian history in the region. Both elements overlook the York.

In the early 1600s, when the first colonists arrived in Virginia, the people who lived on what is now the Gloucester County parkland were part of the sprawling Powhatan Confederacy, a coalition of approximately 30 tribes that stretched from Tidewater Virginia across the Chesapeake Bay to the Eastern Shore. Archaeological digs conducted during the park's recent development show ample evidence of Native activity on the property.

Hence the name dreamed up for the park: Machicomoco, an Algonquian word meaning "special meeting place."

Left to right: Clyde Cristman, director of Virginia Department of Conservation and Recreation; Stephen R. Adkins, chief of the Chickahominy Tribe; Gov. Ralph S. Northam; and Heather Richards, Virginia state director of The Conservation Fund, celebrate the opening of Machicomoco State Park. (Courtesy of Virginia State Parks)

Subdivision plan averted

But if it weren't for an economic downturn and the efforts of preservation-minded local residents, there might have been no place for modern visitors to meet at all, according to the park's advocates.

For years, the acreage was known as Timberneck Farm and belonged to the Catlett family. Their farmhouse, built around 1800, still stands on the property not far from the main pavilion. In 2007, the land was sold to a residential developer, who began carving it into 50 large-lot housing parcels. About 4 miles of roads and an accompanying bike trail were paved before the Great Recession the next year put a halt to construction.

By 2017, the housing market had revived. Timberneck was weeks away from being sold to the highest bidder when local conservationists contacted the Arlington-based Conservation Fund, which seeks to protect land while boosting the economy. The nonprofit bought the land for $15 million, giving state officials time to put their park plans in place.

"Can you imagine houses all over that place?" asked Anne Richardson, chief of the Rappahannock Tribe. "That would have been horrible."

Funding for the park's development came from an unlikely source: Dominion Energy, which paid $25 million to the state as mitigation for a controversial transmission line project across the James River.

The landscape architecture firm of Nelson Byrd Woltz, whose projects have ranged from the Flight 93 Memorial in Pennsylvania to the Lynchburg, VA, riverfront revitalization plan, was hired to design the facility. Because of its proximity just 10 miles downriver from the ancient town of Werowocomoco, the most important place in the Powhatan culture, the parkland was pursued as a showcase for Native American history.

Meanwhile, the National Park Service is working to develop 264 acres of land at Werowocomoco into a separate park.

Ideas gathered from tribes

Machicomoco's planners worked closely with historians as well as members of several Virginia tribes — the Chickahominy,

Eastern Chickahominy, Mattaponi, Upper Mattaponi, Monacan, Nansemond, Nottoway, Cheroenhaka (Nottoway), Pamunkey, Patawomeck and Rappahannock — to get the details right.

"This was a story that could be told from the Algonquian people and something not seen from other parks in this area," said Jen Jessup, the project's manager from Nelson Byrd Woltz. "It's a different perspective."

One of the most compelling contributions from the Native partners was the suggestion of using Algonquian words in the interpretive signs and other materials, said Thomas Woltz, the firm's owner. In the dominant U.S. culture, nature is almost an afterthought, he said, adding: "We've lost our way in the modern world when we separate those two things. These words give you a glimpse into that sensibility."

One of the placards in the longhouse structure displays the names of the Native peoples' five seasons of the year and what they were doing during those times. For example, from *Cattapeuk* (early spring) through *Taquitock* (early fall), they would fish for sustenance.

Although Native communities harvested billions of oysters across the Chesapeake region, archaeological evidence shows that the size of the oysters and the quantity of them in ancient trash piles didn't decline over time, showing that harvest levels were sustainable.

By 1607, when the English arrived, the Powhatan chiefdom numbered about 15,000 people among approximately 32 tribes. They lived in small towns on the region's many rivers. Machicomoco does not appear to have been part of these communities, but a vast collection of oyster discards and other food debris discovered along its waterfront during recent digs suggests the area was used by Native people as far back as about 4,000 years ago, officials say.

Terry Sims, manager of Machicomoco State Park in Virginia, examines a circular stone map showing where scores of Native American communities once existed in the Chesapeake Bay region. (Jeremy Cox)

Machicomoco was originally scheduled to open last year — the last brick in the timeline walkway still states "2020" on the top line and below it "Machicomoco Park opens" — but the COVID-19 pandemic delayed it until this past spring.

The park contains many of the amenities that parkgoers expect: a 30-site tent and RV campground, a kayak and canoe launch, restrooms and a park office. The roads installed by the developer were retained for vehicle traffic, and the bike path is now part of a circular, 6-mile trail system within the park. A swath of the central portion of the park continues to be farmed. During a visit in early May, neat rows of corn sprigs gave hint to the coming bounty.

Gray pavers like this one lead visitors to Machicomoco State Park through a physical timeline of Virginia's Native American history. (Jeremy Cox)

An 'inclusive and serene' place

The park hits all the right notes, said Richardson of the Rappahannock Tribe.

"We just wanted it to be really inclusive and serene. And we wanted the [historical] information to be there," she said. "It causes the next generation to think about, 'When you have places that look like this, do you really want them to be developed?' "

Richardson looks forward to inviting all 267 members of her tribe for a special tour of the park once the coronavirus pandemic has fully subsided. And she can see hosting powwows or other ceremonies at the park as well

"It's really the first place that we've had that we could do that," she said.

Machicomoco is part of a larger effort by Virginia State Parks to be "more inclusive" with the stories it presents to the public, said Melissa Baker, the agency's director.

"There was a gap for us to tell the story of the Native Americans that we hadn't been telling yet," she said. "I feel it really does honor the tribes of Virginia."

Virginia State Parks officials say they will begin drafting a 10-year master plan for the park with input from the public some time soon. That document will determine what further amenities may be installed and how other elements, such as the farmland, will be used.

As he gazed across the land, Adkins said the park represents the kind of places where Indians hunted, fished and cultivated the earth — and where the state's 11 recognized tribes continue to do so.

"This offers us a foothold that ensures our story continues to be told," he said. ■

MACHICOMOCO PARK

3601 Timberneck Road, Hayes, VA

- Entrance fee: $5 for passenger vehicles
- Overnight facilities: 27 vehicle-camping and hike-in campsites are available, as well as three yurts. Call 1-800-933-PARK to make a reservation.
- Website: dcr.virginia.gov/state-parks/machicomoco

Environmental groups find 'forever chemicals' in mosquito spray

Plastic containers suspected source of contamination

By Timothy B. Wheeler

As mosquito season starts once again, there's reason to wonder if the annual spraying of Chesapeake Bay watershed communities to control the pesky insects could also have put humans at risk by exposing them to "forever chemicals."

A pair of environmental groups reported recently that high levels of per– and polyfluoroalkyl substances, or PFAS, were detected in a sample of a widely used mosquito insecticide that is sprayed every spring and summer in the streets of 2,100 communities across Maryland, as well as in other states.

Public Employees for Environmental Responsibility and the Maryland Pesticide Education Network announced in late March that a sample of Permanone 30-30, used by the Maryland Department of Agriculture for statewide mosquito control, contained 3,500 parts per trillion of perfluorooctanoic acid (PFOA). It is one of the thousands of PFAS compounds known to be in use in manufacturing and commerce.

The sample tested also had about 630 ppt of another PFAS compound, hexafluoropropylene oxide dimer acid (HFPO-DA), a PFOA alternative trademarked as GenX.

PFAS remain largely unregulated in the United States, though the U.S. Environmental Protection Agency has set a "lifetime health advisory" threshold of 70 ppt for PFOA. European regulators have expressed concern about the safety of HFPO-DA and its variants, citing research that shows they also affect human health and the environment.

Environmentalists say that because PFAS persist and build up in bodies when ingested, finding the chemicals in pesticides being sprayed throughout communities is particularly troubling. Studies have linked PFAS exposure to liver damage, thyroid disease, developmental issues, reduced fertility, high cholesterol, obesity, hormone suppression and cancer.

"Spraying millions of acres with a chemical that does not break down in the environment, and for which there is no safe means of disposal, is beyond nonsensical," said Ruth Berlin, executive director of the Maryland Pesticide Education Network.

Maryland annually sprays 2,100 communities in 16 counties to kill adult mosquitoes. The state switched pesticide brands this year after high levels of two PFAS compounds were found in the insecticide the state has used in the past. (Edwin Remsberg/Maryland Department of Agriculture)

PEER executive director Tim Whitehouse called on the EPA, which regulates pesticide content, to test all mosquito sprays for PFAS.

On May 7, EPA spokesman Ken Labbe said the agency "is currently reviewing the data from PEER on Permanone 30-30 and will provide information and guidance on next steps expeditiously."

Permanone 30-30, produced by pharmaceutical giant Bayer Corp., had been used in the past in Maryland's mosquito control program. Every year beginning in May, truck-mounted "foggers" spray residential and recreational areas in 16 counties.

Last fall, PEER also reported finding PFOA in samples from Massachusetts of another widely used mosquito-control pesticide, sold under the brand name Anvil 10+10, which is made by Clarke.

After confirming the results from Massachusetts, the EPA in January said it had determined that the PFAS had leached from fluorinated plastic containers used to store and transport the pesticide. Plastic and other containers for holding chemicals are often treated with fluorine gas to prevent vapors from escaping or to keep oxygen from getting in.

It's unclear how fluorination of containers produced PFAS compounds in the pesticides, but the EPA said it was looking into it. In the meantime, the agency has asked states with existing stock of Anvil to discontinue its use, and the manufacturer voluntarily halted shipments in those plastic containers.

Now, with PFAS reported in a second pesticide, Labbe said the EPA would be working "with states and registrants to test additional pesticide products and the containers they are stored in for PFAS."

Before PEER reported it had found PFAS in Permanone, the EPA had already announced that it was testing different brands of fluorinated containers to see if they contain or leach PFAS. It also said it was encouraging pesticide manufacturers to consider alternative packaging, such as metal or nonfluorinated plastic.

The EPA allows some PFAS to be used as either an active or inert ingredient in pesticides. But Labbe, the EPA spokesman, said the agency has determined that the pesticides in question did not themselves have any active or inert ingredients with chemical structures similar to PFOA, or the GenX alternative. He said the agency is still checking for the possible presence of any of the thousands of other PFAS compounds.

Susan Luke, a spokesperson for Bayer's crop science division, said by email that the two PFAS compounds found by PEER are not ingredients of Permanone and that the pesticide is not shipped by Bayer in fluorinated containers.

"We are actively working with the EPA to better understand this topic and the relevance to Permanone 30-30," Luke added, "including looking into the chemical makeup of the lids and other components of the product containers."

In the meantime, state and local agencies in the Bay watershed are adjusting their mosquito control programs for this year.

In Pennsylvania, the Department of Environmental Protection ordered county mosquito programs to stop using Clarke's Anvil 10+10, according to DEP spokesman Jamar Thrasher. The department also tested non-Clarke pesticides in plastic containers "and found those products to be free of PFAS contamination," he said by email.

In Maryland, the ag department has likewise has switched to two other insecticides for truck-based spraying "out of an abundance of caution," said MDA spokesman Jason Schellhardt. State officials, he said, have been assured by the companies involved with the replacements, Biomist 30+30 and Permasease 30-30, that measures have been taken to eliminate exposure to fluorinated containers.

In Virginia, mosquito control is largely a local responsibility. Virginia Beach, the state's largest municipality, uses a formulation of Biomist. According to Phil Meekins of the public works department, Clarke shipped the city a new batch of insecticide in metal barrels, cost-free, to replace the 25 plastic barrels worth it had on hand.

