

# COVID-19 deaths highlight disparity of air pollution’s effects on communities

≈ People of color much more likely to die because many live in areas where higher ozone, particulate levels already impact health

By JEREMY COX

A six-lane highway clogged with traffic and exhaust. A massive waste incinerator that measures its pollution in tons. A phalanx of smoke-spewing manufacturing plants. For decades, residents of south Baltimore’s Westport neighborhood have lived alongside and worked for the heavy industries that helped power the city’s economy. But in recent years, it has become clear that their health has paid a devastating price for the toxic air they breath.

“It seems like everybody has asthma here or breathing issues,” said Keisha Allen, a longtime resident and community activist in the blue collar, largely African-American community. They also are plagued by higher death rates from heart disease, lung cancer, respiratory disease and other afflictions linked to air pollution than

the rest of the city. Now, it’s happening again — but with a disease that kills in days instead of months or years. Emerging research suggests that breathing chronically polluted air may lead to a higher risk of dying from COVID-19, the disease caused by the new coronavirus. People living with compromised air quality tend to live in low-income neighborhoods and communities of color, and they’re more likely to have pre-existing health problems that put them in even greater jeopardy, public health experts say.

“If you already have an underlying risk from air pollution, you are going to be at higher risk from COVID-19 and a higher risk for mortality,” said Sacoby Wilson, a professor at the University of Maryland’s Institute for Applied Environmental Health. “What COVID-19 has really done is pull back the veil of structural inequality in this country.”

Many communities like Westport struggle with

HEALTH ON PAGE 22



Clump by clump, Barren Island is washing into Tar Bay and the Honga River. The Mid-Chesapeake Bay Island Ecosystem Restoration will add 72 acres to the island off Dorchester County, MD. (Dave Harp)

## Dredged material to rebuild 2 Mid Bay islands

≈ The rebirth of James and Barren sites will be akin to restoration at Poplar Island

By JEREMY COX

Over three decades, barges will unload the same amount of dredged material along the bottom of the Chesapeake Bay off Maryland’s Eastern Shore as it would take to fill the U.S. Capitol Rotunda 2,000 times. Their work will transform the swiftly eroding James Island into a formidable storm barrier and wildlife realm, officials say.

Sound familiar? It’s the same playbook the Army Corps of Engineers and Maryland Port Administration

have been using at nearby Poplar Island.

Poplar Island is growing by 2 million cubic yards a year in the Army Corps’ largest “beneficial use” of dredged material undertaken on the East Coast. The new terra firma is composed of muck sucked up from the bottom of Chesapeake Bay shipping lanes, which must be cleared of sediment every year to ensure safe passage for large vessels.

Poplar’s state and federal managers estimate that the island will reach its 1,715-acre capacity by 2030 or 2031. In need of somewhere else to deposit the sediment, the agencies are turning to a

location about a dozen miles to Poplar’s south.

After 20 years of planning, the next phase is set to make history again. The rebirth of James Island off Dorchester County, if all goes according to plan, will be on an even grander scale and shore up a second island as well, officials say.

Once complete, James Island will encompass nearly 2,100 acres of new ground. The \$1.9 billion undertaking, known as the Mid-Chesapeake Bay Island Ecosystem Restoration, also includes using local dredge sites to add 72 acres to Barren Island, another Dorchester land

ISLANDS ON PAGE 19





**BAY JOURNAL** is published by Bay Journal Media to inform the public about ecological, scientific, historic and cultural issues and events related to the Chesapeake Bay. The **BAY JOURNAL**, circulation 35,000, is published monthly except in midsummer and midwinter. It is distributed free of charge. Bundles are available for distribution. Material may be reproduced, with permission and attribution. Publication is made possible by grants through the U.S. Environmental Protection Agency's Chesapeake Bay Program Office, the Campbell Foundation, the National Oceanic and Atmospheric Administration's Chesapeake Bay Office, the Sumner T. McKnight Foundation, the Rauch Foundation, the Fair Play Foundation, the Shared Earth Foundation, the Virginia Environmental Endowment, anonymous donors, and by reader contributions. Views expressed in the **BAY JOURNAL** do not necessarily represent those of any funding agency or organization.

For mailing list additions/changes, please use the form on this page or contact: Bay Journal, P.O. Box 222, Jacobus, PA 17407-0222  
E-mail: [subscribe.bayjournal@earthlink.net](mailto:subscribe.bayjournal@earthlink.net)

BAY JOURNAL MEDIA

Bay Journal Media is a nonprofit 501(c)(3) organization with a mission to further public education and awareness of issues affecting the Chesapeake Bay and the mid-Atlantic environment by creating and distributing journalistic products. In addition to producing the **BAY JOURNAL**, Bay Journal Media operates the Bay Journal News Service, which distributes **BAY JOURNAL** articles and original op-eds about the Chesapeake Bay or regional environmental issues to more than 400 newspapers in the region, reaching several million readers each month.

Karl Blankenship, Executive Director  
Andrew Nolan, CPA, Chief Financial Officer

STAFF

Editor: Karl Blankenship ([kblankenship@bayjournal.com](mailto:kblankenship@bayjournal.com))  
Managing Editor: Lara Lutz ([llutz@bayjournal.com](mailto:llutz@bayjournal.com))  
Associate Editor/Projects: Timothy B. Wheeler ([twheeler@bayjournal.com](mailto:twheeler@bayjournal.com))  
Bay Journal News Service Editor: Tim Sayles ([tsayles@bayjournal.com](mailto:tsayles@bayjournal.com))  
Copy/Design Editor: Kathleen A. Gaskell ([kgaskell@bayjournal.com](mailto:kgaskell@bayjournal.com))  
Staff Writer: Jeremy Cox ([jcox@bayjournal.com](mailto:jcox@bayjournal.com))  
Staff Writer: Ad Crable ([acrable@bayjournal.com](mailto:acrable@bayjournal.com))  
Staff Writer: Whitney Pipkin ([wpipkin@bayjournal.com](mailto:wpipkin@bayjournal.com))  
Photographer: Dave Harp ([dharp@chesapeakephotos.com](mailto:dharp@chesapeakephotos.com))

ADVERTISING

Marketing & Advertising Director: Jacqui Caine ([jcaine@bayjournal.com](mailto:jcaine@bayjournal.com))

BOARD OF DIRECTORS

Mary Barber, President  
Bill Eichbaum, Vice-President  
Karl Blankenship, Secretary  
Kim Coble, Treasurer  
Donald Boesch  
Don Luzzatto  
Mark Platts

Editor's Note

Coronavirus takes its toll on humans, scientific research



As much of the Chesapeake region continues its stay-at-home precautions over the novel coronavirus, it's increasingly evident that impacts of the global pandemic will reverberate around the Bay watershed for many months, if not years. Restoration efforts are on hold, research is stalled and citizen-led cleanups are canceled or delayed.

The crisis is also highlighting the very real and uneven toll that the virus is having on communities already hard hit by environmental neglect. Jeremy Cox highlights in his front page article the intersection between COVID-19 health effects and air pollution — and the troubling reality about how uneven air quality improvements have been for some communities over the past few decades. People living in areas with poor air quality, often in largely African-American neighborhoods, are especially at risk. It is sad that water quality improvements in many of these places are also lagging.

The coronavirus is also taking a toll on science. A 50-year-old crab study on Maryland's Western Shore lost funding because of the virus, and the study may not be resumed. Other surveys around the region are being curtailed, though hopefully most will come back.

These long-running surveys offer invaluable insights about species and ecosystems over time — for example, see the articles about the impacts of climate change on Potomac River fish

and the long-term trends for bald eagles on the James River.

The pandemic is also impacting oyster restoration efforts, and watermen remain hard-hit by the lack of a robust market. States and local governments are looking at massive losses in revenue that will certainly lead to impacts on environmental programs.

We'll be reporting more on all of these issues as they develop over the coming weeks and months.

Visit our new website

One thing you can do while staying at home is to check out our brand new *Bay Journal* website.

Unveiled in April, the site has an all-new look — a more visual presentation, easier search options and a greater ability to showcase related articles. Readers can still comment on stories, and now they have the ability to submit their own calendar items too. Readers even can sign up to follow individual writers if they wish.

Special kudos for managing editor Lara Lutz, who took the lead shepherding the new website from concept to reality for more than a year.

If you haven't visited the site, please do. I'm sure you'll agree the final product was worth the wait.

And there's another design debut coming soon: a fresh look for our print newspaper. You should be holding the results in your hands in the next few months.

In the meantime, stay safe, well and socially distanced.

— Karl Blankenship

Sign Up for the Bay Journal or Change your Address

The BAY JOURNAL is distributed FREE by Bay Journal Media, Inc. If you would like to be added to its mailing list or need to change your present address, please fill out this form and mail it to BAY JOURNAL, P.O. Box 222, Jacobus, PA 17407-0222.

Check One: ☐ New Subscription    ☐ Change of Address  
☐ Please remove my name from your mailing list

Please note that it may take up to two issues for changes to become effective.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State: \_\_\_\_\_

Zip: \_\_\_\_\_

OPTIONAL: Enclosed is a donation to the Bay Journal Fund for \$ \_\_\_\_\_

☐ From time to time, the BAY JOURNAL includes a list of its supporters in the print edition. Please check here if you would like your gift to remain anonymous and not be recognized in the BAY JOURNAL.

  
**CONTACT US**  
*by mail:*  
The Bay Journal  
619 Oakwood Drive  
Seven Valleys, PA  
17360-9395

*by phone:*  
717-428-2819  
  
*To inquire about  
advertising, contact  
Jacqui Caine at  
540-903-9298*

 The BAY JOURNAL is printed on 100% recyclable/recycled paper using vegetable-based inks.

Correction

The article in the April issue about testing for PFAS in St. Mary's County MD misstated the types to be done there. Only surface water and oyster

tissue will be sampled. The photo accompanying the story should have credited Pat Elder. The *Bay Journal* regrets the errors.



From left:

Three-eaglet broods like this one have become less common along portions of the James River in Virginia. As eagle density in the region grows, pairs find it harder to support larger nests while competing for food and territory. See article on page 17. (Photo provided by Bryan Watts)

A rush for the water isn't always wise when the air is warmer but the water isn't. Spring paddlers should venture out only if trained and prepared. See article on page 28. (Dave Harp)

## WHAT'S INSIDE

### News

- 4 **Humpback whales, large ships on deadly course at Bay's mouth** • As number of large mammals continue to increase in nearby waters, so do collisions
- 6 **Fones Cliffs project facing fine; developer pivots to new plan** • Bankruptcy court could nullify penalty as questions of ownership add complications
- 8 **Family paves way for conserving farm, woods near Rappahannock** • Former owners of VA asphalt company 'invest in the future'
- 11 **State pollution goal aims to put the 'sylvan' back in Pennsylvania** • The two largest plans total more than 28 million trees on farms, urban areas, abandoned mine land and especially along streams
- 12 **Long-running Chesapeake crab study threatened with shutdown** • Both funding woes, coronavirus impacts halt 50-year monitoring survey
- 13 **Climate change linked to decline of smallmouth bass in Potomac** • Increased springtime flooding interfering with spawning
- 14 **Oyster growers hope polluters will shell out for nutrient credits** • MD aquaculture businesses try out fledgling water quality trading market.
- 16 **Pumped-up performance: Oysters' filtering feat overstated** • Ability to clear 50 gallons of water in a day enhanced by ideal lab conditions not usually present in Chesapeake
- 17 **Bald eagles' recovery along James River soars to new heights** • Area's 300 breeding pairs surpass goal for entire Chesapeake watershed
- 20 **Coronavirus stalls some Chesapeake oyster restoration projects** • Restrictions delay oyster plantings in MD; work going ahead in VA – for now
- 21 **Less seasonal help, virus deliver one-two punch to Bay's blue crab industry** • With immigrant workforce slashed, restaurants closed, processors and watermen look to makeshift sales methods

### Travel

- 26 Union Canal ride leads passengers down path to past
- 28 The cold hard facts of spring paddling: Be prepared

### Columns

- 38 **Steward's Corner** • Celebrate the Bay by supporting those who bring us locally harvested food
- 39 **On the Wing** • Joy of yellow-throated warbler lingers, a spark in these dark days
- 40 **Bay Naturalist** • Get out! There's no need to distance yourself from nature

### Puzzles & Events

- 25 **Chesapeake Challenge** • Bye-bye Bunny! Deer Depart! Scat Cat! Ta-ta Ticks! Move off Mosquitos!
- 25 **Bay Buddies** • Creature Discomfort!
- 35 **Bulletin Board** • Virtual Learning • Activities • Events • Volunteer Opportunities • Resources

### Forum

Commentary • Letters • Perspectives

- 32 From rooftops to rivers: Solving stormwater woes with local solutions
- 33 **Chesapeake Born** • Do good – not just 'less bad' – if restoration is to gain any ground
- 34 Accountability for pollution caused by agriculture falls on all of us



WE'RE JUST  
A CLICK AWAY

Visit us online:  
[bayjournal.com](http://bayjournal.com)  
Like us on FaceBook:  
**Chesapeake Bay Journal**  
or send us a Tweet:  
[@ChesBayJournal](https://twitter.com/ChesBayJournal)



# Humpback whales, large ships on deadly course at Bay's mouth

As number of large mammals continue to increase in nearby waters, so do collisions

By JEREMY COX

He was known by a number in life. In death, he became a statistic.