Karen Larson, Clarke's vice president for product innovation and government affairs, said it stopped distributing all of its pesticide products in fluorinated containers. The company also has offered to take back all of its products in fluorinated plastic barrels and jugs and replace them in non-fluorinated packaging, Larson said by email.

Kyla Bennett, PEER's science policy director, said her group has not tested Biomist for PFAS. The Permanone tested came from a metal container, she said, but it's possible the insecticide had been previously stored or shipped in a larger fluorinated plastic container.

But after finding PFAS in two pesticides, she said in an email, "I am not convinced any pesticide is PFAS-free until I see tests from an independent lab [with appropriate detection limits]." Otherwise, she warned, "we may be jumping from the frying pan into the fire." ■

CHESAPEAKE CHALLENGE

— Kathleen A. Gaskell

Flatter Chatter

A

B

There are more than 700 species of flatfish, several of which are regularly found in the Chesapeake Bay: hogchokers, blackcheek tonguefish, windowpanes and summer, winter and smallmouth flounders. (Bay whiffs and fringed, fourspot, yellowtail and southern flounders are "rare" and "uncommon" visitors to the Lower Bay.) Can you match the listed flatfish to their descriptions? Answers are on page 39.

Blackcheek tonguefish
Hogchoker
Smallmouth flounder
Summer flounder
Windowpane
Winter flounder

1. I'm related to turbots and can grow up to 18 inches long. I have spots on my body and fins, and I'm so thin that parts of me are almost transparent. You can find me year-round in shallow water with sandy and muddy bottoms, most often in the Lower Bay.
2. At 4.5 inches, I'm small enough to be eaten by winter flounder. I have large scales but a small mouth for my body size. I'm olive brown with dark splotches. I'm common in the Lower Bay's muddy bottoms and channels.
3. A member of the sole family, I'm one of most abundant fish in the Bay. I am 6–8 inches long, a blotchy muddy brown with narrow stripes across my back. I can be found from the Bay's mouth to tidal freshwater. I'm supposedly quite delicious but my rough scales and abundance of bones make me inedible. This opinion is shared by the livestock that farmers tried to feed me to.
4. I am olive green with reddish brown spots and the thickest fish in this group. In the Bay, I can grow up to 16 inches long but I'm limited to small prey because of my little mouth. I am good eating (even my roe). My young hang around in muddy or vegetated bottoms during the summer while adults head for cooler, deeper water, returning when temperatures get colder. I was once caught near the mouth of the Susquehanna River, but I'm becoming more rare in the Bay. Some say that I might become extirpated here as temperatures rise.
5. Despite being common, I'm rarely seen. My 8-inch elongated body tapers sharply at the tail. I have a black splotch on the cheek and no pectoral (side) fins, and my three other fins are connected and completely surround the body. Instead of hiding in the bottom of a depression, I press my belly against one of its sides.
6. I'm also called a fluke, and I'm an important commercial catch and sportfish. Adults of 30 inches or more are found in the Bay's deeper open waters in summer. My back has scattered spots.

Icon: The summer flounder, a left-eyed fish, eats shrimp, squid, worms, crustaceans and other fish. (clipart.com)

A. The winter flounder, a right-eyed fish, eats small crustaceans and worms. (National Marine Sanctuaries/ Public Domain)

B. The fossil, Amphistium paradoxum, lived 50 million years ago and is an early relative of flatfish. Unlike modern flatfish, which have both eyes on one side of their head, one of the eyes of this "transitional" fossil is located at the top-center of its head. (Totodu74/ Wikimedia Commons)

C. The hogchoker, a right-eyed fish, eats worms and crustaceans. (Clinton & Charles Robertson/CC BY 2.0)

D. The blackcheek tonguefish, a left-eyed fish, eats small crabs, shrimps, worms and copepods. (Rob Aguilar/Smithsonian Environmental Research Center)

D

C

We're flat and that's a fact

A body like a squashed pancake doesn't lead to automatic membership in the flatfish fraternity. For one thing, flatfish skeletons are made of bone and not cartilage (sorry, rays). And both eyes are located on one side of its upper head (sorry, mola mola). Here are other features that make a flat fish a flatfish.

We flatter ourselves: A flatfish isn't born flat. Its eyes are located on each side of its head, and it swims in the water column. Within a week or two, the larva moves to the bottom as metamorphosis begins. Its entire skull twists as one eye migrates to the other side until it is close to the other eye. The body turns flat in a couple of weeks. The skin changes colors. The mud-facing side becomes lighter while the water-facing eye side becomes darker. It's also at this time that the larva switches from pigging out on plankton to become a crustacean-crunching, fish-feasting adult predator. This new diet requires an adaptation in its gastrointestinal system.

Fintastic finesse: Flatfish have one long dorsal fin and a long anal fin, each stretching from the tail to near their head. This helps them swim sideways. These fins are ray fins — webs of skin held by bony spines — that the fish can bend to create a hollow in the sea floor where they bury themselves. They can also scrunch up their ray fins to push them along the bottom.

Lying low: Flatfish, as a rule, are ambush predators. When they cannot bury themselves, but their nervous system can change their skin color to blend in with their surroundings, from sand and mud to pebbly bottoms. That's called dynamic camouflage. They spend most of their time waiting for prey to come to them: small invertebrates and crustaceans and other fish. Their camouflage ability also hides them from predators that find flatfish as tasty as most humans do.

Eye-popping peepers: How does a buried fish know when prey is passing by? Their protruding eyeballs can rotate 180 degrees like periscopes. Flatfish species are either right-eyed or left-eyed, depending on which eye migrates. If the left eye moves right, it is a right-eyed fish. If the right eye joins the left eye, it is a left-eyed fish.

Havre de Grace waterfront draws waves of visitors

By Ashley Stimpson

The First United States Congress had been in session for six months when it passed a resolution to establish a permanent capital. It was 1789, and members of the legislative body, gathered in New York City, began mulling over "a convenient place" that could serve not just as a seat of government, but also as a symbolic heart of the young country, uniting the eastern seaboard with the ever-expanding western frontier.

Benjamin Goodhue of Massachusetts suggested Havre de Grace, a hamlet perched at the confluence of the Chesapeake Bay and Susquehanna River — the latter largely considered to be the "highway to the West." Virginia representative Harry Lee urged the Congress to consider a place farther south, more geographically central. The Potomac River, he said, was just as significant a thoroughfare as the Susquehanna.

Days later, a vote took place, resulting in a tie between Havre de Grace and (what would become) Washington, DC. When Speaker of the House Frederick Muhlenberg cast the tie-breaking vote, the fates of the two locations were sealed. The District of Columbia would become the epicenter of power, politics and traffic. Havre de Grace would, well, stay Havre de Grace.

But Havre de Grace also remained a confluence — not just of river and Bay, but of cultures, industries and American pastimes. Here, European settlers traded with the Native communities that had thrived for millennia along rich floodplains; people escaping slavery on the Underground Railroad stood at the precipice of freedom; and, fast-forwarding to now, hunters and watermen clash with environmentalists over the use and management of the ecosystem.

A visit today reveals the many ways that Havre de Grace has been continually shaped and reshaped by the water that laps its shores and by the myriad peoples who have called it home.

Before it was a capital city contender, Havre de Grace was called Harmer's Town. But when a visiting Marquis de Lafayette mentioned that the town reminded him of a charming French seaport called *Le Havre-de-Grace,* residents honored the Revolutionary War hero by incorporating under that name in 1785. (No need to channel your high school French when in town. Locals pronounce it *HAV-er-dee-grace*.)

While the quiet charm Lafayette admired is still on display, Havre de Grace also feels very much like the busy crossroads that garnered the Founding Fathers' attention. During my visit on a hot day in May, cars poured down Market Street, kayaks and stand-up paddleboards strapped to their roofs. Motorboats roared through the Bay. Trains rumbled over bridges. Joggers pushed strollers along the riverside promenade, and weekend revelers spilled from seafood shacks and antique shops onto crowded sidewalks.

While there are many modes to see the sights, Havre de Grace is a pedestrian's paradise. To get from one end of town to the other only requires a trek of about 1.5 miles, a pleasant walk punctuated by museums, murals and gorgeous vistas. To make it simple, the city has continued to improve its self-guided walking tour along the Lafayette Trail, which meanders past just about every attraction Havre de Grace has to offer. Visitors who would like a narrated experience can download the DISTRX app and learn about each of the 57 stops along the route.

One of those stops — and a good place to begin digging into the area's history — is the Havre de Grace Maritime Museum and Environmental Center. Among the museum's permanent exhibits, *The John Smith Trail and the Susquehannocks* is particularly enlightening for visitors curious to know what the Upper Bay and Lower Susquehanna looked like before European settlement.

The Susquehannock were a confederation

Photo: The Concord Point Lighthouse and skipjack Martha Lewis *share the waterfront in Havre de Grace, MD. (Dave Harp)*

of tribes that occupied scattered villages of longhouses on the banks of the Susquehanna River, from New York to Maryland. Historians estimate that during the 1500s, they numbered between 5,000 and 7,000. Even after Europeans arrived, the Susquehannock were able to maintain their influence in the area, becoming the only Native group to develop relationships with all four colonial settlements, trading with the English, Dutch, French and Swedish.

In 1608, English explorer John Smith traveled north from the Virginia colony of Jamestown and met with Susquehannock chiefs during one of his famous expeditions on the Bay. From the shore of Havre de Grace, visitors can still see the site of this meeting: Garrett Island, a 198-acre, 100-foot-high land mass rising from the Susquehanna's dark green water.

Two hundred years later, a journey north was the difference between liberty and bondage for many people fleeing slavery through the network of routes and safe houses known as the Underground Railroad. Last year, the Maritime Museum opened its newest exhibit, *Other Voices of Freedom,* to "reveal the importance of waterways and their relationship to the quest for freedom," according to a pamphlet I picked up at the ticket counter.

An intriguing combination of art and ethnography, the exhibit features evocative wire-mesh sculptures by African American author and artist Anyta Thomas, as well as compelling first-hand accounts of escape, including that of Fredrick Douglass. Douglass, when describing his ferry crossing of the Susquehanna at Havre de Grace, compared his pounding heart to a "fox or deer, with hungry hounds on his trail." Other panels illuminate the import of local waterways, where those on their way to freedom crouched in

rowboats or hid inside crates aboard barges.

During the same time, Havre de Grace became an important stop on a different kind of thoroughfare. In 1840, the Susquehanna and Tidewater Canal opened to boat traffic, facilitating the shipment of coal from the central portions of Pennsylvania to population centers like Philadelphia and Baltimore. Visitors can learn more about the 45-mile canal and the impact it had on Havre de Grace at the impressively maintained Lockhouse Museum.

This spare, red brick house provided a living space to the lock tender as well as an office for the toll collector. When I visited, a docent named Tom explained that during the canal's busiest years, Havre de Grace became a "truck stop on water," where men from boats either caught up on sleep at local inns or cavorted in taverns and casinos. The museum features compelling exhibits and artifacts, including a to-scale model of the canal lock (water and all) and canal scrip, money that could be used on the journey. Outside, visitors can peer down into the preserved canal and take in an unbeatable view of the half-mile-wide mouth of the river as it meets the Bay. The area, known as the Susquehanna Flats, boasts some of the richest, most diverse underwater vegetation in the entire Bay system.

This unique habitat made Havre de Grace a prime base for those chasing wild game and fish. During the last century, the bounty made the city a major player in the seafood industry as well as a premiere destination for anglers and waterfowl hunters.