Attracted by a relative abundance of fish, growing numbers of humpback whales spend the winter in the waters where the Chesapeake Bay empties into the Atlantic Ocean. No. 166675 was one of them.

Researchers tracked the young male with a satellite tag for 10 days in January 2017 as he dodged huge vessels in one of the busiest shipping lanes on the East Coast. The next month, the whale's body washed ashore on Virginia Beach. A necropsy confirmed the scientists' fears: He had been struck by a large ship.

After six years of monitoring humpbacks' movements in the Hampton Roads region, the team conducting the Navy-funded study has published its first peer-reviewed paper. It shows that many more humpbacks are at risk from ship strikes and suggests that authorities may need to take more actions to protect them.

Between December 2015 and February 2017, researchers tagged and followed 35 humpbacks at the mouth of the Bay. Their study, published in the journal *Frontiers in Marine Science* in March, reveals that those whales typically spent more than a quarter of their time inside one of the region's busy shipping channels.

The researchers didn't estimate how many whales were directly killed after colliding with ship hulls or propellers. But one of the study's authors said it demonstrates that ships and the whales are often trying to share the same narrow sea corridors — with potentially deadly consequences for the large mammals.

"They tend to be relatively slow and spend time at the surface, and they tend to congregate where big ships are trying to pass through," said Joel Bell, a Norfolk-based senior marine resources specialist with the Naval Facilities Engineering Command. Ship strikes, he added, "are just an unfortunate consequence."

## Humpbacks in crisis

The study is part of a wider research effort scrambling to explain why dozens of humpback whales have mysteriously turned up dead along the East Coast from Maine to Florida since 2016. The deaths have prompted the National Oceanic and Atmospheric Administration to label the phenomenon an "unusual mortality event."



This is one of many close calls between large container ships and humpback whales in the shipping channels at the mouth of the Chesapeake Bay. A new study describes in the greatest detail yet humpback movements in the dangerous region. (Photo collected under scientific research permit 16239 issued to Dan Englehaupt, HDR Inc. and submitted by Todd Pusser)

The agency has assembled a scientific workgroup to study the 123 whale fatalities documented so far. Early results suggest that about half of the known causes of death are tied to boat-related mishaps, such as ship strikes and fishing-gear entanglement.

Of the 13 states where dead humpbacks have been found, Virginia has recorded the most after New York, with 23, according to NOAA.

Ship traffic is heavy at the entrance to the Chesapeake. Much of it is generated

by the Port of Virginia, the sixth-busiest U.S. container port, and Naval Station Norfolk, the world's largest naval installation. But the area also is teeming with recreational boaters and commercial fishing vessels.

Humpback whales were once rarely spotted in the Bay's waters. Most of the North Atlantic population of humpbacks migrates southward in the winter from Arctic waters to breeding grounds in the Caribbean Sea. But for nearly 30 years,

marine scientists have detected an increasing number of young males stopping short in waters between New Jersey and North Carolina, with many clustered at the mouth of the Chesapeake Bay.

Those tagged during the Navy's

study have roamed widely during their months-long stay, Bell said. Some veer well offshore. Others venture as far west as the Hampton Roads Bridge Tunnel. But when they're ready to eat, they follow their prey — a small, oily

fish called menhaden — to the Bay's shipping channels.

"They're drawn to that deeper water within a relatively shallower area," Bell added. "Unfortunately, they're trying to use the same areas that the big vessels are."

## Tracking the whales

A Navy spokesman said each of its vessels has specially trained spotters onboard to keep a lookout for whales, including humpbacks, whenever they're in the Chesapeake shipping channels.

The Endangered Species Act and Marine Mammal Protection Act require the Navy to also monitor the impacts that its ships have on sea life. A decade ago, the Navy hired the consulting firm HDR to track the whales, which centered on creating a photo database of individual whales.

That evidence has shown that nearly 10% of the more than 100 whales identified in and around the Bay had scars or other wounds consistent with propeller injuries or ship strikes. "While it is impossible to conclude if these injuries occurred outside of the study area," the authors of the new study wrote, "the evidence from this study highlights different instances where humpback whales were observed in



A humpback whale's tale emerges from the water with the Chesapeake Bay Bridge Tunnel in the background. (Photo collected under scientific research permit 21482 issued to Dan Englehaupt, HDR Inc. and submitted by Amy Englehaupt)



## WHALES FROM PAGE 4

the study area without injuries and re-sighted within the same season with vessel-related injuries.”

As questions mounted about a possible link between the Navy’s activities and whale deaths, the military ramped up its monitoring. Since 2014, it has spent more than \$1.6 million to supplement the annual photographic surveys with satellite tags, giving a clearer picture of humpback whale movements.

Bell said that he hopes the mysteries they unlock about humpbacks in Virginia will help guide management decisions in other parts of the world as well. In some places, humpback whale populations remain endangered, but the North Atlantic region was delisted in 2016.

“We’ve chosen to take the approach of not just monitoring what we’re doing but helping the scientific community understand how marine mammals respond to human activities,” he said.

It is no pleasure cruise, he added. The tagging takes place from an open boat during the winter, when winds are cold and unforgiving. Seas are rarely smooth.

The HDR team uses a modified air rifle to fire two darts simultaneously into a whale’s dorsal fin or just below it. “We don’t really like to miss a shot because they cost about \$5,000 to \$8,000 each, and they sink,” Bell said.

The darts provide the anchoring for a golf ball-size transmitter that sends continuous location signals to a satel-



*The Navy is funding humpback whale research in the mouth of the Chesapeake Bay to better understand how ship collisions can be avoided. (Photo collected under scientific research permit 16239 issued to Dan Englehaupt, HDR Inc. and submitted by Jessica Aschettino)*

lite. After anywhere from a few days to a few weeks, the tag falls off.

Over three winters, the investigators found that all 35 whales they tagged traversed a shipping channel at least once. They also swam freely, covering an average of 40 miles per day. The biggest traveler was a male that trekked more than 300 miles to just south of Massachusetts.

On several occasions, the researchers captured photos of ships passing dangerously close to whales as they breached.

“We’ve been out there and seen these ships passing super-close to these

animals while they’re diving down and foraging,” said Jessica Aschettino, HDR’s project manager. “It is pretty scary when you see those close calls.”

Three tags had the ability to record depth information. This data, too, pointed to trouble for the humpbacks. Nearly 90% of the whales’ dives were within 50 feet of the surface, the maximum draft of any of the ships crossing through the Bay’s waters.

### Protections recommended

The study recommends that an existing seasonal boat speed zone at the Bay’s mouth be expanded to help

shield humpbacks from ship strikes.

From November to April, all vessels measuring 65 feet or longer are required to stay below 10 knots per hour. The “Seasonal Management Area” was put in place there and elsewhere along the East Coast to protect endangered right whales. In the Hampton Roads region, it

stretches from the tip of the Eastern Shore to Cape Henry and as far out to sea as 22 miles.

The speed zone should be extended farther into the Bay and farther offshore, Aschettino and her co-authors say.

Her team’s surveys have continued each year. They’ve added a drone to improve their length measurements, which help determine a whale’s age. They’re also expanding the monitoring of diving behavior.

A Duke University study, also funded by the Navy, is carrying the HDR work a step further. It just wrapped up a second season using suction cup-attached tags to record movements and sounds. Because the transmitters use radio waves instead of satellite signals, the researchers must follow in a boat no more than 5 miles away from a tagged whale.

The study aims to match the presence of ships, as measured by the noises their engines make in the recordings, with the movements whales make in response, said Jeanne Shearer, the doctoral student leading the research.

If whales consistently behave in a certain way to passing ships, that information could be passed along to ship captains or fishery managers to reduce the frequency of strikes, she added. So far, her evidence suggests that humpbacks tend to head for the surface when they hear loud sounds, putting them in greater danger of a collision.

“But that’s very preliminary,” she cautioned.

Whale 166675 was the only animal tagged during the HDR study whose death could be confirmed. The whale had a cut so deep on its back that it exposed internal organs.

A ship propeller was the likely cause, the researchers wrote.



*A humpback whale breaches completely out of the water near the mouth of the Chesapeake Bay in March. The whales, mainly young males, come to the Bay in the winter to feast on menhaden. (Photo collected under scientific research permit 21482 issued to Dan Englehaupt, HDR Inc. and submitted by Jessica Aschettino)*



# Fones Cliffs project facing fine; developer pivots to new plan

≈ Bankruptcy court could nullify penalty as questions of ownership add complications

By WHITNEY PIPKIN

Environmental regulators in Virginia plan to levy a \$200,000 fine against Virginia True Corp., the developer of a property along the Rappahannock River's Fones Cliffs. But conservation groups say the fine for illegally clearing trees from more than 13 acres of the property in 2017 is not steep enough to deter future violations and does not take into account new plans for the site.

And several ongoing court procedures call into question whether the fine will be paid at all.

The proposed consent decree with the company directs that \$125,000 of the fine fund an oyster restoration project in the Rappahannock River — but stops short of directly attributing a 2018 landslide on the cliffs to the unpermitted land disturbance.

Meanwhile, the New York-based Virginia True Corp., which filed for bankruptcy last year, has laid out in court documents an entirely new plan for the nearly 1,000-acre site known for its striking 100-foot cliffs and bald eagles. Intended to attract new investors, these plans would replace a golf course and housing development with a combination of federally funded housing, a hotel and luxury condos in 10-story towers near the cliffs. The cost for the first phase of construction would exceed \$83 million, according to court documents.

The bankruptcy court will decide which debts Virginia True must pay, based at least in part on the company's plans and capacity to move forward. The consent decree with the Virginia Department of Environmental Quality acknowledges that the company's ability to pay the environmental fine is subject to the bankruptcy court's approval.

In their comments filed on April 3, each of the environmental groups took issue with this aspect of the consent decree, arguing that the bankruptcy court could easily nullify the consent decree and its penalties. That court's next hearing is currently scheduled for May 5.

Peggy Sanner, Virginia executive director and senior attorney at the non-profit Chesapeake Bay Foundation, wrote in her comments that the fine should be recharacterized as an "administrative expense" of the bankruptcy estate, which would give the debt a priority treatment under bankruptcy code.

Sanner also thinks the consent decree should require Virginia True to plant trees to compensate for those it cut down. The oyster restoration called for in the consent decree could still continue as "remediation for the environmental damage," she said.

"Our proposal," Sanner said, "is



*A photo taken on March 14 shows the shoreline of the property owned by Virginia True Corp., a developer that has filed for bankruptcy and is now facing a fine from Virginia regulators. (Hill Wellford)*

to, as a minimum, get the treatment of these enforcement obligations correctly characterized in the bankruptcy proceeding so there is the best opportunity to take care of erosion issues."

The Chesapeake Conservancy and Friends of the Rappahannock also submitted comments to the DEQ requesting that reforestation of the property be required. The friends group suggested that \$500,000 would be a more fitting amount to fund an oyster restoration project that would help remediate the damages at Fones Cliffs.

In its letter to DEQ, the Chesapeake Conservancy said the \$200,000 fine included in the latest consent order is not high enough to deter future violations. The Conservancy's CEO Joel Dunn wrote in comments that the fine is low enough to be written off as "the cost of doing business" by a company that plans in its bankruptcy filings to spend \$83 million on the next phase of construction at the site.

Local conservation groups have opposed the development project in an otherwise rural portion of Virginia's Northern Neck since the rezoning of the property was first proposed to the Richmond County Board of Supervisors in 2015. But the board approved the changes to accommodate the proposed project, which vowed to boost local tax revenues.

The board had in 2012 also rezoned an adjacent property along the cliffs, known locally as the Bowers tract, for develop-

ment into residential units. In a surprising turn of events — after more than a decade of wrangling over the property — the U.S. Fish and Wildlife Service purchased the 252-acre property last year for conservation. The property's forests, fields and deep ravines are being added to the more than 9,000 protected acres that make up the Rappahannock River Valley National Wildlife Refuge.

Conservationists hoped the purchase would persuade neighboring landowners, such as Virginia True, to consider conservation options, too.

## Ownership disputes

Still more concerns circle Virginia True and the Fones Cliffs site: Legal maneuvers are under way that could shift ownership of the company or the property and leave Virginia True without assets to pay the state fine.

One dispute directly challenges land ownership. Allan Applestein owned the property from 1958 until 2017, when he sold it to Howard Kleinhendler, who was his lawyer at the time. New attorneys for Applestein, who is now 88 years old, have alleged in a malpractice lawsuit that Kleinhendler took advantage of the elderly man who had advancing Alzheimer's disease at the time of the sale.

The lawsuit filed in Florida alleges that Kleinhendler unethically acted as both Applestein's attorney and the buyer of the property, advising Applestein to

refuse another offer and seeking to rezone the property for development before selling it to a corporation that Kleinhendler created to buy it — Virginia True.

Kleinhendler also structured the sale to Virginia True, the lawsuit alleges, to be a seller-financed transaction. That meant Applestein received \$5 million for the sale at closing with the remaining balance of \$7 million to be financed through a loan — with an unsecured promissory note. Because that note was unsecured, the debt to Applestein may not be paid because of Virginia True's bankruptcy proceedings. The lawsuit alleges Applestein would not have allowed the loan to be unsecured had he been in a better state of mind.

Neither Kleinhendler nor his lawyers could be reached for comment.

Meanwhile, a pair of investors in Virginia True, Anthony and Domenick Cipollone, have filed objections to the company's plan to reorganize and attract new investors. Their suit in Richmond County Circuit Court seeks to enforce the terms of a contractual agreement they have with Kleinhendler.

"If either of those cases are successful, ownership of the site will be transferred from [Virginia True] to" Applestein or the Cipollones, Sanner wrote in her comments. If that happens, Virginia True "will have no assets to comply with the terms of the consent decree with DEQ."

## How much damage?

The Bay Foundation recently hired a third-party consulting firm to quantify how much damage occurred to the cliff and local water quality when a swath of the crumbly earth sloughed off in 2018, and attached its findings to their comments on the consent decree. The clearing and cliff failure created conditions the environmental groups believe continue to contribute sediment to the Rappahannock River and Chesapeake Bay.

Rummel, Klepper & Kahl, LLP, the Baltimore-based engineering firm that prepared the report, used drone imagery, geology and rainfall data, and elevation models to calculate how much nutrient and sediment pollution the landslide along about 800 linear feet of riverfront contributed to the waterway. The firm found that about 28,000 tons

FONES CONTINUES ON PAGE 7



## FONES FROM PAGE 6

of soil — which would weigh as much as the Statue of Liberty — had been lost from that portion of Fones Cliffs.

The firm also calculated that soil loss from Fones Cliffs has contributed almost 37 tons of total nitrogen — one of the main pollutants plaguing Bay waters — to the river, in addition to phosphorus. It estimates that Virginia will now need to reduce nutrient loads to the river by approximately 10% to make up for the cliff-related nutrient surge if it is to still meet the state's share of Bay cleanup goals by 2025.

"In 2017, Virginia failed to meet its pollution reduction goals for nitrogen and sediment in the Rappahannock River," Sanner wrote. "That discharge will continue to impair Virginia's ability to meet its pollution reduction goals for the Rappahannock River and will continue to cause identifiable harm both to the river and to the Chesapeake Bay."

Richard Moncure, who regularly boats by the site in his role as the tidal Rappahannock River Steward for the Friends of the Rappahannock, said he "absolutely" sees ongoing sediment pollution from the Virginia True property.

"There is groundcover up there, small trees, but you're still able to see the channelization in areas and sediment from the top of the cliffs forming beaches at the bottom," he said. "I would call it an active scar at this point."

DEQ spokeswoman Ann Regn said the Virginia True property was considered in compliance in October 2018 but, during an inspection in May of 2019, a small area of the property was found to need additional stabilization.

"Since our September 2019 inspection, all reports have been marked compliant, and the site has remained in compliance," Regn said. "DEQ is currently waiting for the bankruptcy court's approval, which may be delayed by the recent pandemic."

The DEQ already requires regular reports from a stormwater compliance manager hired by Virginia True. The latest report from March 27 found the sediment and stormwater conditions at the site to be "in satisfactory condition."

### New development plans

Richmond County Administrator Morgan Quicke said Virginia True's alternative development plans for the site have not yet been brought to the county, which must approve them. He said past problems at the site would make any future zoning approvals "that much more difficult."

The new plan is contingent on more than the bankruptcy court's approval. Plans submitted to the court in January assert that construction of housing for seniors, veterans and future employees working at the site would all be funded by the U.S. Department of Housing and Urban Development.

The documents, submitted by

James Fukuda, a freelance consultant hired by the company to attract investors, say the idea has already attracted interest from a handful of New York-based investors.

In addition to the housing, the plan calls for working with the Dream Hotel Group on a Chatwal Hotel similar to one the company runs in New York City's theatre district.

This project would be built near the cliffs in conjunction with luxury condominiums contained in four to five 10-story towers.

"The views from the Rappahannock River and surrounding areas from these condos will be magnificent," states the document submitted by Fukuda.

The environmental groups who have commented on the consent decree say they would still like to see the property along the historically significant stretch of cliffs become conserved.

"Fones Cliffs remains among the Conservancy's highest priorities for conservation in Virginia," the



Richard Moncure, who regularly boats by the site as the tidal Rappahannock River Steward for the Friends of the Rappahannock, said he "absolutely" sees ongoing sediment pollution from the Virginia True property. (Dave Harp, 2014)

Chesapeake Conservancy's Dunn said. "We continue to track the legal jostling... which will likely determine the future of this iconic property."

## SELLER OF TUBEX TREE SHELTERS

36, 48 and 60-inch standard shelters and 30-inch shrub shelters available.\*



PARKTON WOODLAND SERVICES

For pricing call  
301-606-1207  
billbond119@hughes.net

\*Other products may be available if ordered in advance

[parktonwoodlandservices.com](http://parktonwoodlandservices.com)

## Using Nature to Restore Nature



THINK LIKE A MOUNTAIN™

[www.ecotoneinc.com](http://www.ecotoneinc.com)

410.420.2600



# Family paves way for conserving farm, woods near Rappahannock

≈ Former owners of VA asphalt company 'invest in the future'

By WHITNEY PIPKIN

When the Goodloe family bought a bucolic, 216-acre property in Stafford County, VA, officials were planning to build a beltway around the bustling nearby city of Fredericksburg. That made the land purchase along a major traffic artery a fitting financial decision — especially for a family in the business of laying asphalt.

But that beltway was never constructed and, nearly 25 years later, the Goodloes have come to value the land that makes up Snowden Farm for more than its development potential. Late last year — in a move the matron of the family asphalt business found a little ironic — the Goodloes had the property protected from development through an easement with the Northern Virginia Conservation Trust.

"I'm a native Virginian," said Lucy Harman, who owns the property with her two sisters and ran the asphalt company their father and grandfather started after World War II. "But both of my grandparents' farms are subdivisions now in Fredericksburg, and I just didn't want that to happen to the one piece of land I have control over."

The property along an oxbow of the Rappahannock River includes not only some of the top agricultural soils in the state — leased for years to local farmers — but also hardwood forests and wetlands along a mile of shoreline. A single parcel since the 1600s, the land has also been a backdrop to Civil War history and American Indian life, according to records and artifacts.

"This property kind of has it all," said Alan Rowsome, the trust's executive director. "You don't usually



Lucy Harman walks along a high point on the Virginia property where her daughter, Sally Harman, married her husband George Harvey not long ago. "But both of my grandparents' farms are subdivisions now in Fredericksburg," Harman said, "and I just didn't want that to happen to the one piece of land I have control over." (Whitney Pipkin)

see all of this in one place."

For that reason, the land would have ranked high on any conservation priority list, including one recently launched in Virginia. In 2019, the state rolled out a living "smart map" that layers 19 sets of conservation priorities — from agricultural lands to cultural resource locations — onto one searchable platform.

Neither state nor county funds were needed to conserve the Goodloes' land. They didn't want to sell the property, where Harman's daughter and her husband live. But they could use the tax benefit of a conservation easement, which is a voluntary legal agreement that permanently limits uses of the land.

Such a tax benefit was particularly attractive to the Goodloes in 2019, the year several family members saw a boost in their taxable income from selling the asphalt business, P.C. Goodloe & Son, Inc. Harman said she would have conserved the property anyway, because "it was just the right thing to do."

"But it was sure wonderful to get that tax benefit," she said.

Rowsome said it's not uncommon for land trusts like his to get frantic calls from landowners in the fourth quarter of a year wondering if they can get an easement completed by the end of it.

"If people hem and haw, it can take six months," Rowsome said. "It can take six weeks if everyone is ready to make it happen, and that's what happened in this case."

The land trust holds 114 easements in

Northern Virginia, where development pressure has spread down the Interstate 95 corridor as population growth expanded beyond the DC metro area. The Goodloe property is the trust's fourth easement in Stafford County, which has recently become a frontline for development pressure in the region.

Stafford County's Board of Supervisors is currently considering downzoning nearly 90,000 agricultural acres in the state to curb growth in rural areas and to mirror the zoning regulations of other more rural counties nearby. The change would limit development in those areas to one house per 10 acres instead of one house per three acres.

Stafford County Supervisor Mark Dudenhefer told *The Free Lance-Star* that the change needs to happen "right now" to prevent Stafford from becoming the next Fairfax County in the state, referring to the populous DC suburb. A public hearing on the zoning change is scheduled for May but could be delayed due to the coronavirus.

The county already has a purchase-of-development-rights program that allows a landowner to voluntarily

In early April, a bevy of bluebells mingled with a carpet of spring beauties in the Virginia woods owned by the Harman family. (Whitney Pipkin)





## PRESERVE FROM PAGE 8

limit development on the property in exchange for a one-time payment, with a limit on how many can be funded each year. Harman said that program had a long wait list when she looked into it in 2019.

## Valuable resources

Rowsome said land conservation advocates recommend all of these programs as options to property owners. Rather than waiting for property owners to come to them, the trust is taking steps similar to the state's by identifying lands they'd like to see conserved, then reaching out to the owners.

"As valuable as this is to protect, it will end up being an island of conservation if we don't protect the rest," Rowsome said. "There's a lot riding on people like Lucy talking to their neighbors and saying, 'This worked for me.' And it's a lot better coming from her than us."

For her part, Harman said she's already been spreading the word. One of the first people she told about the conservation easement was a former mayor of Fredericksburg, Bill Beck, who had suggested the family conserve the property soon after they bought it.

"I told him that we bought it as an investment and he said, 'Lucy, I don't

want to see one more square inch of asphalt in this state,'" Harman said, laughing. "I said, 'Do you know what I do?'"

That the family has now decided to conserve the property "does seem like an irony," Harman said. "People don't think it's possible to be a developer and still do this."

But Rowsome said such seeming dichotomies are not uncommon in the conservation community. People who have built businesses by tapping natural resources often develop an outsized appreciation of the land and all it offers.

The land in this part of the state is rich in sand and gravel deposits just

below the surface. That was also true at the Snowden Farm property, where the family mined a 30-acre swath for those materials for several years.

"Almost every farm from here along the river has been mined for that," Harman said. "This was one of the last

PRESERVE CONTINUES ON PAGE 10



Lucy Harman, center, and her family recently conserved a 216-acre property along the Rappahannock River in Stafford County, VA, where her daughter, Sally Harman, at right, and son-in-law, George Harvey, at left, live and run a landscaping business. The property includes some of the top agricultural soils in the state, hardwood forests and wetlands along a mile of shoreline. (Whitney Pipkin)



RESOURCE  
RESTORATION  
GROUP, LLC



Providing innovative solutions to conserve, restore, and enhance our natural resources.