At the Havre de Grace Decoy Museum, exhibits and relics galore tell the story of one of the nation's most singular hunting traditions: waterfowl decoys. Inside the still, reverent air of the museum, I could almost feel the concentration it takes to carve and paint the incredibly lifelike wooden birds, some so detailed they look like taxidermy.

Museum board member Jim Carroll, who gave me a tour of the space, calls decoy making "a uniquely American, pure artform." Indeed, many decoys on display were never meant for water-based chicanery, created instead to adorn mantels and bookshelves; visitors would be forgiven for mistaking the Decoy Museum for an art gallery. The museum also depicts the environmental movement of recent decades, which responded to the alarming decline of waterfowl, and the increasing tension between those who made their living on the water and those who sought to protect it.

In between these many attractions, I wandered through the grounds of the Concord Point Lighthouse — the Bay's second oldest — and the city's new living shoreline project, a three-acre, formerly industrial lot that has been restored with native plants and a natural stormwater filtration system.

There, I marveled at the water's latest gift to Havre de Grace — the flocks of boaters, sunbathers and seafood enthusiasts who spend their weekend in a place where tourism revenue brings in $1 million a day.

The city may have missed its chance to become the nation's capital, but in doing so Havre de Grace got the chance to become something even better — itself. ■

Ashley Stimpson is a freelance writer based in Maryland.

PLAN A TRIP TO HAVRE DE GRACE

Visitor Center
explorehavredegrace.com

Maritime Museum
hdgmaritimemuseum.org

Lockhouse Museum
thelockhousemuseum.org

Decoy Museum
decoymuseum.com

Concord Point Lighthouse
concordpointlighthouse.org

Top photo: The waterfront promenade in Havre de Grace, MD, stretches along the Chesapeake Bay between the Concord Point Lighthouse and Tydings Park. (CMatt Rath/ Chesapeake By Program)

Bottom photo: The Lockhouse Museum in Havre de Grace tells the story of the Susquehanna and Tidewater Canal. (Mike Land/Chesapeake Bay Program)

An egret perches atop a rotting skiff in a Tangier Island, VA, marsh. (Dave Harp)

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Ground fog obscures a clear cut area along the Nanticoke River on the Delmarva Peninsula. (Dave Harp)

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Algae swirls in a farm ditch leading to Marshyhope Creek, a tributary to the Nanticoke River on the Delmarva Peninsula. (Dave Harp)

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A peregrine falcon is perched near its nest on the Choptank River Bridge at Cambridge, MD. (Dave Harp)

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Military veterans constitute a new class of sustainable farmers

By Jake Solyst

One Saturday morning, a group of trainees reported bright and early to a 6-acre property off the Potomac River. The participants had at least one thing in common: They are military veterans. But the group wasn't there for rigorous drills and combat training. Instead, they were there to learn about sustainable farming.

At its farm in Alexandra, VA, the Arcadia Center for Sustainable Food and Agriculture helps military veterans achieve their agricultural dreams through its Veteran Farmer Program. Here, participants are given the education and support needed to get a farming business off the ground, while also learning how to most responsibly steward their land.

"I love it here," said Monica Newman, a participant in Arcadia's Veteran Farm Fellowship Program. "It's just so much fun learning everything and becoming in tune with your surroundings and the plants."

Newman is a former controlman in the U.S. Navy and, like other veterans, has been looking for a meaningful and rewarding profession since retiring from the service. She enrolled in Arcadia's fellowship program during the COVID-19 pandemic after being inspired by gardening in her backyard. Newman is learning everything from soil health and stormwater runoff to the business side of operating a farm.

Newman's dream is to start a community-supported agriculture program. As a fellow, she is eligible for a quarter-acre plot at the farm after she completes her apprenticeship, which includes ongoing training and support.

"I'm definitely going to do that next year," Newman said. "I have a five-year goal where I'm going to have my own farm, and this is just step one for me."

The Veteran Farmer Program, based at the National Trust for Historic Preservation's Woodlawn-Pope Leighey Estate, is designed for people like Newman, who, due in part to their military experience, are determined, hard-working and in need of a new duty.

The program has three levels of training: a 12-month Reserve Program in the basics of farming; a Veteran Farm Fellowship for state-certified, on-the-job training; and the Veteran Farm Incubator, which helps veterans launch their own mini farms, try out equipment and practice growing techniques for up to three years. The program has helped 120 military veterans since forming in 2015.

Military veterans Monica Newman, left, and Joel Fudge plant onions at the Arcadia Center for Sustainable Food and Agriculture in Alexandria, VA. The two are studying and working full-time as part of Arcadia's nine-month Veteran Farm Fellowship Program. (Will Parson/Chesapeake Bay Program)

Central to all of the programs is sustainability, which the organization sees as a three-legged model of environmental and financial sustainability and social justice. Farmers are taught not only how to reduce pollution on their property and preserve soil quality, but how to do it in a way that is financially beneficial.

"Things like overspraying with fertilizer or chemicals, it's expensive to do it," said Matt Mulder, director of operations at Arcadia. "We try to make the argument with [the farmers] that it's both productive and better for the environment, but it's also better for them."

Much of the work on the farm is done by hand without the use of machinery that can damage soil and burn more fuel. Farmers do little to no tillage, each building is solar powered and composting is done with the help of the company Veteran Compost, which is also run by a military veteran.

"The way we like to see it is that we're stewards of this land," said Joel Fudge, a Marine veteran enrolled in the program. "We want to protect that creek. We want to store as much water as we can. We're not using typical fertilizers that are going to cause algae blooms and make anoxic environments."

Like Newman, Fudge wants to run an environmentally sustainable farm. With a degree in environmental science from Brown University, he is training at Arcadia to supplement his knowledge with hands-on experience. There, Fudge and others can practice sustainability without having the burden of producing a high yield.

"It's just a really beneficial growing environment," Fudge said.

The third leg of Arcadia's mission, social justice, is carried out by growing produce for Arcadia's Mobile Markets, which bring fresh, healthy food at affordable prices to underserved neighborhoods in the District of Columbia. All of the excess produce is donated to local food pantries. The community-driven work, combined with the sustainable mindset, can be a gift to veterans who, after retiring from military service, often want to be a part of something meaningful.

"We've had veterans come in who look at this as continuing their service," Mulder said. "They're serving and protecting the environment, and they're feeding people."

The mental health benefits of being outside and working the farm are also a factor, especially for people who've experienced high-intensity, and at times traumatic, situations.

"Something about working with the soil was just cathartic for me," Newman said. "I just felt better about myself."

Throughout the Chesapeake watershed, opportunities are growing for military veterans to get into farming. According to Arcadia, the average U.S. farmer is 58 and nearing retirement. Meanwhile, the U.S. Department of Agriculture estimates that the nation will need 700,000 new farmers to replace them over the next two decades. Organizations like Arcadia are looking to bridge that gap while instilling the best practices needed to be a farmer today.

In Pennsylvania, the Rodale Institute trains military veterans in organic agriculture. The organization has taught veterans from Pennsylvania, Maryland, Virginia and DC. Some veterans have trained at both the Rodale Institute and Arcadia.

The Pennsylvania Veteran Farming Project also serves as a network of veterans, military members and their spouses who farm and operate agribusinesses.

In Baltimore, the nonprofit TALMAR focuses on the mental health benefits of farming, offering horticulture therapy programs for those who served in the military.

And in the Bay watershed, where agriculture is still a significant source of pollution, the benefits of having farmers trained in and dedicated to sustainable agriculture is clear.

Newman, Fudge and the other veterans at Arcadia are helping to start that trend. They say that there are plenty of other veterans who are ready to continue serving their country this way.

"I know other farmers like myself. We want to make change, we want to help, we want to do more," Newman said. ■

Jake Solyst is the Chesapeake Bay Program web content specialist at the Alliance for the Chesapeake Bay.

Happy water trails, Allan Quant, you will be missed

By Cindy Adams Dunn & Brook Lenker

The region lost a champion for the Chesapeake Bay in November 2020, when Allan Quant of Lewisburg, PA, succumbed to cancer after a courageous, multiyear fight. His beloved Susquehanna River will seem more empty without his wise, endearing presence.

A veteran of the Bucknell University Outing Club, Allan spent two years at the Nantahala Outdoor Center in North Carolina mastering skills as a paddler, guide and wilderness sage.

In 1978, he started a mechanical services business called Ironwood, but in his spare time ran forest trails and competed in local biking, canoeing and running races. In 1987, Allan and his dear friend, John Capwell, won the U.S. Canoe Association's National Championship in marathon canoeing.

Allan Quant's knowledge of the outdoors ran deeper than the depths of the Bay, and his abilities to instruct were nothing short of collegiate.

In 1992, Allan landed the role of providing on-the-water safety for the second annual Susquehanna River Sojourn — a weeklong, paddle-and-camp adventure for people of all ages and skill levels with stops along the way for educational talks and tours. Thus began 24 years of providing safety services for scores of these river awareness trips on multiple rivers. Through sojourns and shorter trips, Allan introduced thousands of paddlers to the enjoyment of waterways from Canada to Florida.

Sometimes the significance, the *exquisiteness*, of a thing is only realized in its absence. The first Susquehanna Sojourn in 1991 met its objective, but organizers discovered an urgent need to address safety and, more so, help participants figure out how to make their vessels go downstream. An experienced hand in paddling logistics was sorely needed. The details of moving more than 100 people — with varied levels of paddling and camping expertise — from point to point on the East Coast's largest river were mind-boggling. Add in meals, education and dignitary events, and you need a water-savvy magician. During the latter days of the first sojourn, a most serendipitous recommendation came forth: "You need Allan Quant." Soon, the Alliance for the Chesapeake Bay, the organizer of the voyage, would discover that Allan wasn't merely the magician they hoped for, but a one-of-a-kind riverine wizard.

The next year, Allan and Betsy Quant led the sojourn on the West Branch of the Susquehanna. With their deep experience, problem-solving mindset and good-natured but firm leadership, they educated and motivated the sojourners. The event improved. A tradition began that lasted for more than two decades and, as is said, the rest is history.

Coordinating these events afforded the pleasure of working closely with Allan. He exercised a calm that permeated a group and a jolly, can-do attitude that encouraged even the most recalcitrant curmudgeon to try a little harder. His knowledge of the outdoors ran deeper than the depths of the Bay, and his abilities to instruct were nothing short of collegiate. Taller than 6 feet, 5 inches, his lean, towering presence amplified these qualities. He was a giant, literally and figuratively.

Allan served on the Citizens Advisory Committee to the Chesapeake Bay Program and developed a successful local outfitting business, Canoe Susquehanna, serving students and recreationalists with signature care and patience while carrying on other personal and professional ventures.

In 2018, under a pavilion on a rainy day at the Loyalsock River sojourn, Allan and Betsy announced they were selling their outfitting business and retiring from leading trips. Allan needed to focus on cancer treatments. Even then, acknowledging the cessation of his lifetime's river work, Allan had a positive attitude and shared belly laughs about the trips of the past and what they meant to all of those involved. Somehow what he was facing didn't take away from the joy and significance of his calling — to connect thousands to our waterways and discover the joys of paddling.

Paddling guide Allan Quant, shown here in 2009, introduced many people to the joys of the Susquehanna River, especially through his leadership on the Susquehanna Sojourns. (Cody Goddard)

Like the brave captain at his core, Allan weathered a storm of treatments and relentless peaks and valleys in his battle against cancer. Despite his tenacity, he eventually acceded.