CONSERVE RESTORE ENHANCE

Ecological Design & Construction

Stream • Wetland • Shoreline • Stormwater BMPs

www.RRGroup.us



## TIME TO PLAN YOUR RIPARIAN BUFFERS.

Ernst offers mixes with switchgrass and other native grasses that can reduce runoff and absorb nutrients. These grasses can be harvested for forage or livestock bedding.



ernstseed.com

sales@ernstseed.com

800-873-3321





PRESERVE FROM PAGE 9

farms to be mined, actually.” Trust officials were hesitant about the mining, which had ended a couple years before they set foot on the property. But Rowsome said they and state officials were pleasantly surprised by the relatively low-impact use of resources. All that’s left of the operation, which was safely closed by the state, is a section of one field that sits about 15 feet lower than the rest of the surface. Vegetation and small trees have grown back, and there are plans to raise the surface and return it to agriculture in the future.

Not lost to history

Snowden Farm, like many conserved properties, had come close to being developed. A previous owner, Katherine Gouldin Woods, had written in her will that she wanted the land donated to a nonprofit organization and protected. But after she died, the deal fell through and it was sold at auction to a developer. That developer knew the property had sand and gravel deposits that Harman might be interested in and sold it to the Goodloe family.

“Part of the story is how many of these [places] we don’t get to conserve,” Rowsome said to Harman during a visit to the property in early April. “I don’t know how many



Lucy Harman and her daughter, Sally, walk the wooded area of their property. Alan Rowsome, the Northern Virginia Conservation Trust’s executive director, noted the mix of woodlands, farmland and river access on the Harman family property. “This property kind of has it all,” he said. “You don’t usually see all of this in one place.” (Whitney Pipkin)

moments in history there were where this property could have been lost.” During the Civil War, the property was home to John Seddon, the brother of the Secretary of War for the Confederacy, James Seddon.

Union troops passing through the area believed the home — one of the two largest in the county at the time — belonged to the secretary and burned it to the ground. James Seddon and his family barely escaped to a nearby

laundry building, according to a book written by a local historian. More recently, the University of Mary Washington’s Historical Preservation Department found relics of an American Indian community on the property’s riverbank. Harman’s daughter, Sally Harman, married her husband, George Harvey, on a high point near the entrance of the property where the couple now lives and runs a landscaping business. Avid naturalists, they make good guides to the farm’s diverse natural offerings. They also keep tabs on the property, 130 acres of which is farmed by another local family.

On a walk through the woods not far from the shores of the river, they meandered through a bevy of Virginia bluebells mingling with a carpet of spring beauties in early-April bloom. The bottomland hardwood forest, framed by a deep oxbow in the river on one side, also is home to some wetlands and surprising changes in elevation. Harman and Harvey have also counted 14 heron nests in a rookery in one part of the forest.

In the end, Lucy Harman said, the reasons for conserving the property weren’t that different from the reasons for which they bought it in the first place. “We thought it was a beautiful property,” she said. “And it felt like an investment in the future.”

Want a diversified investment portfolio with a low carbon footprint?

**Your Money, Your Values.**



Environmental, Social and Governance (ESG) investment strategies allow investors to put their money into corporations that are working towards:

- Reducing carbon emissions
- Harnessing renewable energy
- Taking measures to reduce pollution
- Respecting human rights
- Demonstrating accountability
- ...and much more.

Contact our advisors to get more information about ESG investment options and to see where your current financial plan can be aligned with your personal values to make greater impact on the future.

**410.810.0800**  
[www.valliantwealth.com](http://www.valliantwealth.com)




**VALLIANT**  
WEALTH STRATEGIES



**RAYMOND JAMES**

Bruce & Mary Ellen Valliant, Registered Principals, RJFS, Inc.  
110 S. Queen Street | Chestertown, MD | 21620  
3033 Kent Narrows Way, S. | Suite 5 | Grasonville, MD | 21638



Valliant Wealth Strategies is not a registered broker/dealer and is independent of Raymond James Financial Services, Inc. Securities offered through Raymond James Financial Services, Inc., member FINRA / SIPC. Investment advisory services offered through RJFS Advisors, Inc.



**Environmental Quality Resources**

**LEADER IN ECOLOGICAL SERVICES SINCE 1991**

[www.eqrllc.com](http://www.eqrllc.com)  
410-923-8680  
1 Churchview Road  
Millersville, MD 21108





# State pollution goal aims to put the 'sylvan' back in Pennsylvania

≈ The two largest plans total more than 28 million trees on farms, urban areas, abandoned mine land and especially along streams

By AD CRABLE

Pennsylvania, under criticism by fellow Chesapeake Bay drainage states for being far behind in meeting pollution reduction goals, has turned to trees in a big way to make up ground.

The state's new blueprint for stemming pollution flowing into the Bay prioritizes tree plantings along streams in farmland and urban areas, next to streets, in lawns and on abandoned mine land.

In all, the plan calls for more than 18 million new trees to cloak the landscape by the end of 2025 — especially as forested buffers along streams.

In addition, the Keystone 10 Million Trees Partnership, an ambitious separate initiative spearheaded by the Chesapeake Bay Foundation, wants to plant another 10 million trees statewide in the same time frame. And that's not counting smaller grassroots efforts.

"There's no panacea for the Bay, but buffers are a close one," said Cindy Adams Dunn, head of the Pennsylvania Department of Conservation and Natural Resources, which has championed trees in recent years and is the main agency tasked with ramping up tree planting.

Pennsylvania is already 60% covered by trees. But there aren't enough trees where they need to be, said Harry Campbell, the Bay Foundation's Pennsylvania executive director.

"We do have a lot of trees in the state of Pennsylvania, but the thing is, they are not in the right places," Campbell said.

"The restoration and preservation of trees, particularly in strategic areas, can have a profound impact on the condition of streams and rivers, and particularly meeting our Chesapeake Bay goals."

The tree initiatives are gathering steam, but some are doubtful their lofty goals can be attained. To date, the state effort is still at less than 1 million trees, and the 2-year-old 10 Million Trees partnership stands at about 1.7 million trees statewide.

But public officials and advocates maintain that the pace of tree planting is increasing now that infrastructure is in place, grassroots and corporate partnerships have expanded, funding has increased and nurseries — once unwilling to invest in growing large quantities of trees — are buying into the effort.

"Everyone acknowledges it is a very steep goal," Dunn said. "It took a while for people to accept. Having it become a regular part of the farm landscape takes time."



*Trees are installed in a Harrisburg neighborhood. Increasing trees along urban streets is a key part of new initiatives to reduce pollution in local waterways and the Bay, as well as to improve human health and combat climate change (Chesapeake Bay Foundation)*

Growing interest in blunting the effects of climate change has also spurred the public's appetite for more trees. Trees store large amounts of the carbon dioxide greenhouse gas — 5 million tons of carbon dioxide if state goals are reached — and trees planted on city streets break up the heat island effect that is projected to become more dangerous.

The state's urban and suburban tree planting goals are for an average of 300 trees to be planted per acre, a concentration about one-third higher than for streamside buffers on farmland. Concentrations would be highest when trees are planted side by side along streets, but lower in parks and school campuses.

Officials point to the many benefits that trees offer and stress that it's a simple conservation measure needed everywhere.

"There's just not a lot that moves the needle like trees do," said Ryan Davis, manager for the Chesapeake Forests program of the Alliance for the Chesapeake Bay. "We absolutely need to have them everywhere."

By far, the biggest push is to establish filtering strips of trees and other vegetation along streams in farm country, where fertilizers and soil can run off during heavy rains. Strips 100–150 feet wide are preferred in the state plan, but even a buffer 30 feet wide can help break up the flow of stormwater and filter pollutants. A buffered stream can absorb eight times more nitrogen and five times as much

phosphorus as one without trees and grasses, according to Campbell.

Pennsylvania's latest Bay cleanup plan calls for forested buffers on 83,000 acres of farmland and 2,650 acres in developed areas, totaling about 17 million trees.

"If we don't get close to these forest buffer goals, there's almost no way we get to have these healthy streams, period," Davis said.

Streamside trees provide wildlife with habitat and corridors for movement, while their roots help to stabilize stream banks, reducing erosion. The shade helps fish survive. Branches and leaves that fall into the stream enrich the water with organic matter that feed macroinvertebrate insects that, in turn, support fish. And increased biological activity helps the stream capture more nutrients.

"The bottom line is the presence of trees helps to not only preserves and protects water quality and the ecosystem, but also helps the stream cleanse itself," Campbell said.

And planting trees is a relatively inexpensive improvement on the landscape that gets more effective over time, with a boost in real estate values to boot.

Leaders in the tree planting effort say that a greater variety in programs that offer financial or technical assistance for tree plantings is drawing more landowner interest, especially from farmers.

Programs have become more creative and flexible, allowing a variety of buffer widths, with more vegetation. Some landowners, for example, want

to bring in birds, others game animals. Some programs include after-planting maintenance, which is often a time drag for busy farmers.

Multifunctional buffers that generate income for landowners are also a draw. Growing elderberries for jam and syrup that can be sold at farm markets is popular, as is red osier dogwood and pussy willow trees whose ornamental cuttings are in demand. Trees that bear fruits and nuts can be sprinkled in among the vegetation.

Yet another new driver is the requirement for municipalities to reduce nutrient pollution from stormwater runoff. Many are turning to stream restoration projects with forested buffers as a way to meet those goals.

In addition to getting trees planted along streams in farmland and in urban areas, the state plan calls for 35,000 acres of barren abandoned mine land to again become living ecosystems with trees and plants. It also aims to convert 10,000 acres of lawns and mowed turf to forests or meadows with pollinator habitat.

Conservation plays a role too, with the state plan calling for 20,000 acres of existing forests and natural areas to be protected and 400 acres of wetlands to be restored annually.

One of DCNR's linchpins for carrying out its tree agenda is its Riparian Forest Buffer Program, which provides grants and short-term maintenance for projects. The agency's TreeVitalize program is a public-private partnership to help communities plan, plant and care for urban tree projects.

A private initiative, Tree Tenders, started by the Pennsylvania Horticultural Society, trains people throughout the state to properly plant and care for trees, then go out and drum up more community plantings.

The Keystone 10 Million Trees Partnership has created a coalition of 124 partners that include state government, businesses and local and national conservation groups.

To identify the best places where trees will make a difference in stemming pollution, the group is working with the Chesapeake Conservancy to use satellite imagery and computer modeling to find the most concentrated flows of runoff, like streams at the bottom of a sloped farm field.

Campbell thinks trees are the way to go as Pennsylvania works to meet its Bay cleanup commitment.

"People can understand trees. It's difficult sometimes to explain cover crops to a suburban soccer mom. But a tree is much more relatable. We can connect people to this larger endeavor and make them feel that they are part of the solution," Campbell said.



# Long-running Chesapeake crab study threatened with shutdown

≈ Both funding woes, coronavirus impacts halt 50-year monitoring survey

By JEREMY COX

One of the longest-running scientific investigations of the Chesapeake Bay is in danger of shutting down permanently.

The Morgan State University blue crab monitoring survey has persisted for 50 years through two institutions, three financial sponsors and the evolution from paper to digital tabulation. But its funding dried up this year, and the deep financial downturn triggered by the coronavirus has cast doubt on finding an alternative source.

"Normally, we'd be getting the crab survey ready, but that's not happening this year unfortunately," said Tom Ihde, the fisheries ecologist at Morgan State who currently helms the study.

The coronavirus has grounded environmental research across the Chesapeake region and around the globe. Some studies are impossible to carry out without violating social-distancing protocols. Others suffered human resource shortages when university graduate students were sent home. And the future funding picture is hazy at best.

Amid this crisis within a crisis, the Morgan State crab study stands out. Its ills predate the pandemic, putting it in a tougher spot than most of the other suspended work. Meanwhile, what hangs in the balance isn't a few months of datasets but rather a decades-long crusade that helped fishery managers resurrect the iconic species after years of decline.

Ihde said he has been trying to find other avenues to finance the work. The prospects didn't look good before the coronavirus emerged, he said. Now, they look even worse.

"These long-term surveys are notoriously hard to keep funded, and it's not cheap to get boats on the water or to pay for gear and staff time," Ihde said. "We're trying to find other ways of funding. I've tried quite a few, but there's no success yet."

The research historically has cost about \$50,000 a year to conduct.

The protocol has changed little from the beginning. Once a month from June to early November, when crabs are most active, Ihde and his team bait 30 crab pots with menhaden and drop them into the Bay along the western shore in southern Maryland. The pots are divided among offshore sites near Kenwood Beach, Rocky Point and Calvert Cliffs.

The researchers return in their boat 24 hours later to record how many they caught, the size of the crustaceans and the characteristics of the water.

The study got under way in 1968. It grew out of researchers' and envi-



Stanley Nwakamma, an intern at Morgan State University's Patuxent Environmental and Aquatic Research Laboratory, hoists a crab pot containing crustaceans in 2018 while working on the facility's long-running blue crab survey. (Morgan State University)

ronmentalists' concerns about how a new nuclear power plant, which was then nearly a decade from opening at Calvert Cliffs, would affect crabs with its discharges of heated water.

The scientist selected to lead the study was fresh from receiving his master's degree in biological sciences from the University of Delaware. George Abbe became the first employee of the Academy of Natural Sciences' Estuarine Research Center on the Patuxent River.

Over the next 40 years, Abbe produced a wealth of publications — more than 150, including his oyster research and other topics. But the crab study was his obsession, colleagues say.

The crab survey would soon move beyond its initial parochial goal — the heated water turned out to be a non-factor. Along the way, the survey shaped science's evolving understanding of the Bay's crabs.

Sandra Shumway, a marine scientist with the University of Connecticut who knew Abbe through academic conferences and followed his work closely, called him a visionary for developing a study that stood the test of time.

"Long-term data sets are rare," she said. "It's only by having that long, broad picture that you really understand what the population is doing."

In the 1990s, Abbe was one of the first scientists to warn that the once-abundant species was dwindling in the Bay. His

work showed that fishermen were taking too many crabs just over the legal size limit instead of waiting for them to grow mature enough to reproduce, a phenomenon known as "growth overfishing."

"He rang the warning bell very loudly and clearly," Ihde said.

Abbe's research helped inform the U.S. Commerce Department's decision in 2008 to declare the Chesapeake crab fishery a disaster, Ihde said. The designation made watermen eligible for \$75 million in federal aid. It also prompted fishery managers in

Maryland and Virginia to enact harvest restrictions that have been widely credited with helping to drive the population up 60% to 594 million crabs as of 2019.

The study has weathered several changes in recent years.

In 2004, the Academy transferred the research center that housed Abbe's work to Morgan State. Funding for the study began with Baltimore Gas & Electric, the nuclear plant's original owner. After 15 years, it moved to the Maryland Department of Natural Resources for 30 years. The state money stopped flowing in 2011; there was no funding and no surveying for the next two years.

Abbe continued working and studying the Bay's shellfish until shortly before his death in August 2013 at the age of 69.

Dominion Energy, which operates a liquefied natural gas plant in the area, stepped up and voluntarily funded the work from 2014 through last year. This year's stoppage initially stemmed from a mix-up between Morgan State and Dominion over the application deadline for the funds, each side confirmed.

But the coronavirus has forced the energy company to reshuffle its priorities.

"We have halted all expenditures companywide for the foreseeable future," said George Anas, Dominion's external affairs manager. "It's not that we don't care any less [about the crab survey]. We have enjoyed working with them, and we look down the road

hoping we can do some more."

Maryland's DNR has no plans to fund the study, agency spokesman Gregg Bortz said.

The state has conducted its own annual crab survey in conjunction with the Virginia Institute of Marine Science since 1990. It uses dredges to collect oysters during the winter.

Bortz added that the agency's scientists prefer their method for assessing the population size because it analyzes many locations around the Bay and catches crabs of all sizes. In contrast, the Morgan State study focuses on one area and can only capture crabs that are at least a year old.

The director of what is now known as the Patuxent Environmental and Aquatic Research Laboratory insists the study can still be valuable to the state's fishery monitoring. "Our survey can do different things and fill in some gaps," Scott Knoche said.

For example, because it looks at female crab movements in the fall, the study can be used to predict reproduction levels for the next spring, Ihde said.

Tom Miller, a crab specialist who directs the Chesapeake Biological Laboratory at the University of Maryland Center for Environmental Science, said the winter dredge survey supplies the best overall snapshot of the blue crab population. He helps author the annual study.

The Morgan State survey may no longer be as vital for fishery managers as it once was, but it is still useful for spotting long-range trends, Miller said.

"What's important about it is you conduct it the same way," he said. "If you see crabs are less abundant than they were in this pot survey, because the methods are the same, that should be a reliable indicator of changes in the overall crab population."

Last year, the center's staff converted decades of Abbe's handwritten notes to digital records. Ihde has begun analyzing the voluminous dataset and hopes to dig up findings that persuade some entity to fund future field work.

A long-term study can survive a year or two without collecting new data, Ihde said. But if the delay goes on much longer, it seriously compromises the survey's ongoing usefulness to fellow researchers and fishery managers.

"Long-term surveys like this are absolutely critical when it comes to trying to understand population changes over time, especially when the system itself is changing," Ihde said, referring to the way climate change has led to warmer winters and shorter periods of dormancy for crabs. "It's easy to lose sight of what things should be like. Fifty years is well beyond most people's professional career memory."



# Climate change linked to decline of smallmouth bass in Potomac

≈ Increased springtime flooding interfering with spawning

By KARL BLANKENSHIP

Amid the coronavirus outbreak that sidelined almost all other field work this spring, a handful of Maryland biologists were dispatched to the Potomac River for an emergency project.

Their task: Capture smallmouth bass so their eggs could be transported to a hatchery with the hope that their offspring could help rebuild the river's flagging population of the prized sport fish.

"The angling community is in an uproar, and rightfully so," said Josh Henesy, a freshwater fishery biologist with the Maryland Department of Natural Resources, who was with the crew — practicing social distancing on a boat — while trying to collect egg-bearing fish.

Smallmouth bass are, by far, the most popular sport fish in the nontidal portion of the Potomac above Great Falls. But they've suffered from poor reproduction every year since 2007. Without intervention, state fishery managers worry the future of the recreational fishery, valued at \$23 million a year, could be in jeopardy.

State officials say the cause of the decline isn't overfishing because the bulk of the activity is catch-and-release.

A new study by the U.S. Geological Survey's Leetown Science Center in West Virginia and the Maryland Department of Natural Resources offers another explanation: a changing climate. Increased rainfall driven by a warming planet is causing parts of the river to routinely flood in May and June, during and immediately after the smallmouth bass spawning season.

Heavy flows scour eggs from the nesting areas where they were released and also move recently hatched larvae into areas where their odds of survival are poor.

On average, precipitation in the Bay region has been increasing for the past century with much of the increase coming during intense storms as opposed to



Biologists set up a seine net to survey fish in the Potomac River above the fall line. The annual survey has been taking place since 1975. (Courtesy of John Mullican)

gentle, soaking rains. In the Potomac, peak spring flows have increased 4.3% per decade from 1970 through 2010, according to the study that was published in the journal *Ecosphere*.

"We're concerned that rare events are becoming less rare," said Than Hitt of the U.S. Geological Survey and lead author of the study.

The impact of intense rainfall is further compounded by development, the study said, which speeds stormwater runoff from the land into the river.

Nor are smallmouth bass the only species being affected. The study, which analyzed 43 years of data from the Potomac River, found that 13 of 28 fish species experienced significant changes in abundance that appear to be related to higher springtime river flows.

Of those, nine increased in abundance and four decreased. Those that increased tended to be small, short-lived fish such as

banded killifish and mosquito fish, which are capable of spawning several times during the spring. That gives at least some of their offspring a greater chance to find optimal flow conditions.

Declining species were larger, long-lived fish that tend to delay spawning, have fewer offspring and provide more parental care.

"The reproductive biology of these species is telling us that conditions in the river are changing," Hitt said. "And that is important because they have been there for many generations. To see such important changes over the last 43 years gives us pause."

Other factors, such as whether a species was native or introduced, or changes in water quality, did not explain the trends in reproduction, Hitt said.

The fact that the DNR has initiated a five-year stocking program to try to stabilize the smallmouth bass population

in the Potomac shows the significant impact of shifting flow patterns on fish. "What we are seeing now is that natural reproduction may not be able to provide a stable population," Hitt said.

The study was only possible because the DNR launched a seine net survey to monitor the river's smallmouth bass reproduction in 1975. They not only maintained the survey over time, but identified and counted more than 244,000 fish collected over the years, ultimately resulting in a long-running data set that covered 28 species.

As a result, Hitt said, "we can put smallmouth in the context of many other species. The story they are telling is much more powerful when you see that it is not just one species showing a trend, but rather many species in the fish community."

Also of concern were sharp declines in some ecologically important species such as river chub and creek chub. Those species are ecological engineers — they physically move stones around in the river to build nests where they release eggs. Those structures are important spawning sites for other species as well.

"Where they disappear, you can lose other species that rely on those mounds," Hitt said. "That could have rippling effects throughout the ecosystem."

The changes are not all bad. The small species that are thriving under the new conditions aren't sport fish, but they provide food for those species — including the voracious flathead catfish that has turned up in the Potomac in recent years.

"We have a lot of predators in the river now," Henesy said. "So having a strong forage base is needed to support the amount of predation now in the river."

But with more than a decade of poor reproduction, the population of adult smallmouth bass is starting to suffer, and Henesy said he hopes the hatchery-stocking effort changes the trajectory. After all, he has seen first-hand the smallmouth population change over time. "I learned to fish on the Potomac, with smallmouth bass."

## Long-time Supporter of Environmental Causes...



Over 80% of our non-consumable items are recycled  
Our straws are compostable  
All food waste is composted  
All oysters shells recycled (over 100,000 in 2019!)



HAPPY HOUR Mon-Fri 3-7 pm BREAKFAST Mon-Fri 7:30 am BRUNCH Sat-Sun 8 am-1 pm

400 Fourth St Annapolis, MD [boatyardbarandgrill.com](http://boatyardbarandgrill.com) 410-216-6206

**SMC**  
STORMWATER MAINTENANCE & CONSULTING

**WE PROTECT AND RESTORE WATERSHEDS.**

**DESIGN | BUILD | INSPECT | MAINTAIN | SURVEY**

(410) 785-0875 | [www.MDSWM.com](http://www.MDSWM.com)



# Oyster growers hope polluters will shell out for nutrient credits

≈ MD aquaculture businesses try out fledgling water quality trading market.

By TIMOTHY B. WHEELER

When event planners huddled last fall at the Baltimore Convention Center for a workshop on sustainable conferences, they chowed down on locally sourced foods, including oysters on the half shell farmed on the Eastern Shore.

Those shellfish earned a green premium. The convention center not only paid to stock its raw bar, but it also agreed to pay extra for an ecosystem service the oysters provided before being harvested: removing water-fouling nitrogen from the Chesapeake Bay.

That deal is among the first of its kind to be struck under Maryland's water quality trading program, which aims to harness the power of the marketplace to reduce nutrient and sediment pollution in the Bay and its tributaries.

The transaction was a drop in the proverbial bucket, based on the removal of just four pounds of nitrogen, when more than 200 million pounds of that nutrient get into the Chesapeake annually from wastewater, farm runoff and urban stormwater. But aquaculture advocates, who've been waiting years to see a deal like this, hope that many more will follow.

"It's an organic solution to an age-old problem," said Johnny Shockley, chairman of Blue Oyster Environmental, an aquaculture company in Cambridge that brokered the nitrogen credit deal.

Shockley, a third-generation waterman, gave up traditional crabbing and oystering a decade ago to go into oyster farming. Last year, he started Blue Oyster Environmental to help scale up Maryland's aquaculture industry while simultaneously helping to improve the Bay's water quality. It's a dream shared by others.

"Maryland and Virginia have bought into the concept of using a market-based approach to clean up the Chesapeake," Shockley said. "And it just so happens that oysters and oyster aquaculture fit very neatly into that concept as a best management practice."

Getting from concept to the market, though, has been a slow and painstaking process that's only now begun to show tentative results.

The concept seems straightforward. Oysters are prolific filter feeders, each one pumping several gallons of water daily through its gills to sift out and consume algae and other organic particles.

As they feed, oysters assimilate some of the nutrients from their diet into their gray, slimy tissue and hard shells. They neutralize some more algae-feeding nitrogen by turning it into a harmless gas. And they make the water clearer by removing



Jordan Shockley, CEO of Blue Oyster Environmental, and his father, Johnny Shockley, the company's founder and chairman, say nutrient credit trading can help expand Maryland's aquaculture industry while also helping to clean up the Bay. (Dave Harp)

some of the sediment suspended in it.

For those reasons and more, scientists, environmentalists and policy makers have long regarded oysters as a missing link to reviving the Chesapeake's health. But overharvesting, disease and habitat loss have depleted the bivalve population — and its filtration capacity — to 1% or less of historic levels. To help revive the Bay, both Maryland and Virginia have pledged to conduct large-scale oyster restoration projects by 2025 in five of its tributaries. Virginia recently added a sixth, the Elizabeth River, to its commitment.