No one knows what journey awaits the departed, but Allan's adventures while in our presence inspired and uplifted. They showed places worth protecting and the many wonders of a watershed. Only in his absence do we begin to realize the full contributions of his life so well-lived.

At a virtual remembrance last fall, friends gathered and shared their recollections, revealing tale after tale of Allan's profound humanity: a neighbor who helped his neighbors; a farmer who cherished his land; a husband and father who loved his family; and yes, a man who adored rivers.

It's not too far a stretch to imagine that the rivers, too, reciprocated his affection. The surfaces seem different without the strong, nimble, strokes of a most magnanimous grinning explorer. Rivers remember. And grateful hearts never forget.

Godspeed, Allan. ■

Cindy Adams Dunn is secretary of the Pennsylvania Department of Conservation and Natural Resources. Brook Lenker is executive director of the FracTracker Alliance. Both served with the Alliance for the Chesapeake Bay and in other capacities organizing Susquehanna Sojourns and encouraging river stewardship activities. In these roles, they developed a lasting friendship with Allan Quant and his family.

Shifts in underwater grasses impact humans as well as wildlife

By Briana M. Yancy

Last year, I worked for the Chesapeake Conservation Corps, a team of young adults who gain environmental experience while working for a year at nonprofit organizations and government agencies across the Chesapeake Bay region. During my time with the corps, I soared in my kayak over beds of underwater grasses and stepped carefully among the beds to collect seeds for restoration. I watched fish follow the channels I made as I walked, had clumsy blue crabs brush up against my legs, and strategically avoided sea nettles caught in the grass canopy.

The health of the Chesapeake Bay depends on maintaining high levels of biodiversity, and that requires protecting beds of underwater grasses, also called submerged aquatic vegetation. They are one of the Bay's most valuable resources, supporting an abundance of aquatic life. They also provide many benefits for humans, called ecosystem services, which include healthy fisheries, improved water clarity and shoreline protection.

Twenty species of native and nonnative underwater vegetation are found in the Chesapeake. Unfortunately, their acreage has been declining for several decades due to human activity, climate change and pollution.

Having a mixture of grass species is important for their resilience. But in the southern Chesapeake Bay, where salinity is the highest, only two species coexist: eelgrass and widgeon grass.

Eelgrass populations have declined and are expected to keep declining as temperatures, disease and pollution increase. When eelgrass dies off, widgeon grass takes its place, but it is not clear if the ecosystem services provided by widgeon grass will be as beneficial as those provided by eelgrass.

What changes in ecosystem services can we expect and what do these shifts mean for life in and around the Bay?

Briana Yancy collected seeds from underwater grasses during her service in the Chesapeake Conservation Corps. (Nicole Newell/Anne Arundel Community College)

Loss of eelgrass

The loss of eelgrass impacts ecosystem services such as shoreline protection, water clarity and wildlife habitat. Dense and healthy beds can reduce the force of waves and currents, shielding our shores from sea level rise and erosion. A 2008 report found that, compared with eelgrass, widgeon grass has a shallow root system and has difficulty surviving under high wave action. This interferes with its ability to weaken the impact of waves and currents.

Underwater grasses also trap suspended sediments, which improves water clarity. A study conducted in 2018 by researchers Emily French and Kenneth Moore found that eelgrass beds are better at trapping sediments than widgeon grass and thus better at improving water clarity.

Eelgrass is so crucial to life in the southern portion of the Chesapeake Bay that species declines can be linked to its disappearance. Declines in eelgrass caused brant, a species of geese, to lose an important food source and almost completely disappear from the region.

Likewise, blue crab population declines can be linked to the retreat of eelgrass. Not only is blue crab survival higher in beds of eelgrass compared with widgeon grass, but in 2017 researchers estimated that the decline of eelgrass equals a total loss of $28.6 million–$76.7 million for fisheries.

Benefits of widgeon grass

One of the most important benefits of widgeon grass is its overall tolerance. It can withstand changes in water quality, heat and salinity better than eelgrass. In the 1990s, a team of researchers studied the relationship between water quality and underwater grasses in the Bay. They found that after major declines in water quality, widgeon grass was the only species found in some portions of the Bay.

Nutrient pollution also causes grasses to decline. The nutrients nitrogen and phosphorus entering the Bay in excess is due to deforestation, lawn treatments, agriculture and other human activity. Widgeon grass can survive better than eelgrass because it is more tolerant of nitrate enrichment, according to a 1994 study.

Many species prefer eelgrass habitat over widgeon grass habitat, but dense plots of widgeon grass provide valuable habitat comparable to eelgrass. In 2011, a researcher from the Virginia Institute of Marine Science found that pipefish foraged better in widgeon grasses' thin blades. And, when eelgrass is unable to survive changes in water quality, widgeon grass becomes more valuable as habitat and a food source.

Strive for coexistence

Widgeon grass and eelgrass are both beneficial to the southern portion of the Bay, where species richness is low compared with other areas.

These two species work well in harmony. When stress causes eelgrass to die off, widgeon grass can expand to some areas and replace a portion of the lost eelgrass. And widgeon grass will retreat rather than displace eelgrass when the latter is able to return.

Both species are native to the Chesapeake Bay and, therefore, can support an abundance of native species. A study conducted at the Virginia Institute of Marine Science found that a higher percent coverage of seagrass, regardless of the species, positively correlated with blue crab density. Eelgrass and widgeon grass provide food for waterfowl, such as ducks, coots, geese, swans and other aquatic animals, either from feeding on the plant matter directly or eating invertebrates that depend on them for habitat. Other animals that eat widgeon grass, such as muskrat and green turtles, also consume eelgrass.

Why does it matter?

This topic has significant management implications, but it is not only up to leadership to make changes. If you eat seafood, enjoy aquatic recreation or depend on shoreline protection, then these changes impact you. Everyone can take a few steps to reduce pollution and protect Bay grasses. Here are a few suggestions:

- When boating, follow posted speed limits and no-wake laws to avoid harming grass beds.
- Reduce herbicide and fertilizer use to minimize chemicals and nutrient overloading.
- Clean up trash on or near the water and storm drains because waterborne trash can block light or physically damage grass beds.
- Become a community scientist and monitor Bay grasses by joining the Chesapeake Bay SAV Watchers. ■

Briana Yancy is a Chesapeake Research Consortium environmental management staffer for the Chesapeake Bay Program's Diversity Workgroup. She is also a graduate student studying biology with Project Dragonfly at Miami University in Ohio in conjunction with The Bronx Zoo. The focus of her studies is coastal ecosystem conservation.

In farming, small is beautiful, but can it also be profitable?

By Tom Horton

Dairy farmer Judy Gifford tends her small herd of Jersey cows at St. Brigid's Farm in Kent County, MD. (Dave Harp)

Jam the cow has decided she feels like getting milked. A handsome Jersey, a breed prized for its high-quality milk, easy calving and all-around smarts, she strolls into a spotless room, about 10 feet by 15 feet.

Here, at Judy Gifford's dairy farm in Kennedyville, MD, gone are the days of the traditional milking barn with cows in rows, laboriously hooked up by the farmer to milking machinery.

The metallic arm of the Lely Astronaut robotic milker glides beneath Jam, washing and air drying her udder as an array of lasers and sensors align "intelligent" suctions to her four teats. The robot extracts milk in a manner most comfortable to Jam, sensing her flow. Simultaneously, it delivers to a trough below her muzzle a ration customized for each cow.

Payback for the $100,000 investment in the Lely Astronaut will be about 10 years (reduced energy, higher milk quality and production), Judy estimates.

But payback wasn't the real issue for Judy and husband, veterinarian Bob Fry. Two decades of traditional milking had eroded Judy's shoulders to the point where she wasn't going to be able to continue their little dairy, 60 cows grazing on about 60 acres of pasture.

"Small is beautiful" is an environmental dictum, but staying profitable while remaining small in farming is tough. Judy's last day off? "I remember it well … June of 2019."

Judy and Bob's place, called St. Brigid's Farm, is what you'd wish for the future of agriculture, which covers approximately 25% of the land in the Chesapeake region and is the Bay's largest source of water pollution.

Their permanent pasture, rippling with a green sheen of springtime growth in the April breeze and morning sun, uses far less fertilizer and retains soil, nutrients and water far better than the grain fields that were here 25 years ago.

Spongelike soil like theirs can sequester larger amounts of carbon, significantly reduce runoff that leads to flooding, and reduce damage from droughts by replenishing groundwater.

All of this is becoming more critical as climate change ushers in an era of more intense wet and dry periods, says a 2017 survey of emerging agricultural research by the Union of Concerned Scientists: *Turning Soils into Sponges*.

As with everything to do with farming, doing it well is more complicated than most of us can appreciate. When I was growing up in the 1950s, it seemed idyllic to see dairy cows lounging all day down by the streams.

At St. Brigid's, Jam and her cohorts are fenced out of waterways to prevent them from eroding the banks and polluting the water. And they are kept on the move, constantly, much as wild grazers have always done out of fear of predators.

Rotational grazing, it's called, involves moving Judy's dairy herd daily from pasture to pasture, using flexible fencing, and it's a big part of her job. It promotes healthier pastures, healthier cows and a healthier Bay.

And that's just the quantifiable end of places like St. Brigid's. There is a pent-up demand among young Americans to reconnect with the land through small, sustainable agriculture, say groups like Future Harvest and Pasa Sustainable Agriculture.

That's hard in modern agriculture, where just a tiny percent of the population feeds all of us. Judy's farm was a typical size for Kent County in the 1990s. Now it's at the "low end of small," she said.

So much of agricultural research and government subsidies, like insurance against crop damage, are better designed to benefit big farms. The answer may not be to put an end to that so much as to extend it to people who are willing to farm sustainably on the smaller acreage they can afford to buy.

Judy says of the trend to larger dairy farms: "I don't know if you give up anything tangible like water quality. But there's more to the ecology of farming than that. The economic system rewards simplicity and uniformity. It doesn't reward hedgerows and beaver dams, and being creative."

It also doesn't reward the "Field to Fork" dinners that St. Brigid's hosted for many years, community gatherings that raised thousands of dollars for local schools and fire departments.

St. Brigid's also sells steaks and roasts and chops from the male cows that often have little value for dairy operations. St. Brigid's has worked with local chefs and direct delivery to consumers to make meat a profit center.

Meat, especially red meat, has gotten a bad name in the environmental community and even more so among consumers worried about health, the impact of cows on climate change, and pollution from manure. But meat is about a quarter of St. Brigid's income — and critical to survival.

The real issue may be one of scale. Eating red meat in moderation is not going to harm most peoples' health, nor is there undue environmental impact from incorporating small numbers of animals into a farm. Conversely, industrial-scale meat production and a burger-a-day habit have real downsides.

St. Brigid's is meeting Judy's three goals: environmental sustainability, economic sustainability and being a community asset. But is it sustainable beyond the ownership of Judy and Bob, ages 64 and 69 respectively? "[The land will] stay in farming, we've made sure of that," she said, "but we think we're the end generation. … Our kids, and probably our grandkids, don't want the lifestyle."

One might hope someone else would want it. But could they afford to buy St. Brigid's? That might depend on how much they could make from a small, great-for-the-Bay, great-for-Kent-County, great-for-the-planet operation.

And that's what really needs to change: How much we're willing to pay for food raised in such ways and how much we're able to redefine agriculture in broader terms than just food production — or, for that matter, just water quality. ■

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.

BULLETIN BOARD

VOLUNTEER OPPORTUNITIES

WATERSHEDWIDE

Citizen Science: Creek Critters

Use Audubon Naturalist's *Creek Critters* app to check a stream's health by identifying small organisms, then creating a report based on what is found. Get the free program at App Store or Google Play. Info: anshome.org/creek-critters. Learn about partnerships/host a Creek Critters event: cleanstreams@anshome.org.

VIRGINIA

Goose Creek Association

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

Citizen Science: Ghosts of the Coast

The Gedan Lab at The George Washington University in partnership with the Virginia Coast Reserve Long-Term Ecological Research are engaging citizen scientists to help document the formation of ghost forests (dead forests created by rising sea levels) on a larger scale. People who have seen a ghost forest are asked to contribute to a public collaborative map by submitting their observations to storymaps.arcgis.com/stories.

Check out cleanup supplies

Hampton Public Libraries have cleanup kits that can be checked out year-round, then returned after a cleanup. Call your local library branch for details.

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. To register for an event: trashnetwork.fergusonfoundation.org.

Become a water quality monitor

Train online with the Izaak Walton League to volunteer or 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. Activities include:

- ***Snap a Stream Selfie:*** Collect trash data, take a photo at a local stream.
- ***Become a Salt Watcher:*** Use a free, easy test kit to check for excessive road salt in a stream.
- ***Check the Chemistry:*** Spend 30 minutes at a waterway with a handful of materials, downloadable instruction sheet.
- ***Survey Stream Critters:*** Use pictures in an app to identify stream inhabitants. The number, variety of creatures reveal how clean the water is.
- ***Monitor Macros:*** Become a certified Save Our Streams monitor with one day of training. Learn to identify aquatic macroinvertebrates, assess habitat, report findings, take action to improve water quality.

VA Master Naturalists

VA Master Naturalists are a corps of volunteers who help to manage, protect natural areas through plant & animal surveys; monitor streams; rehabilitate trails; teach in nature centers. Training covers ecology, geology, soils, native flora & fauna, habitat management. Info: virginiamasternaturalist.org.

Chemical water monitoring teams

Help the Prince William Soil and Water Conservation District and Department of Environmental Quality by joining a chemical water quality monitoring team. Participants collect data from local streams. Training includes collection methods, reading data. Monitoring sites are accessible for easy collection. Info: waterquality@pwswcd.org, pwswcd.org.

PENNSYLVANIA

Middle Susquehanna River

Get involved with the Middle Susquehanna Riverkeeper Association. Contact Riverkeeper John Zaktansky at 570-768-6300, midsusriver@gmail.com. Activities include:

- ***HERYN (Helping Engage our River's Youth with Nature)***: Help with youth outdoor activities.
- ***Susquehanna Stewards:*** Deliver programs, info to people in your region, help to develop new initiatives. Info: middlesusquehannariverkeeper.org.
- ***Water Reporter App:*** Track the health of Middle Susquehanna watershed's fish species by sharing photos, locations, other info about your catches via an app. Reports, interactive map available at middlesusquehannariverkeeper.org.

MARYLAND

Lizard Hill site workday

Join Maryland Coastal Bay's *Invasive Invasion* 9:30 a.m.–12 p.m. June 12 at the Lizard Hill Restoration Site in Bishopville. Participants remove invasive plants and sample freshwater fish and macroinvertebrates to discover what's living below the surface. All ages welcome; be aware the work will be hard. Info/registration: lwist@mdcoastalbays.org, 410-213-2297 x110.

Annapolis Maritime Museum

The Annapolis Maritime Museum & Park, now open after having been closed since December 2019 for renovations, is seeking volunteers. Info: Ryan Linthicum at museum@amaritime.org.

Severn River Association

Join the Severn River Association's Water Quality Monitoring team. Volunteers help out on a three-hour cruise Wednesday, Thursday or Friday mornings through the first week in November. SRA provides training. Participants become certified water quality monitors using Chesapeake Monitoring Cooperative protocols. Data collected is shared with scientific, regulatory, academic communities via CMC's Chesapeake Data Explore sharing platform. Info: Info@severnriver.org. Put "WQ Team" in message box.

Cromwell Valley Park

Join Cromwell Valley Park's Habitat Restoration Team's *Weed Warrior Days* 10 a.m.–12 p.m. June 12, 26; July 3; Aug. 7 & 21 to remove invasive species, plant natives, maintain restored habitat. Meet at Sherwood House parking lot. Ages 17 & younger must be accompanied by an adult. No walk-ins. Participants must sign Baltimore County liability and COVID-19 waivers when preregistering. Info: Laurie Taylor-Mitchell: Ltmitchell4@comcast.net.

St. Mary's County museums

Become a member of the St. Mary's County Museum Division Volunteer Team or Teen Volunteer Team. Info: 301-769-2222.

- ***Adults:*** Assist with student/group tours, special events, museum store operations at St. Clement's Island Museum and Piney Point Lighthouse Museum & Historic Park. Work varies at each museum. Info: St. Clement's Island Museum 301-769-2222. Piney Point Lighthouse Museum & Historic Park 301-994-1471.
- ***Students***: (11 & older) Work in the museum's collections management area on artifacts that have been excavated in the county.

WORKDAY WISDOM

Make sure that when you participate in cleanup or invasive plant removal workdays to protect the Chesapeake Bay watershed and its resources that you also protect yourself. Organizers of almost every workday strongly urge their volunteers to wear long pants, long-sleeved shirts, socks and closed-toe shoes (hiking or waterproof). This helps to minimize skin exposure to poison ivy and ticks, which might be found at the site. Light-colored clothing also makes it easier to spot ticks. Hats are strongly recommended. Although some events provide work gloves, not all do; ask when registering. Events near water require closed-toe shoes and clothing that can get wet or muddy. Always bring water. Sunscreen and an insect repellent designed to repel both deer ticks and mosquitoes help. Lastly, most organizers ask that volunteers register ahead of time. Knowing how many people are going to show up ensures that they will have enough tools and supervisors. They can also give directions to the site or offer any suggestions for apparel or gear not mentioned here.

Submission Guidelines

ONLINE

The ***Bay Journal*** website has a section called ***Bulletin Board***, where you can log in and post your own events — and even include a photo. Visit bayjournal.com and click on "Bulletin Board."

IN PRINT

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 printed edition of ***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.
July-August issue: June 11
September issue: August 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.

BULLETIN BOARD

Mount Harmon Plantation
Help with manor house student tours, colonial crafts, hearth cooking, guided nature walks, the herb garden at Mount Harmon Plantation in Earleville. Special event needs include house tours, admission/ticket sales, gift shop, auction & raffle fundraisers. Training provided. Docents are asked to commit to eight service hours per month during tour season: 10 a.m.–3 p.m. Thursdays to Sundays, May to October. Info: 410-275-8819, info@mountharmon.org.

Report a fish kill
If you see a fish kill, call the Maryland Department of Environment's Fish Kill Investigation Section. Normal work hours: 443-224-2731, 800-285-8195. Evenings, weekends, holidays: Call the Chesapeake Bay Safety & Environmental Hotline at 877-224-7229.

Breeding Bird Atlas project
Help the Breeding Bird Atlas of Maryland & the District of Columbia — a five-year project documenting the distribution, abundance of local breeding bird populations — by looking for nests in backyards, forests. Data are used to manage habitat, sustain healthy ecosystems. Info: ebird.org/atlasmddc/about.

Severn River Association
The Severn River Association is looking for people to tell the Severn's story. Writers, photographers, reporters, memoirists, editors are needed to record tales of the river's wildlife, people, forests, history, culture, sailing. SRA can create internships for journalists of all ages who want to tell a story, cover meetings, take pictures. Info: info@severnriver.org. Put "volunteer" in the message box.

Ruth Swann Park
Help the Maryland Native Plant Society, Sierra Club and Chapman Forest Foundation remove invasive plants 10 a.m.–4 p.m. the second Saturday in June, July and August 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 a.m.; return at 5 p.m. Carpool contact: 301-277-7111.

Chesapeake Bay Environmental Center
Help the Chesapeake Bay Environmental Center in Grasonville. Drop in a few times a month or more frequently. 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; participate in CBEC's teams of wood duck box monitors, other wildlife initiatives. Other opportunities include fundraising, website development, writing for newsletters & events, developing photo archives; supporting office staff. Volunteers donating more than 100 hours of service per year receive a free one-year family membership to CBEC. Info: volunteercoordinator@bayrestoration.org.

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

Citizen science: angler survey
Use the Volunteer Angler Survey smartphone app to help the Department of Natural Resources collect species, location, size data. Information is used to develop management strategies. The artificial reef initiative, blue crab, freshwater fisheries, muskie, shad, striped bass programs also have mobile-friendly methods to record data. Win quarterly prizes. Info: dnr.maryland.gov/Fisheries/Pages/survey/index.aspx.

Patuxent Research Refuge
Volunteer at the Wildlife Images Bookstore at the National Wildlife Visitor Center of the U.S. Fish and Wildlife Service's Patuxent Research Refuge in Laurel. Open & close the store, help customers, operate the register. Training provided. Info: 301-497-5771, lindaleechilds@hotmail.com.

CONFERENCES/CLASSES

VIRGINIA

VAEE virtual mini-conference series
Learn about the state's regions and seasonal changes at the *2021 Virginia Association for Environmental Education* virtual mini-conference series scheduled 12 a.m.–11:59 p.m. July 17 *Summer on the Shore*; and Oct. 23, *Fall in the Piedmont*. There is enough space to offer up to nine, 50-minute sessions each date. Each conference includes professional development, learning, collaboration, and environmental education efforts and resources in Virginia, beyond. For pricing details, registration (required) packet, scholarship opportunities, visit vaee.wildapricot.org. Click on Events in the menu. Info: April Harper at events@virginiaee.org, 804-916-9302 The conference is issuing requests for proposals for the Oct. 23 conference: forms.gle/XZyPcbVcTURhFCyVA.

MARYLAND

Preserving with a Purpose forum
The Forever Maryland Foundation, a new nonprofit organization dedicated to conserving the state's land, water, wildlife and other natural values, is presenting its *2021 Maryland Land Conservation Conference / Preserving with a Purpose*, July 13 & 14 at Ripken Stadium in Aberdeen. This in-person event features nearly 50 speakers, including innovators, conservation leaders, elected officials. Topics include: the creation of a new Chesapeake National Recreation Area; the future of Maryland agriculture; the latest conservation & restoration mapping tools; advancing resources for diversity, equity, inclusion and justice within environmental & conservation priorities; local government leaders panel; Chief Sustainability Officers Roundtable. This event will offer indoor and outdoor programs and follow all CDC recommendations for preventing the spread of COVID-19. Forever Maryland is still accepting sponsorships. Registration/info: forevermaryland.org/2021-conference.

Virtual boater safety class
The Chesapeake Bay Maritime Museum in St. Michaels is offering Maryland Department of Natural Resources-approved boater safety courses via Zoom. Three-session courses are scheduled 5–8 p.m. July 12–14; and Aug. 25, Sept. 1& 8. Participants learn how to safely operate a vessel on Maryland waterways. Individuals, families welcome. Boaters born after July 1, 1972, are required to have a Certificate of Boating Safety Education. Participants must attend all sessions and pass the DNR exam to earn a certificate, which is good for life. Fee: $25/person. Participants must be 10 or older. Early registration recommended: cbmm.org/boatersafety. Info: dnr.maryland.gov/boating.