Those efforts are under the gun, though, with just two of the 11 restora-

tion projects finished so far. Even when completed, they'll still be just a fraction of what's needed to return oysters to their one-time abundance.

"We want to support their restoration," said Suzanne Dorsey, assistant secretary of the Maryland Department of the Environment. Aquaculture, she added, "is a really important approach to do that."

## Trading on oysters

Federal and state officials, along with some environmentalists, hope to enlist oyster aquaculture in the Bay restoration effort through water quality trading. Typically, trading can occur when a

municipality or some other discharger needs to reduce the amount of nutrient pollution it generates. Instead of making the cut from its own activities, the polluter could pay a farmer to plant trees or do something else — at less expense — to prevent a comparable amount of nutrients from getting in the water elsewhere. With their ability to soak up nutrients, oysters are seen as another option.

In December 2016, after studying the scientific literature, a panel of experts advising the federal-state Chesapeake Bay Program recommended awarding nitrogen removal credits to aquaculture operations based on the number and size of oysters that are harvested.

It's taken years to work out the details and set ground rules aimed at ensuring the nutrient reductions claimed are real. But as of April, 10 different oyster farmers had listed credits for sale on the MDE's online "trading board." No deals had been finalized, but Greg Sandi, who helps manage the MDE trading program, said he knew of two or three in varying stages of negotiation.

With only a few deals in the works, it's too early to say what growers might earn from selling credits. Because trading is new in Maryland, the price paid can range from \$75 per pound to a few thousand dollars, the MDE's Dorsey said. Credits from sales of farmed oysters, though, are only good for the year in which they were harvested, so anyone needing offsets would have to pay for them annually.

The convention center deal is basically done, awaiting only a check to be issued for the nitrogen credits purchased, said the facility's deputy director, Mac Campbell.

Campbell said the deal grew out of an encounter he had with Jordan Shockley, Johnny's son and CEO of Blue Oyster Environmental. The convention center wants to market itself as a venue for sustainable meetings, Campbell explained, by serving local foods and shrinking the environmental footprint of its events.

TRADING CONTINUES ON PAGE 15



## TRADING FROM PAGE 14

"I'd never heard of oyster nitrogen offset credits before," Campbell said. But, he added, "When you think Baltimore and you're bringing your event here, it's all about the Bay. It's about crabs and oysters. I think it's a logical line to draw."

So, Blue Oyster Environmental arranged for the convention center to buy 400 farm-raised oysters and pay \$1,600 extra for the related nutrient reduction credits for its sustainable events session from the Orchard Point Oyster Co.

Campbell said he viewed it as a test to see how such transactions work and how they'd be accepted.

Scott Budden, co-owner of Orchard Point, said the significance of the deal goes beyond the relatively small amount of money involved this time.

"It is a way to compensate growers for the service they're providing the public," he said. Oysters do what no other pollution control can, he said, by removing nutrients after they've gotten into the water.

The payments are especially welcome now, he added, because oyster growers have had two tough years and appear in for a third. Harvests suffered in 2018 when record rainfall turned the Bay fresh, and again last year, when hatcheries couldn't produce the spat needed for a new crop. Now, the coronavirus pandemic has shut growers' markets with restaurants and raw bars.

"Farming's very hard work, and it's not a get rich scheme," Budden said. "Any little bit is going to help."

### Demonstrating possibility

The convention center deal was purely voluntary. Usually, trades are to satisfy a regulatory requirement. Anne Arundel County, for example, has agreed to purchase nitrogen and phosphorus removal credits from an oyster farm on the West River south of Annapolis to help meet state mandates for treating stormwater runoff.

Erik Michelsen, who runs the county's watershed protection and restoration program, said Anne Arundel will be paying \$4,950 for 107 pounds of nitrogen and 12 pounds of phosphorus removed from the river by oysters cultivated and harvested there by Rob and Terry Witt of Shady Side.

The credits being bought are equivalent to treating runoff from 3 acres of impervious surface, Michelsen said — a smidgeon of roughly 5,000 acres of pavement, buildings and other hard surfaces in the county. But Michelsen said county officials think it's worth "demonstrating the possibility that this can be done by supporting local aquaculture — and maybe catalyzing efforts on a larger scale."

Terry Witt already thinks it's "a huge

thing." She and her husband Rob raise oysters on leased bottom to supplement what they can harvest in the wild. The deal with Anne Arundel was brokered through the Maryland Seafood Cooperative, of which she is board president.

"It's a daunting thing to plant oysters, and you have to wait three to four years ... before you can harvest them," she said. Being paid for nutrient reduction credits "is like icing on the cake," she said. The added income can help farmers grow their businesses, she said.

Still, there are challenges. The prospective buyers on the MDE website are industries or government entities looking to buy more and different credits than any individual oyster farmer has to offer. And trades are limited, geographically. In an effort to see that cleanup occurs where pollution is produced, MDE specified that credits can only be sold in the watershed where they're generated. Many oyster farms are in rural areas on the Eastern Shore and in Southern Maryland, with few industries or wastewater plants.

"There's nothing upriver of us but marsh," said Ted Cooney, founder of Madhouse Oysters on Hoopers Island in Dorchester County.

The MDE's Sandi acknowledged that the opportunities for oyster farmers to sell their credits are limited now. But he said that MDE officials are looking for "new and creative ways" to incentivize trades.

### VA holds back Fledgling as the

market is, at least some Maryland growers are trying it out. While Virginia's aquaculture industry is much larger than Maryland's, growers there have shown little interest to date.

"It's something we've all talked about, and thus far, no one is convinced that this is a money-making proposition for growers," said Mike Oesterling, executive director of the Shellfish Growers of Virginia.

One, the Oyster Company of Virginia, recognized the potential early on of trading and offsets. It got state approval in 2015 and again in 2018 to earn and sell nutrient removal credits. Tolar Nolley, the company's founder, said the "in situ nutrient remediation program" he's crafted can boost the aquaculture industry and help clean the Bay at the same time.

"Through modeled and measured science, we do have an opportunity to accelerate domestic seafood in the Chesapeake Bay, to help with restoration projects and also to help stabilize the waterfront communities," Nolley said.

So far, though, Nolley's company has yet to apply for state approval of any nutrient credits, according to Allan Brockenbrough, water permits manager for the Virginia Department of Environmental Quality. Nolley said that a significant deal is in the works. But the state regulator expressed doubt that aquaculture can gain much traction in the state's trading market. "I don't know if it will ever take off," Brockenbrough said. "It takes an awful lot of oysters to generate a reasonable credit, and you're competing against other credits produced on the market by wastewater plants that are also readily available."

Johnny and Jordan Shockley acknowl-

ing oyster reefs. With hundreds of acres to be seeded with billions of hatchery spat, those projects could reduce large amounts of nitrogen and phosphorus — much more than any single oyster farm. And the credits could be perpetual rather than annual, because the oysters will stay in the water and — assuming they survive — continue converting nitrogen to harmless gas.

Traditional watermen would also like to get a piece of the nutrient trading action, with payment for the water-fouling nutrients removed when they harvest oysters from public reefs. The Bay Program expert panel is looking at proposing limited credit for harvesting hatchery-produced oysters from public fishing grounds, according to the panel's chair, Jeff Cornwell, a research professor at the University of Maryland Center for Environmental Science's



*The Baltimore Convention Center offered a raw bar stocked by the Orchard Point Oyster Co. for a workshop last fall on holding sustainable events. Under a deal brokered by Blue Oyster Environmental, the center paid extra for the nitrogen the farmed oysters were credited with filtering from the Bay. (Photo courtesy of Baltimore Convention Center)*

edge the challenges, but say they're working to overcome them. They want to "bundle" credits from various growers to make them more attractive to buyers, and they're looking for ways to structure deals that aren't so bound by geography. They're convinced that more growers will want in once they see credits finally getting sold.

One boost might come from the state's Clean Water Commerce Act, under which the MDE is authorized to spend up to \$10 million in the coming year for "the purchase of cost-effective nitrogen, phosphorus and sediment load reductions" that will help clean up the Bay. Those funds can buy reductions anywhere in the state, an MDE spokesman said.

The Blue Oyster team also is hoping that the Bay Program will soon approve granting water quality credits for restor-

Horn Point Laboratory.

Eventually, the Shockleys said, they hope the aquaculture industry can tap into a stream of revenue similar in size to the \$25 billion a year that now is spent on mitigating wetlands losses in the United States. They're planning to develop a modern oyster-processing operation in Cambridge and even create a "lifestyle brand" around oysters that can engage the public more in the restoration effort.

"We're looking to find solutions," Johnny Shockley said. While there's a lot of friction now over oyster restoration and aquaculture, he said, "we're looking to bring the community together, the NGOs [nongovernmental organizations], the watermen and the entire population, to be focused on putting more oysters in the Bay."



# Pumped-up performance: Oysters' filtering feat overstated

≈ Ability to clear 50 gallons of water in a day depends on ideal lab conditions not usually present in Chesapeake

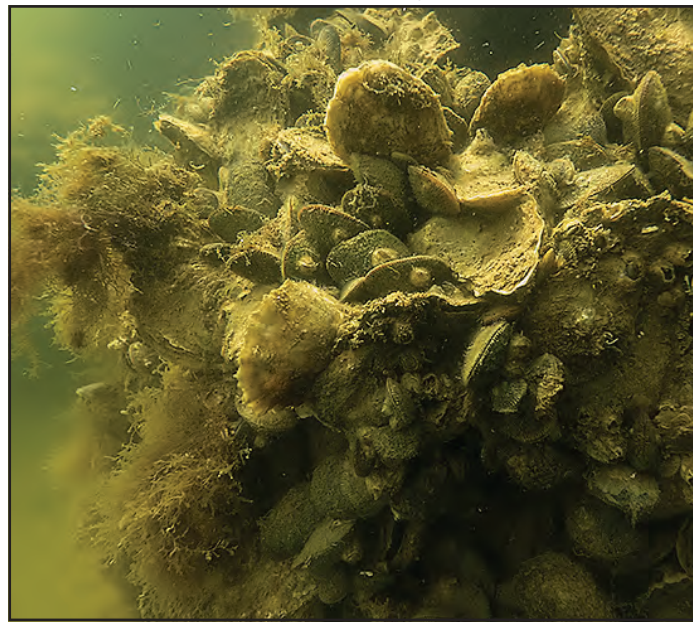
By TIMOTHY B. WHEELER

Oysters are filter feeders that can help clean up the Chesapeake Bay, right? Many have seen the various web videos showing a dozen or so bivalves clearing a murky fish tank in just an hour. But are they such ecological superheroes that each one can siphon 50 gallons of water in a day?

That's what's often said by restoration advocates. It's found on websites for the federal-state Chesapeake Bay Program and the nonprofit Chesapeake Bay Foundation, among others. It's also been stated in countless press releases and news stories, including those published by the *Bay Journal*.

Is it true? Well, yes, but not so much in the real world, according to Matthew Gray, a scientist at the University of Maryland Center for Environmental Science's Horn Point Laboratory.

"[Fifty gallons per day] is about the near maximum rate at which the Eastern oyster will filter under laboratory conditions at optimum temperatures and very high-quality diets," said Gray, whose specialty is the study of oysters, clams and mussels.



*Oysters need everything to be just right for them to filter anything like 50 gallons of water in a day. (Dave Harp)*

In reality, Gray said, under average conditions in the wild, an oyster will more likely siphon 3.0–12.5 gallons of water per day.

Oysters feed on algae and other organic particles by pumping water through their gills. Gray said research he and others have done shows that an oyster's filtration rate depends on a lot

of environmental factors.

"They don't feed much at very low temperatures and get stressed out at super high temperatures," he explained. They tend to be hungriest when the water is in a 10-degree range from the high 60s to high 70s Fahrenheit. Consequently, he pointed out, Bay oysters don't eat or filter water year-round — not when a frigid winter sets in or when summer turns blistering.

Salinity matters, too. Oysters feed less, or not at all, when the water becomes really fresh.

Turbidity also can make a difference. While oysters can clear up cloudy water, Gray said that "if there's a lot of sediment and dirt in the water column, they'll spend more time sorting that than just ingesting it. And if it's really, really bad

they'll just stop feeding. They'll close up."

Furthermore, the quantity and quality of food matters. Certain kinds of harmful algae, like the ones that produce brown or red tides, can turn off an oyster's appetite.

Finally, Gray pointed out that oysters stop filter feeding and "clam up" in the presence of crabs and other predators. If that happens often or long enough, it can alter how much water they process over the course of a day.

In other words, an oyster's propensity to filter anything close to 50 gallons a day is a little like Goldilocks in the classic fairy tale: Everything has to be just right. And in the wild, that sweet spot is hard to find.

That's not to say oysters don't play an important role in the Bay. They're "powerful ecosystem engineers," he said, building reefs with their shells that provide habitat for fish, crabs and other marine creatures.

And when conditions are optimal, he added, "they can really have transformative effects on water quality and clarity."

"But they are not a silver bullet," he said. "Like any animal on Earth, there needs to be some baseline level of environmental quality in which they can function and live before they can have a major role in improving environmental health."



Since 1957

Open 7 Days  
(410) 242-6108

**FISHING TACKLE - LIVE BAIT**

**GUNS - AMMUNITION - Guns Bought, Sold, Traded**

**HUNTING EQUIPMENT - ARCHERY**

2307 Hammonds Ferry Rd.  
Halethorpe, MD 21227  
Exit 9 off I-695

24 HOUR  
Fishing Info:  
(410) 247-FISH

A NEW BAY JOURNAL FILM  
**Nassawango Legacy**

Watch on [BayJournal.com](http://BayJournal.com) or on YouTube

**Give them Knowledge,  
Share your Passion**

Help preserve  
independent journalism  
for future generations  
when you include  
**Bay Journal** in your  
**Estate Planning**

Contact us and your estate planning attorney  
[jcaine@bayjournal.com](mailto:jcaine@bayjournal.com)  
jacqui caine (540) 903-9298



# Bald eagles' recovery along James River soars to new heights

≈ Area's 300 breeding pairs surpass goal for entire Chesapeake watershed

BY WHITNEY PIPKIN

In the late 1970s, the treetops of the James River looked like a ghost town. Despite plenty of suitable habitat where bald eagles could have been nesting and had before, the waterway was the only major tributary in the Chesapeake Bay whose nesting population of the iconic American predator had plummeted to zero.

Imagine biologists' surprise when, four decades later, that same river became the staging ground for the eagles' astonishing comeback. Aerial surveys tallied more than 300 breeding pairs of eagles along the James River for the first time in 2019 — a number that had been the species' recovery goal for the entire Chesapeake Bay watershed.

Biologists estimate there are now close to 3,000 nesting pairs Baywide, but surveys of the entire region no longer occur annually. Maryland stopped surveying bald eagles in 2004 when they hit nearly 400 breeding pairs statewide, surpassing population goals. The Pennsylvania Game Commission began asking the public in 2019 to help count the number of nesting eagles in the state, which had surpassed 300, creating a website for public input.

The James River aerial surveys, though, have taken place every year since 1962 — and they continue, in part, so biologists can better understand the full curve of a bird population's recovery.

The 2020 aerial survey of the river, conducted in February and March, indicated that the eagle population continues to grow, though at a slower rate as it begins to stabilize after decades of rapid recovery.



*A two-eaglet brood like this one is harder to find along portions of the James River. As eagle density in the region grows, pairs find it harder to support larger nests while competing for food and territory. (Photo provided by Bryan Watts)*

"We never expected the James River population would reach these types of numbers," said Bryan Watts, who's been conducting the survey for nearly 30 years as director of the Center for Conservation Biology, a research arm of the College of William & Mary and the Virginia Commonwealth University.

On the plane with him each year is professor and co-founder of the center, Mitchell Byrd, who's in his 90s and has conducted surveys on the James for nearly 45 years, including when there were no nesting pairs of eagles to count in 1977 and 1978.

Now, Watts said, "It's hard to keep up with the pairs."

Early in the 1970s, two seminal pieces of legislation set the stage for the eagle's comeback, both locally and across the country. The federal government in 1972 outlawed the widely used pesticide DDT, which caused eagles to lay thin-shelled eggs that cracked before the chicks could hatch. The next year brought the Endangered Species Act, with additional habitat and population protections for the birds.

Over the decades, the bald eagle's recovery nationwide has been so robust that it was delisted as endangered in 2007. The birds are still federally protected, though, by the 1940 Bald Eagle Protection Act, which added golden eagles to the measure in 1962.

"If you go back in time, there was a long parade of insults [against eagles.] The last one was DDT. It just pushed them to the limit," Watts said. "There's no doubt that respect for eagles played a major role" in their protection.

Water quality improvements set into motion in the 1970s likely helped the recovery, too.

## Nesting on the James

Researchers focused on bald eagle populations in the Chesapeake in the mid-1950s had a hunch that the region could be one of the last strongholds for the entire East Coast population.

Jack Abbott, an amateur naturalist who worked for the military at Fort Belvoir, conducted the first aerial survey to count bald eagle nests in the region in 1962, logging his observations in parts of Virginia and Maryland until passing on the job to the states' natural resources agencies in 1977. Abbott pegged Jamestown Island as the hub of eagle breeding because it had three nests — the highest density at the time. Watts thinks he may have been onto something.

Today, "there's no question that the Chesapeake Bay is a huge fountain of eagle production flowing to the surrounding states," Watts said. But "no one could have anticipated the heights we've reached."

The number of nesting pairs of eagles near the James River has grown 8–10% each year since the first newborn chick appeared in a nest in 1979 through the 2010s. Now, that growth rate is beginning to slow, but Watts said that's an indication that it's stabilizing.

The James River is a focal point of the bald eagle monitoring effort for a few reasons: The annual count of the number of nests and the number of chicks in them has been ongoing for nearly 60 years on this river, making it a rare and valuable dataset in the world of bird counts. The river also was the only major Bay tributary whose population of nesting bald eagles got down to zero during the '70s.

The winding river begins in a freshwater stretch upstream of Richmond and shifts to saltwater over a shorter distance than other major Chesapeake tributaries. This means an eagle on the wing can feed on a wide variety of fish close to its nest on the tree-lined shores — which, today, are teeming with eagles.

This year's survey results were still being confirmed during April, but Watts estimates that there are approximately 310 nesting pairs of eagles along the James.

In the 2000s, when there were half as many nests, many of the pairs would



*Aerial surveys tallied more than 300 breeding pairs of eagles along the James River for the first time in 2019 — a number that had been the species' recovery goal for the entire Chesapeake Bay watershed. (Dave Harp)*



## ISLANDS FROM PAGE 1

mass in danger of disappearing.

"This area of the Bay has some of the highest erosion rates," said Ray Tracy, the Army Corps' project manager.

The twin projects will help to improve the Bay ecosystem's fragile health, engineers say, by reducing the amount of sediment that washes into nearby waters and enlarging nesting areas for rare and threatened bird species.

The Chesapeake Bay Foundation and other conservation groups have been complimentary of the Poplar restoration and are watching the James and Barren projects closely.

"We want to ensure the dredged material continues to be viewed as a resource for habitat restoration," said Doug Myers, senior Maryland scientist for the Bay Foundation.

### Environmental benefits

Already, hundreds of islands have been lost to storms, erosion and a changing climate across the United States' largest estuary. Over the last 150 years, scientists estimate that the middle-eastern portion of the Bay alone has lost 10,500 acres of remote island habitat — places with no bridge connection to the mainland.

Many more islands remain threatened. Sea level has risen about 1 foot in the Chesapeake region over the past 100 years and could surge another 4 feet or more by the end of this century, climate scientists say.

Although only two remote islands



*Dredged material will be used to rebuild the rapidly eroding Barren Island in the mid-Chesapeake Bay, shown here in 2017. (Dave Harp)*

remain inhabited — Tangier Island in Virginia and Smith Island in Maryland — scientists and environmentalists say that a different kind of populace relies on their survival. Because of their secluded locations, the islands are magnets for migratory birds, such as ospreys, black skimmers, pelicans and bald eagles.

Like Poplar, James Island would be rebuilt using mud dredged from the approach channels leading to the Port of Baltimore and the Chesapeake and Delaware Canal. Officials say that nature can benefit from the creation of dredge-spoil islands, even if some of their methods and materials are anything but natural.

For example, plans at James Island call for replacing much of its squishy shoreline with a ring of boulders and

other armoring. In many locations, such "hardened" shorelines have been shown to reduce important habitat for waterbirds, crabs and fish. But federal biologists tracking the presence of wildlife on Poplar, which also sports a stone perimeter, have documented up to 15,000 birds a day touching down on the island, representing more than 200 species. Before the work got under way, only 10 bird species frequented it.

"These projects like Poplar Island and Mid-Bay create great wetlands and habitat for birds, terrapins, fish and crabs," said David Blazer of the Port Administration. "That's why they call it beneficial use."

Myers and other environmentalists say their advocacy remains crucial because

rebuilding-islands projects are an expensive way to deal with dredged material and can face criticism for the cost.

### An island reimagined

Poplar Island offers a preview of what to expect at James and Barren, said Michael Scott, a geography professor at Salisbury University who has closely studied Dorchester's receding coastline for years.

"They will use very similar techniques as they did with Poplar Island," Scott said, "They are very good at engineering these sorts of things."

In the 1840s, Poplar Island, which lies 10 miles south of the Bay Bridge off Talbot County, covered 1,100 acres. But by the 1990s, it was little more than a 5-acre slab. The island's restoration began in 1998 in response to a state-enacted prohibition on the openwater dumping of dredge material.

The original plan called for returning the island to its mid-19th century size. But the Army Corps expanded the project, moving forward with construction of a 575-acre addition on the island's north side in 2016.

Inside the island's stone dike, heavy machinery has sculpted a terrain that hosts winding creeks, wind-tossed marshes and burgeoning plant life.

In Dorchester, one of the lowest-lying regions around the Bay, officials and local residents began lobbying in the late-1990s for their islands to be next in line for the spoils of the port's

ISLANDS CONTINUES ON PAGE 19

## EAGLES FROM PAGE 17

have had two or three chicks begging for food during the March surveys.

Today, most nests have just one chick despite having laid more eggs.

That's because maturing eagles now have more competition for food and nesting habitat, Watts said. An adult male, for example, has to split his time between gathering food for the brood and protecting the nest from "floater" eagles who have not yet found a territory of their own in the increasingly crowded treetops. A similar phenomenon has played out in regions such as Alaska, where bald eagle populations remain robust, and competition keeps most nests to one chick apiece.

"It is this behavioral feedback that will bring the population into balance with the available space," Watts said. "This is the last chapter of the recovery and why we continue to monitor down here."

Eagles without a territory can either compete for those that do exist — picking fights with their own species or with other large birds, such as ospreys

and blue herons, over limited resources — or they can take flight for another, less populated region. Watts said both are happening with the Chesapeake population, which has been a source of growing eagle populations along the East Coast.

### New neighbors

It's difficult to compare today's eagle population with historic levels for the region. The first recorded survey of bald eagles in the Chesapeake Bay was a ground survey conducted in 1936 that covered a quarter of the available habitat in the region. That survey was used to project that the Bay region was home to between 600 and 800 breeding pairs at the time — and it was used to set recovery goals for the entire Bay, which have long since been surpassed.

One of the reasons that goal might have been too low is that it assumed eagles would only populate areas with little to no human disturbance.

"It turns out, that's not really the case," Watts said.

Eagle populations continued to grow through the 1990s despite a



*An eaglet not in the mood to share its dinner is pictured along the James River in Virginia. The river's mix of salt- and freshwater fish offer bald eagles a variety of food in a short distance. (Photo provided by Bryan Watts)*

period of suburban expansion and, it appears, they acclimated. Today, eagle nests are not uncommon in the treetops of some neighborhoods — even those they had once vacated when the pickings for nests were more plentiful.

"We believed back in the '80s

that land was a zero-sum game — we either give it to the eagles or to humans," Watts said. "The lands we thought were off-limits to eagles have now been colonized. Maybe the future between us two species is not as dire as we once thought it was."



## ISLANDS FROM PAGE 20

war against incoming silt. They hope that the enlarged islands will shield the communities behind them from further erosion and storm surge damage.

“They’re barrier islands to protect the main island,” said Bruce Coulson, a longtime advocate for the projects who owns a campground on Taylors Island, which lies just south of James. He has begun to worry that one of Taylors’ main roads and power line trunks are in danger of sliding into the sea.

Coulson and others knew, though, that the Army Corps measures progress in decades. So, they settled in and kept up their pressure.

Coulson said that the math was on their side. “They have to have [a dredged material placement site]. They either have to find a place to put dredge material or they have to close the port.”

The Port of Baltimore is tied to more than 140,000 jobs and generates \$2.6 billion in business revenue annually, according to the state.