RESOURCES

WATERSHEDWIDE

Property pointers
The Alliance for the Chesapeake Bay offers resources for property owners who want to make their landscapes more friendly:
- ***Wood you Like to Learn about Forests?*** Put "Alliance Websites, Resources, Videos, Blogs" in your search engine, then scroll down to the Forest for the Bay's Tree Talks. Topics include: *How to Plant A Tree, What's That Conifer?, Live Staking, Gray Dogwood, Boxelder, Poison Ivy, Black Raspberry, Pawpaw, Blackgum, Snags, Witch Hazel, Christmas Fern, White Cedar, Mountain Laurel, Atlantic White Cedar*, and *A Hobbyist's Guide to Maple Sugaring*.
- ***Bouquets for the Bay:*** Visit NativePlantCenter.net to find the perfect native species for your landscape.
- ***Right as Rain Landscape:*** Learn how to design a stormwater runoff plan that will help you better manage water running off your property. Visit the Alliance for the Chesapeake Bay's Yard Design Tool at stormwater.allianceforthebay.org.

Farm tool, equipment sharing forum
Future Harvest / Chesapeake Alliance for Sustainable Agriculture has created a tool & equipment sharing platform to facilitate farmer-to-farmer lending, renting, or custom hiring. Farmers with tools that aren't used every day can fill out, submit a form that sets terms for the lending arrangement: fee charged; length of rental period; pick-up, delivery options; custom hire availability; other details. Equipment is listed under one of five categories: hand tools, tractors, implements, shop tools and other. Users can locate nearby equipment that meets their needs. Farmers who would like to try out equipment before buying it are also welcome to browse the list. The site is regularly updated, check for new listings. Info: Lisa Garfield at Lisa@futureharvest.org

Susquehanna River CD
The Middle Susquehanna Riverkeeper presents *Songs of the Susquehanna 2021*, a CD containing 20 original river-inspired songs from 36 regional musicians and musical groups. The diverse mix of music highlights the environmental, recreational, historical, therapeutic aspects of the river and its tributaries, and offers musicians a platform to share their skills, connect with audiences after a year of lost gigs. The cost is $15; all proceeds benefit the work of the Susquehanna Riverkeeper. CDs are available at the Riverkeeper office in Sunbury or can be ordered by mail. Info & lyrics: middlesusquehannariverkeeper.org/song-project. A 2022 CD is being planned with a Jan. 31 submission deadline. For help in finding

See **BULLETIN**, *page 44*

CHESAPEAKE CHALLENGE
ANSWERS TO Quiz
on page 27

1. Windowpane 2. Smallmouth flounder 3. Hogchoker 4. Winter Flounder 5. Blackcheek Tonguefish 6. Summer Flounder

BULLETIN BOARD

BULLETIN *from page 43*

a resource to create a polished recording, email Riverkeeper John Zaktansky at midsusriver@gmail.com.

Garden Thyme podcasts

Get timely gardening tips, information about native plants, more during the *Garden Thyme* podcast presented by the University of Maryland Extension. June's topics are *Landscapes for Wildlife* and *National Pollinator Week*. Podcasts typically include a native plant of the month, bug of the month and timely garden tips. If you have garden-related questions, email UMEGardenPodcast@gmail.com, visit facebook.com/GardenThymePodcast. Info: UME Home & Garden Information Center at extension.umd.edu/hgic. Watch past episodes at gardenthymepodcast.buzzsprout.com or on iTunes, Stitcher, Spotify and Google.

Chesapeake Network

Join the Alliance for the Chesapeake Bay's *Chesapeake Network* (web search those terms) to learn about events and opportunities that protect or restore the Bay, including webinars, job postings and networking. Stay connected with the conservation world.

MARYLAND

MD Free Fishing Days

Fish Maryland's tidal and nontidal waters without a license on June 5, June 12 and July 4. During a free fishing day, a person may catch and possess finfish in the tidal and nontidal waters of the state for recreational purposes without an angler's license, Chesapeake Bay sportfishing license or any fishing stamp normally required by the state. Participants must still observe all other fishing laws and regulations. Web search "MD free fishing days."

African American heritage grants

The Maryland Commission on African American Heritage and Culture and Maryland Historical Trust are awarding grants for construction projects on properties important to African American history, culture in Maryland. Applicants may apply for grants of up to $100,000 for acquisition; rehabilitation/capital improvements; new construction; predevelopment costs such as studies, surveys, plans & specifications; and architectural, engineering or other services directly related to preconstruction work for a capital project. To learn about the program or get an application, web search "African American Heritage Preservation Program." Applications are being accepted through July 1. Info: Charlotte Lake at charlotte.lake@maryland.gov or Chanel Compton at chanel.compton@maryland.gov.

Free streamside buffers

Stream-Link Education is looking for Frederick County residents who own streamside or riverside property on 2 or more acres of land and are interested in joining a large-scale reforestation effort to protect the Monocacy River, its tributaries. Stream-Link raises funds through grant awards, corporate sponsorships to take on buffer-planting projects at no cost to landowners without restrictions (no easement required). Volunteers plant, maintain the forest for at least three years to ensure 85% survival rate. Fill out form at streamlinkeducation.org/landowners. Info: streamlinkeducation.org/about, 301-473-6844, lisa.streamlink@gmail.com.

Million Acre Challenge

Future Harvest's *Million Acre Challenge* is working to advance healthy soil on 1 million acres of Maryland farm land. Its website, millionacrechallenge.org, is a hub where farmers, consumers, service providers, researchers, funders can share data on soil health, take action. Site highlights include:

- ***Resources:*** Peer-reviewed research, articles, reports.
- ***Farmer spotlights:*** Learn what others are doing.
- ***Ways to join the challenge:*** Find out how to get involved in the challenge. Visit @soilchallenge on all social media platforms for updates. Info: Amanda Cather at amanda@millionacrechallenge.org

Fishing report

The Department of Natural Resources' weekly *Fishing Report* includes fishing conditions across the state, species data, weather, techniques. Read it online or web search "MD DNR fishing report" to sign up for a weekly (Wednesday) email report.

EVENTS / PROGRAMS

WATERSHEDWIDE

Middle Susquehanna River podcasts

The Middle Susquehanna River Association has compiled a library of podcast interviews with outdoor influencers from throughout the watershed. To access the podcasts, put "Middle Susquehanna River podcasts" in your search engine. Guests speakers include:

- Peter Petokas, a hellbender expert with 15 years experience, talks about the amphibian's dwindling populations in our watershed, its importance, what can be done.
- The Foundation for Pennsylvania Watersheds' John Dawes discusses how his agency helps small watershed groups, the dangers of acid mine drainage, fracking, other waterway concerns.
- ProtectNorthernPA.org founder Diana Dakey discusses concerns about the production, transportation of liquified natural gas.
- Teen kayaker and angler Lila Oast discusses how kayaking has opened doors for her.
- Outdoor educator Jon Beam and Audubon member Gary Metzger discuss threats to the watershed's duck species.
- Renee Carey of the Northcentral PA Conservancy discusses the importance of preservation, public access.
- Benjamin Hayes, director of Bucknell University's Watershed Sciences & Engineering Program, discusses the health of the Middle Susquehanna River.
- Salmon angler Steve Kurian discusses the benefits of clean water.
- Educator Van Wagner discusses his Eels in the Classroom program, the importance of eels.
- Waterkeeper Alliance Executive Director Marc Yaggi discusses growing up in the Middle Susquehanna watershed, his quest in the fight for clean water.
- Outdoor educator Jolene Connelly discusses the importance of getting youth, women on waterways.
- Diving instructor Rich Best discusses trends, treasures, underwater threats in the Susquehanna.
- Pennsylvania Organization for Watersheds and Rivers spokesperson Tali MacArthur discusses the importance of assisting a watershed group.
- Falconer Mike Dupuy discusses the raptors of the Middle Susquehanna River.
- Pennsylvania Fish & Boat Commission spokesman Mike Parker discusses the agency's efforts during COVID-19 pandemic, historic unexpected start to trout season.
- Wesley Forest Camp Director Emily Sliski shares stories of getting young people engaged with nature at camp on the Penns Creek.
- Professional angler and YouTuber John Oast discusses how he got his start, what he has learned along the way, observations of the river.
- Biologist David Lieb discusses the concerning trend of exotic crayfish eradicating native species in the watershed, how it is impacting the ecosystem.

215-mile Bay paddle team relay

Chris Hopkinson, who last summer became the first person to traverse the entire Chesapeake Bay by standup paddleboard, has expanded this summer's *Bay Paddle* into a multi-team paddle race benefiting both the Oyster Recovery Partnership and Chesapeake Conservancy. The 215-mile, 8-day, staged paddle race from Havre de Grace, MD, to Virginia Beach runs Aug. 27–Sept. 3. Relay teams and solo paddlers will face wind, current and tides, using standup paddleboards, kayaks or other paddlecraft to cover the distance. To become a sponsor, donate, join or create a team, visit baypaddle.org. Participants should register by July 1.

Backyard stormwater webinar

Learn about stormwater and best management practices that can be implemented on one's property to decrease the negative impacts stormwater has on our waterways at a free webinar, *Stormwater Management in Your Backyard*, 7–8:15 p.m. June 23. Stormwater is precipitation that flows across the land, often carrying pollutants to streams, rivers, ponds, and lakes. It is one of the fastest-growing forms of pollution affecting the Chesapeake Bay. The webinar is presented by Jodi Sulpizio, the Natural Resources Educator for Penn State Extension in York in partnership with the Community Conservation Committee, Penn State Extension York County and Alliance for the Chesapeake Bay. Info/registration: stormwater-the-issues-and-solutions-for-your-home-tickets-142988589721. Participants must register by 5 p.m. June 22. Registrations will not be processed after that time.

MARYLAND

MD Park Quest 2021

The Department of Natural Resources' *Maryland Park Quest 2021* runs through Oct. 31. More than 25 state parks will offer opportunities to engage families in outdoor activities to experience Maryland's cultural, historical, natural resources on public lands, parks. This year's theme, *Spread Your Wings to Explore Maryland's State Parks*, will highlight the state's birds. Adjustments related to the COVID-19 pandemic include:

- Ranger-led activities have been turned into do-it-yourself programs. Web search "MD park service" to download, print worksheets there.
- Passport or registration is no longer required.

Participants/teams completing at least 12 activities before Oct. 31 and the Quest form by Nov. 1 are eligible to win prizes (proof of completion via photos required). Drawings take place Nov. 2. Winners will be notified by email. Prizes range from stickers, magnets, and bandanas to an Annual State Park & Trail Passport. Participants will need to pay the appropriate day-use service charges at certain participating state parks. (A list of service charges is found at: dnr.maryland.gov/Publiclands/Pages.) There are no additional fees to participate; all materials are available online. Downloading a copy of the Maryland Bird List at mdbirds.org/wp-content/uploads/md-bird-list.pdf or a Checklist to Maryalnd Birds mdbirds.org/wp-content/uploads/MOS_MD-Field-Checklist_Oct-2019.pdf will help with many of this year's quests. Bring binoculars, if possible, to see more birds. Info: Ranger Melissa Boyle Acuti at melissa.boyle@maryland.gov (Monday-Friday).

BULLETIN BOARD

Annapolis Maritime Museum & Park

The Annapolis Maritime Museum & Park is open after having been closed since December 2019 for extensive exhibit hall renovations. A new exhibit, *Our Changing Waterfront*, allows visitors to experience the Bay and local history through interactive and immersive exhibits. Tickets are$7/ adults; $5/ ages 3–12, ages 65+ and military; free/ages 2 & younger, and must be purchased in advance at amaritime.org. Highlights include:

- Two 500-gallon aquariums, *Bay Today & Yesterday*, which compare the environmental quality of today's Bay today with that of the 17th Chesapeake
- An interactive "Harry Potter" style book that explores the Bay watershed
- Touch screen table game featuring oyster harvesting methods
- Virtual reality boat where visitors can join a race midstream, jump onto a contemporary oyster boat, slip across the Bay in a kayak

Land Trust garden tour

The Lower Shore Land Trust is offering a self-guided garden tour June 25 & 26 of 10 pollinator-friendly gardens across the Lower Eastern Shore. Visit gardens with landscapes that provide habitat for a variety of pollinators in urban and suburban settings on the Lower Shore by encouraging the use of native plants in landscaping. The trust manages a certification program to provide resources for people who wish to implement practices that support pollinator habitat. A highlight of the Pollinator Garden Tour will be the raffle of *Beehives and Butterflies,* an original oil painting by artist Laura Jenkins valued at $750. See the painting at the Lower Shore Land Trust Conservation Center during the plant sale pickup and the garden tour. Info: lowershorelandtrust.org or Taylor Carty at 443-234-5587, tcarty@lowershorelandtrust.org.

Chesapeake Bay Maritime Museum

Programs and events offered by the Chesapeake Bay Maritime Museum in St. Michaels include:

- ***Log Canoe Races Cruise:*** 1:30–3:30 p.m. June 26 & 9:30–11:30 a.m. June 27. Board the 1920 buyboat *Winnie Estelle* a close shady view of sailing log canoe races on the Miles River. With long masts and large sails, these boats keep upright as they accelerate to speeds of 10 knots or more, and their crew members climb to the ends of 15-foot boards hanging off the side of the canoe. Cruises fill early and are dependent on marine conditions. Fee: $35. Info/registration: cbmm.org/onthewater.
- ***Wednesday Night Racing Spectator Cruises:*** 5:30–7:30 p.m. July 7 & Aug. 4 and 5:15–7:15 p.m. Sept. 1 & Oct. 6. Watch sailboat races on the Miles River from deck of 1920 buyboat *Winnie Estelle*. Fee: $20. Info/registration: cbmm.org/onthewater.
- ***Learn the Art of Caulking:*** 10 a.m.–4 p.m. July 24. Master shipwrights will teach traditional ship-caulking techniques, from rolling oakum to threading and making seams. Participants' hands-on lesson includes helping to caulk *Maryland Dove*, a reproduction of the vessel that accompanied the first European settlers to Maryland in 1634, which is under construction at CBMM. (*Dove* info: marylanddove.org.) Participants must wear closed-toe shoes, facial covering, dress for working outdoors. Lunch, refillable water bottle recommended. Fee: $55. Info/registration: cbmm.org/shipyardprograms.

Ladew Topiary Gardens

Join ecologist John Canoles 9:30–11:30 a.m. July 13 at Ladew Topiary Gardens Monkton, for a leisurely nature walk that will focus on identifying exotic, invasive species. Learn about the origins, some of the pros & cons of these species. Participants, ages 13+, should wear hiking gear; the 1-mile trail can be muddy. Registration required. $20 fee includes admission to the gardens. Info: 410-557-9466, 410-557-9570, information@ladewgardens.com, adewgardens.com.

Cromwell Valley Park

Take part in a May event at Cromwell Valley Park's Nature Center in Cockeysville. Ages 17 & younger must be accompanied by an adult. No walk-ins. Preregistration (online only) required for programs: cromwellvalleypark.campbrainregistration.com. Preregistration closes 4 p.m. Friday for weekend programs. Participants must sign Baltimore County liability and COVID-19 waivers when registering. Info: 410-887-2503, cromwellvalleypark.org, info@cromwellvalleypark.org. For disability-related accommodations, call 410-887-5370 or 410-887-5319 (TTY), giving as much notice as possible.

- ***Tulip Tree Bark Baskets:*** 1–3 p.m. June 12. Meet at Primitive Technology Lab. Ages 10+ Turn tulip tree bark into a basket. Bring a folding pocket knife if possible. Fee: $4.
- ***Girl & Boy Scout Day/Signs of Animals:*** 1–3 p.m. June 13. Ages 5–11 w/adult. Learn to identify signs of the park's creatures. Receive a Cromwell patch. NO SIBLINGS. Fee: $5 per Scout.
- ***Summertime Safari:*** 1–2:30 p.m. June 19. All ages. Use nets, binoculars to observe animals in their natural habitat. Bring binoculars if possible, wear sturdy shoes. Fee: $4.
- ***Nature Quest Hike with Dad:*** 10 a.m.–3 p.m. June 20. All ages. Pick up a Nature Quest Passport at the center, take a self-guided hike to search for the park's markers. Free.
- ***Fire & Ice Night Hike:*** 8–9:30 p.m. June 25. Ages 8+ Learn about fireflies, their flash patterns, then search for them. Return to Willow Grove Nature Center for an ice cream sandwich. Fee: $5.
- ***Herb's the Word:*** 1–3 p.m. June 26. Ages 5+ Make tea sandwiches using homemade herb butter, drink mint tea from the Children's Garden. Fee: $5.
- ***Celebrate International Mud Day:*** 1–3 p.m. June 27. All ages. Wander in Minebank Run. Make mud pies, sculptures. Play with different soils, water. Shoes, clothes will get wet, muddy. Fee: $4.
- ***Animal Adaptations for Summer:*** 1–2:30 p.m. July 3. All ages. Learn how animals adapt to the summer heat, how they cool down. Fee: $4.
- ***4th of July Adventure Trek:*** 10 a.m.–3 p.m. July 4. All ages. Stop by the center for a self-guided journey, return to get a prize. Fee: $4.
- ***Berry-licious:*** 1–3 p.m. July 10. Ages 5+ Forage for berries to make berry shortcakes in the earth oven. Fee: $5.
- ***Poisonous Plants & Animals:*** 1–3 p.m. July 11. Ages 8+ Learn to identify, avoid poison ivy, cherry leaves, nightshades, copperhead snakes. Fee: $4.

Father's Day cruises

Experience the sights and sounds of Solomons Harbor and the Patuxent River during a Father's Day cruise aboard the historic *Wm. B. Tennison* departing from the Calvert Marine Museum in Solomons 11 a.m.–12 p.m. & 4–5 p.m. June 20. Built in 1899, the *Tennison* is the only Coast Guard licensed log-hulled, passenger-carrying vessel in the nation. It served as an oyster buyboat until 1978 and has been designated a National Historic landmark. Fee: $10/ages 13 & older; $5/ ages 12 & younger. Preregistration required. Guests may bring drinks and snacks. Tickets: bit.ly/WmBTennisonCruises. Info: Melissa McCormick at 410-326-2042 x8083, Melissa.McCormick@calvertcountymd.gov.

DNR photo contest

The Department of Natural Resources is accepting entries for its annual photo contest. Photographers, novice or professional, can enter for a chance to win cash, park passes and other prizes. Winning entries will be posted online, featured in an issue of *Maryland Natural Resource* magazine, placed in the department's 2022 wall calendar. Entries can include images from anywhere in Maryland featuring birds, insects, flora, recreation, scenic landscapes, weather and wildlife. First, second, and third place awarded for each season; an overall grand prize winner will be chosen from the first-place winners. Social media users will also be able to select a "fan favorite" via facebook.com/MarylandDNR. Photographers may submit up to three entries for $10 with additional entries (no limit) at $3 each before Aug. 5, 2021. All photos must be original and unpublished. The contest is open to residents and visitors alike, but only photos taken in Maryland will qualify to win.

African American schoolhouse

The Drayden African American Schoolhouse in Drayden has scheduled open houses 11 a.m.–2 p.m. June 19 & 20, July 3, Aug. 7, Sept. 4 and Oct. 2. Drayden, one of the nation's best-preserved one-room African American schoolhouses, has a rich history and played an important educational role in St. Mary's County. Visitors will learn real stories about its students up until the mid-20th century. Staff, volunteers will offer tours, answer questions. Info: 301-994-1471, Facebook.com/DraydenSchool.

VIRTUAL EXPERIENCES

Virtual Bay trivia nights

The Chesapeake Bay Maritime Museum in St. Michael's, MD, invites people to put their Bay knowledge to the test during a virtual trivia night 8–9 p.m. July 26. Create a team or connect with friends virtually to join the game. Non-museum members are asked to pay what they can by adding a donation at checkout. Register: cbmm.org/virtualtrivia. For tech tips on how to run a trivia team: registration@cbmm.org.

Tour Maryland parks

Learn about history, nature highlights, Harriet Tubman's story, corn snakes, wildflower hikes by taking a virtual tour of Maryland's state parks. To view one of 29 videos, web search: MD DNR virtual park tour, go to DNR Offers Virtual State Park Tours LexLeader, follow instructions.

Wayback Wednesdays

St. Mary's County (MD) Museums are bringing history to people who are unable to visit them during the COVID-19 pandemic. Their weekly video series, *Wayback Wednesdays*, features everything from the quirky to the fascinating in the county's history. At present, there are more than 30 titles in the series, including: *Horse Racing in Leonardtown, The Old Jail & the Underground Railroad, John Donahoo & the Lighthouses of St. Mary's County* and *The Pony Express & U.S. Postal Service in St. Mary's County.* Visit facebook.com/watch/SCIMuseum/817869892069064.

Piney Point coloring pages

Learn about Piney Point Lighthouse Museum & Historic Park in Piney Point, MD, while coloring pages featuring an osprey, blue crab and terrapin as they explore different parts of the site. The pages are samples of a larger coloring book designed by local artist Ellen C. Halbert that will be available once the museum store reopens. Visit visitstmarysmd.com/blog/online-museum-fun/.

The dairy diaries, continued: Farm sustainability goes retail

By Brittany Smith

Alliance staff member Brittany Smith converses with a farmer in Rising Sun, MD, who has planted a streamside buffer at his farm and is making numerous barnyard improvements to help prevent water pollution. (Adam Miller/Alliance for the Chesapeake Bay)

June brings a lot of good things: cookouts, sunny weather, pool parties, ice cream. It also happens to be National Dairy Month, and the Alliance for the Chesapeake Bay is celebrating just how far dairy farmers have come, and where they might be headed next, in the effort to improve the health of the Chesapeake.

Since 2018, the Alliance has partnered with the Maryland & Virginia Milk Producers Cooperative Association, operating under the umbrella of the Turkey Hill Clean Water Partnership. Our goal is to create a dairy product supply chain that prioritizes and supports environmentally responsible practices on farms.

This month we added the crucial final link to the supply chain: a retail grocer. The Giant Food grocery chain has joined the effort with its own initiative, the Giant Clean Water Partnership — joining us in our effort to advance on-farm conservation, transparency and animal welfare for up to 400 MDVA member farms throughout Pennsylvania, Maryland and Virginia. Giant will lend its voice and widespread retail presence (nearly 160 stores in the Bay watershed states) to this important sustainable-dairy initiative.

Completing the supply chain — from the dairy farmers themselves, on to brand-name suppliers (Turkey Hill and MDVA's brand, Maola Local Dairies) and finally to grocery store shelves — gives us what we've aimed for: a scalable model that can be replicated across the country.

"We're focused on local impact, greater purpose," said Steven Jennings, who heads Giant Food's health and sustainability initiatives. "We're committed to creating a better world and that starts with being a leading voice for a healthy, sustainable food supply chain."

In addition to selling Maola and Turkey Hill products in its stores and using co-op milk in its store-brand products, Giant this spring conducted a monthlong campaign selling reusable grocery bags and donating $1 to the Alliance for each bag sold. If you've shopped at a Giant recently, you may have already seen signs on its dairy cases promoting the campaign, getting the sustainable-dairy message to hundreds of thousands of grocery shoppers.

This reflects a change of corporate thinking around the world. Brands like Tillamook and Chobani have run campaigns to help raise funds to restore farmland and rivers. Corporations everywhere are increasingly cognizant of their responsibility to protect the resources they rely on and to serve communities, not just customers.

Supporting sustainability is now very much a bottom-line calculation for corporations and businesses because consumers are more conscious than ever about where their products come from and if they are sustainably produced or manufactured. Their purchasing choices reflect that. According Futerra, a sustainability advocacy organization, 88% of consumers say they want brands that help them make environmentally friendly and ethical choices in their daily lives. Many of those people are even willing to pay more for those brands.

Sustainability is a bottom-line issue for farmers, too. Very few dairy operations refuse on principle to incorporate sustainable and animal-friendly practices. Rather, for most farmers the profit margin is skinny to begin with, and they can't possibly cover costly improvements such as manure-management upgrades, cover crops, stream fencing and streamside buffers.

Sustainable practices, however, are ultimately bottom-line positive. Planting cover crops instead of leaving fields bare, for instance, doesn't just sequester carbon and provide wildlife habitat. It also improves soil health and yields healthier crops. Redesigning a barn to increase space improves ventilation, provides more comfortable bedding areas and ultimately makes for healthier cows — as well as lowering labor costs for feeding, and for cleaning and maintaining stalls.

With funding assistance from the National Resources Conservation Service, Lancaster County dairy farmer Chris Landis — an MDVA co-op member — installed a larger manure pit and redesigned his calf hutches. An improved collection system allowed for increased manure storage capacity, making it possible to apply manure to the fields at the appropriate times. The housing upgrades not only gave the calves more space, but also reduced bedding costs, streamlined feeding labor and improved animal healthcare.

"We've been able to save labor and costs with the increased accessibility and efficiencies of the new facilities," said Landis, fifth-generation owner of Worth the Wait Farms. "The end result is a healthier cow, but overall, the payoff is much higher."

Those five words, "the payoff is much higher," are what our partnership aims for at every juncture in the supply chain, from the farmer to the supplier to the retailer. The Alliance and partners want to see viable farms, thriving suppliers, robust retailers and satisfied consumers who know their choices matter — all of it built on the real bottom line: cleaner water and sustainability for our future. ■

Steward's Corner is a column from the Alliance for the Chesapeake Bay. Brittany Smith is the Alliance's agricultural projects coordinator, based at the organization's Lancaster, PA, field office.

Make way for the master of mimicry: northern mockingbird

By Mike Burke

Northern mockingbirds are known for their ability to imitate sounds. They mostly mimic other birds but occasionally replicate human-made sounds like car alarms. (Renee Grayson/CC BY 2.0)

It sounded like a dozen birds singing, one right after the other, in rapid but distinct voices. We were out for a roll-and-stroll (me in my electric scooter and my wife, Pat, on foot), admiring the summer gardens gracing nearly every yard in our neighborhood. The bird songs were coming from atop a tall cedar tree. When I looked up, I saw not a flock, but a single songster.

The northern mockingbird is a master of imitation. It can learn upwards of 200 different sounds, from the songs of other birds to the noises of a residential community. And the male loves to sing. He can go on throughout the day and sometimes into the evening. The songs are clear and typically repeated two to four times each. As soon as he's done imitating a cardinal, he's likely to start sounding like a robin.

Most female birds of other species don't sing, but the female mockingbird is an exception — though her songs are more muted than her mate's and she doesn't go on all day like he does. And while males sing almost every month, the female limits her tunes to times when she is establishing territory and nesting. The champion singers in this species are invariably males, like the one atop our neighborhood cedar.

The northern mockingbird comes from the small family of perching birds called *Mimidae*, which contains two other common Chesapeake species: the gray catbird and brown thrasher. (There are other species in this family, but they reside primarily in other parts of North America and South America.) As the Latin name suggests, the *Mimidae* are mimics, expert imitators of other birds. The full Latin name of the northern mockingbird is *Mimus polyglottos*, which loosely translates to "many-tongued mimic."

A few years ago, a mockingbird established his territory in an area that encompassed our backyard and those of two of our neighbors. The bird perched atop one neighbor's roof and sang away all summer. We were treated to imitations of blue jays, song sparrows, wrens and even crows. In the next street over, a resident's car alarm would go off with painful frequency. Sure enough, the mockingbird incorporated those irritating sounds into his repertoire. Somehow, hearing the "beep-beep, whoop-whoop" coming from a bird struck me as more amusing than annoying.

Mockingbirds are not colorful birds. They are a dull white underneath, with a combination of gray, black and white on top. When their wings are folded, they show two white wing bars. When they spread their wings, the bars expand into large white patches both underneath and atop their wings. They also have white edges to their tails. That's about as flashy as they get.

During breeding season, some mockingbirds may extend their range slightly northward. Their year-round territory includes a large swath of the United States, coast to coast, as well as Mexico and the Caribbean. It includes the entire Chesapeake Bay watershed.

These birds favor areas with lots of open ground as well as scrub. Suburbs, parks and farmland are favorite haunts. As usual, diet determines habitat. In the spring, mockingbirds eat mostly insects. Open landscapes make it easy for them to see and capture their prey, which includes beetles and ants, butterflies and moths, and even bees and wasps. Occasionally they will eat earthworms and small animals such as skinks. In the fall and winter, when insects are scarce, mockingbirds turns its attention to fruits and berries.

The male begins the breeding process by starting the construction of several nests. He uses sticks and twigs to fashion these proto-nests into cups. Eventually, his mate will select one of the offerings and complete the nest by adding a soft lining of grass, rootlets and leaves. She'll lay up to six eggs and incubate them for 12 or 13 days. When they hatch, it is the male that supplies food to the hatchlings, until they fledge less than two weeks later. In the meantime, his mate will be off finishing another nest and getting ready to lay more eggs. Mockingbirds produce two to three broods each summer.

Although they are prolific breeders, northern mockingbirds have seen their population drop by more than 20% since the 1960s. One reason for the mockingbird's rapid decline is the dramatic loss of insects (largely due to pesticides). Without that protein-rich source of nutrition, mockingbirds simply don't have enough food to thrive. Loss of appropriate habitat also plays a major role.

The 20% loss of mockingbirds is significant, yet it does not rise to the level of "special concern" among conservationists. Scores of avian species in North America are in much worse shape. Meanwhile, the human assault on the insect world and the landscape continues unabated.

Sitting in my scooter, my admiration of the mockingbird's vocal range gradually shifted from appreciation to something more sobering. Maybe that car alarm imitation I heard earlier wasn't so funny after all. Perhaps this many-tongued mimic was sounding an alarm for all the birds, warning them that "there's big trouble, and we need help."

Today, there are an estimated 3 billion fewer birds on our continent than there were just 30 years ago, and the northern mockingbird is part of that startling statistic. The bird data are telling us we are in a crisis. It's time to listen … and to act. ■

Mike Burke, an amateur naturalist, lives in Mitchellville, MD.

It's time to sing the praises of Father Nature

By Kathy Reshetiloff

Father's Day: A day when children take a moment to appreciate their fathers and thank them for helping to support the family, give advice and teach life lessons. For a majority of local wildlife, feeding offspring, protecting them and teaching them survival skills falls mostly to the mother. There are some wildlife dads, though, that do their part to create a home, feed the family and help raise the young.

Brown pelicans

Brown pelicans are social and gregarious, with juveniles and adults congregating in large flocks for much of the year. They nest in colonies mostly on small coastal islands that provide protection from predators. Newly hatched pelicans are blind, featherless and completely dependent on their parents. The very young are fed with great care; adults swallow fish and later disgorge the broken-up meat into the chicks' extended throats. Later, after the chicks have grown a bit, the adults will put an entire fish into their mouths. Finally there's a buffet stage, when the parent birds merely place food on the edge of the nest for the young to retrieve.

Least terns

Least terns breed in colonies of up to 200 birds. Nests are scraped in sand and may be lined with shell, gravel or other debris. Both sexes build nests, incubate eggs and care for young. Chicks leave the nest a few days after hatching, but adults continue to care for them, leading them to shelter in nearby grasses and bringing them food. Chicks fledge in approximately 20 days but can stay with adults for up to three months.

Gray fox

Although typically monogamous with lifetime mates, gray foxes are solitary animals, only socializing during mating season. About two months after mating, the female gives birth to a litter of pups — blind, covered in fur and weighing about 3 ounces each. Both parents care for the offspring. Males typically provide most of the food and teach pups hunting skills. At 3 to 6 weeks of age, the pups are weaned and ready to hunt on their own, though they do not leave their parents until they are about 10 months old.

Ospreys

Ospreys usually mate for life and typically use the same nest site year after year. Spring courtship marks the beginning of a five-month period when the pair works together to feed and raise their young. By the end of August, both young and adult ospreys begin their southern migration from the Chesapeake Bay area to wintering grounds in the Caribbean, Central America and South America.

The male toadfish builds a nest on the Bay bottom and then puts out a call that it's open for business. After a female comes along and deposits eggs, the male fertilizes them and guards the nest for weeks. (Will Parson/Chesapeake Bay Program)

Male and female brown pelicans share mealtime duties, feeding the very young by partially digesting a fish and then disgorging it into the chicks' throats. (National Resource Conservation Service)

Owls

Great horned owl dads, as well as male eastern screech owls and barred owls, feed their mates while she warms the eggs. When eggs hatch, these dads not only feed chicks but continue to bring food to their mates.

Turkey vultures

Turkey vulture pairs are monogamous, and both parents incubate the eggs, as well as feed and care for the young. Young are born with a coat of down and eyes open but must be fed regurgitated food by their parents. If the nest is disturbed, parents will protect it by violently vomiting on the offender.

Oyster toadfish

If you've never seen an oyster toadfish, I can only say they are aptly named. A round, flat head and large gaping mouth gives it a monstrous pollywog look. Scaleless, slimy skin and bulging eyes complete the homely appearance. When ready to spawn, the male toadfish searches for and secures a nest, a semi-enclosed area of debris on the Chesapeake Bay bottom. He then uses his bladder to send out a low plaintive call to attract a female. The female will deposit eggs on the nest and swim away. The male fertilizes the eggs and then protects and nurtures the offspring for weeks.

Freshwater fish

The males of many species of freshwater fish take on a large role in the survival of their fry. Male largemouth bass, bluegills and pumpkinseeds build shallow nests in sand or gravel for females, which deposit the eggs, then leave. After fertilizing the eggs, the dads guard them from other fish and predatory insects.

Lined seahorse

If there were a "best dad" award for Chesapeake Bay wildlife, it would go to the lined seahorse. After an elaborate courtship, the female lays 200–300 eggs in the pouch of the male, which then fertilizes them. The male provides oxygen and transfers nutrients to the developing embryos through a network of capillaries in his pouch. The young remain there for two to three weeks, depending on water temperature. When the time comes, the pregnant dad convulses and expels the contents of the pouch, releasing a swarm of tiny offspring into the water. ■

Kathy Reshetiloff is with the U.S. Fish and Wildlife Service's Chesapeake Field Office in Annapolis.