### History washing away

The Army Corps selected James after analyzing 100 potential island restoration sites, Tracy said. “James Island was chosen because it offered a large viable area that would maximize the material placement capacity while allowing infrastructure costs to be kept to a minimum,” he said.

James lies in the mouth of the Little Choptank River. As recently as 1903, it was connected to Taylors Island, but that link has long since washed away. A half-mile of water now stands between their shores.

When the English settled the island in the 1660s, calling it St. James Island, it measured about 1,350 acres. The Pattison family came to own it for about two centuries. By the late 1800s, according to William B. Cronin’s book, *The Disappearing Islands of the Chesapeake*, James was still substantial enough to contain about 20 families, a Methodist church, a school and a store.

But not long after James’ human occupants departed for higher ground in the early 1900s, new residents took their place. In 1916, an enterprising resident named Clement Henry introduced sika deer to the island.

In the decades after their introduction, some of the diminutive elk, native to Asia, swam to the mainland, establishing a population prized by hunters across much of the Eastern Shore to this day. The island’s population has vanished along with all but a few acres of land.

“You used to look out on the Bay and see an island. Now you go out there and see a couple little sticks sticking up. It’s going fast now,” Coulson said.

As part of an erosion study he



*James Island was still somewhat intact in this photo from 1999. Erosion has broken it into three small islands since then and it's disappearing at a great rate. (Dave Harp)*



*By 2013, James Island had broken up into three islands, left. These were shadows of their former selves in 2018. (Google Earth)*



performed for county officials, Scott created an animation of satellite images that show James devolving from a well-defined land mass in 1972 to a few chunks of earth in 2016.

“You can clearly see the significant loss of fast ground over a very short period of time,” he said.

Lying to the south off Hooper’s Island, Barren Island also was once home to a bustling community, boasting 14 farms, a Methodist church, a one-room

schoolhouse and a smattering of stores at its height, Cronin reports in his book. But a rising tide and storms drove the last family off the island in 1916. Hunters constructed a lodge on the island in 1929. But it fell into disuse, with the Bay lapping at its foundation by the 1980s.

The U.S. Fish and Wildlife Service now owns and manages the island as part of the Chesapeake Marshlands National Wildlife Refuge Complex.

Restoring Barren will protect a

healthy patch of underwater grass that has become exposed to wave action, Tracy said. And the northern end of Hooper’s Island, which is home to several of the state’s few remaining crab-picking houses, will be less susceptible to erosion.

Last August, the projects cleared an important hurdle when the Army Corps and Port Administration finalized engineering designs for the islands. The action allows the agencies to move forward with more-complex blueprints, the last step before construction.

“We’re starting now. We’re very early in the process,” Blazer said. “We’re doing the engineering and design, but it will take us almost 10 years to get [the James Island dike] constructed and get it ready for material.”

The plan is to start with Barren. Workers are set to begin building its dike and an 8,500-foot breakwater in 2022. Dredge placement is expected to take place two years later, with material scooped from the bottom of the nearby Honga River, Tracy said. Work is scheduled to wrap up by 2029.

Construction on James Island will ramp up as operations on Poplar Island scale back, he said. Work on the outer stone dike will begin in 2024, with dredge material being steered its way beginning in 2028.

Dredge-filling and maintenance operations there are expected to continue into the 2060s, according to the Army Corps’ time line, which its website notes is contingent on the availability of funding.



# Coronavirus stalls some Chesapeake oyster restoration projects

≈ Restrictions delay oyster plantings in MD; work going ahead in VA – for now

BY TIMOTHY B. WHEELER

The coronavirus pandemic is delaying oyster restoration efforts in Maryland this spring but so far has not impacted projects planned in Virginia later this summer.

In Maryland, plans to start placing hatchery-reared oyster spat in early April in the Little Choptank River have been held up, said Ward Slacum, executive director of the Oyster Recovery Partnership.

The nonprofit partnership is hoping to “seed” 7 acres of bottom in the Little Choptank with juvenile oysters that have been induced to settle and grow on old oyster shells.

Maryland and Virginia have pledged to restore oyster habitat and populations by 2025 in five Bay tributaries in each state. That work has been completed in only two so far — Harris Creek in Maryland and the Lafayette River in Virginia.

The plantings scheduled this spring in the Little Choptank would effectively complete restoration in that Eastern Shore tributary, ending a six-year project that’s supposed to restore abundant bivalve populations on about 350 acres of bottom.

But the work can’t proceed right now because of the public health restrictions imposed to fight the spread of the coronavirus, Slacum said. Maryland Gov. Larry Hogan ordered all nonessential businesses to close on March 23 and issued a stay-at-home order the next week.

Juvenile oyster plantings are also planned this spring or summer in the St. Mary’s and Manokin rivers, two other Bay tributaries in Maryland targeted for large-scale reef restoration. But Slacum, whose nonprofit group would be involved in those projects as well, said everything is on pause until the state-imposed coronavirus restrictions are eased.

“We’re ready,” he said. “It will literally be a matter of flipping the switch and getting going.”

The partnership supplies shell to the Horn Point hatchery in Cambridge operated by the University of Maryland Center for Environmental Science. The hatchery seeds the shell with baby oysters, then the partnership arranges to transport them by boat to the designated restoration sites for putting overboard.

But with the timetable for those projects now uncertain, the state’s largest hatchery has scaled back its operation.

“As of right now, restoration is kind of on hold,” said Stephanie Alexander, the hatchery manager.

The hatchery is still producing oyster larvae for sale to aquaculture operations, but Alexander said she’s held off setting spat on shell for use in restoration



Stephanie Alexander, manager of Horn Point Hatchery on Maryland's Choptank River, stands on bagged oyster shells in one of the large tanks used to connect oyster larva to shell. (Dave Harp)

projects. As a result, the facility is only running at about 40% capacity, she said.

The state Department of Natural Resources, which is in charge of restoration work in the Little Choptank, St. Mary’s and Manokin, joined with other partners in the projects in deciding to hold off for now, said spokesman Gregg Bortz.

“The restoration work requires large groups of people working in close proximity in the lab and in boats on the water, making it a risk for our staff and theirs,” he said. “We will resume activities as soon as safely possible once the state of emergency is lifted. Sanctuary planning work is continuing, as that can be accomplished through teleworking.”

Alexander said the hiccup in restoration work this year is frustrating, though, because the hatchery was hoping to rebound from problems last year that severely limited its production of baby oysters. One of the largest hatcheries on the East Coast, it cranked out 1.8 billion spat in 2016 and 2017. But persistently low-salinity levels in the Choptank River last year, caused by prolonged heavy rains, cut the hatchery’s output to about 10% of its normal yield.

“We’ve got a lot to make up for,” Alexander said. “We were really kind of hoping this was going to be a normal season.”

The hatchery began preparing its brood stock in January to be ready to spawn come springtime. Normally by this time of year, Alexander said, the hatchery would be going full bore. But with the coronavirus prompting staff cutbacks and restoration delays, Alexander said the facility has been “pumping the brakes”

to slow down the reproduction process by maintaining its brood stock but not allowing them to spawn too much.

If the restoration holdup is relatively brief, Alexander said the hatchery can probably ramp up without problems. But if the delay is prolonged, she said, the broodstock oysters may shift out of spawning condition, hampering production.

Oyster restoration hasn’t been formally delayed in Virginia, but there’s uncertainty about when it can begin. A 12-acre project in the western branch of the Lynnhaven River in Virginia Beach was to begin this spring, building reefs of crushed concrete covered by a layer of oyster shells. But the two nonprofits partnering on the effort — Lynnhaven River Now and the Chesapeake Bay Foundation — have yet to receive a permit to proceed from the Virginia Marine Resources Commission, which canceled its March meeting because of the coronavirus.

“We are still hopeful that we can build later this spring or this summer,” said Karen Forget, Lynnhaven River Now’s executive director, “but we are waiting to see what happens.”

State and federal officials aiming to do restoration projects later in the year say they’re hopeful the coronavirus will ease up enough to allow them to go forward.

The Virginia Marine Resources Commission has plans to build about 33 acres of oyster reefs in the Piankatank River, one of five Bay tributaries the state has designated for large-scale restoration efforts. The commission also intends to do a much smaller project in the Elizabeth

River in the Portsmouth area.

“It is our intent to do a lot of that work this summer,” said Ellen Bolen, deputy VMRC commissioner. But she said commission staff won’t know for sure until maybe six weeks from now if it can start as planned.

The Baltimore District of the U.S. Army Corps of Engineers plans to issue a contract this year to build about 40 acres of reef in Maryland’s Tred Avon River. That is the last phase of a restoration project begun there in 2015 but repeatedly delayed by lack of funding and complaints from watermen, which has since been resolved.

The agency still hopes to get the work under way sometime in the upcoming winter, said the Corps’ Angie Sowers. But pre-contract surveys of the restoration area with local watermen, she said, have been put on hold because of the coronavirus travel restrictions. That may delay the contract award some, she said.

The Corps’ Norfolk District has no oyster restoration construction planned in this fiscal year, which ends Sept. 30. But Susan Layton, chief of policy and planning in the District’s water resources branch, said planning continues for now on the Virginia restoration projects involving the Corps.

Stephanie Westby, oyster restoration program director for the Bay office of the National Oceanic and Atmospheric Administration, said that work in Maryland seems most affected right now by the coronavirus restrictions, while the later planned work in Virginia seems mostly untouched so far.

But, she added in an email, “Things seem to be changing rapidly, as is the case everywhere, so all this could change (or may have changed).”

While some restoration projects are on hold, plans to replenish oyster reefs that have been harvested are going ahead.

In Maryland, groups of watermen in each Bay-shore county will be planting spat-on-shell acquired from private hatcheries, as is done every year, said Robert T. Brown, Sr., president of the Maryland Watermen’s Association. Some areas with good natural reproduction will get plantings instead of shell acquired from Virginia oyster-packing houses. The work can be done safely without much risk of spreading the coronavirus, he said.

“It’s not hard to keep your 6-foot distance when you’re in the river,” he said. “Most of the boats don’t have more than three people on them anyhow.”

In Virginia, shell plantings to replenish reefs on public harvest grounds also are expected to go ahead as planned, Bolen said.



# Less seasonal help, virus deliver one-two punch to Bay's blue crab industry

≈ With immigrant workforce slashed, restaurants closed, processors and watermen look to makeshift sales methods

By TIMOTHY B. WHEELER

Crab season is off to a slow and foreboding start around the Chesapeake Bay, with many crabmeat processors crippled by an inability to import seasonal workers and by watermen worried they'll be unable to sell all they can catch as a result of the coronavirus pandemic.

Chilly, windy weather limited commercial harvests of blue crabs through much of April, the first full month of the season. Warming spring weather usually brings better fortunes, but those in the business of catching or picking crabs say they fear for their livelihoods amid the double whammy that's hit the Bay's most valuable fishery.

"It's kind of a really scary situation," said Bill Sieling, executive vice president of the Chesapeake Bay Seafood Industries Association, which represents Maryland companies. "It just doesn't look good."

Many of the crabmeat processing businesses around the Bay are short-handed because they failed to get federal approval to bring in as many foreign workers as they have in previous years.

The Department of Homeland Security held a lottery in January to distribute a reduced pool of 33,000 H-2B visas nationwide to all of the landscaping, construction and other businesses seeking



Aubrey Vincent of Lindy's Seafood in Wolford, MD, is waiting for her temporary visa workers but is currently using a small contingent of local employees to pick crab meat. (Dave Harp)

struction and other businesses seeking to bring in seasonal labor, mainly from Mexico and Central America. Under pressure, the department announced in March it would hand out another 35,000 visas, but shelved that in early April amid the coronavirus pandemic.

As a result, only three of Maryland's nine "picking houses," as the crab processors are known, received any visas in the initial drawing. After missing out on the lottery, Lindy's Seafood on Hoopers Island was looking at limping along with a half-dozen local workers.

"We could sell more product, we just can't produce it," said sales manager Aubrey Vincent.

Then, in late April, she said she got federal approval to bring back 61 workers who'd picked crabmeat at the plant last fall.

"It's not all of my people," she said, noting that the plant typically hires more than 100 seasonal workers. Still, she said, "it's better than no people."

The luck was as bad or worse in Virginia, where Graham & Rollins Inc., the biggest crabmeat processor in the state and one of the largest

est on the East Coast, has been idled after coming up snake-eyes in the visa lottery. The company, a fixture on the Hampton waterfront for nearly 80 years, had asked for 85 visas.

"Without workers, we're looking at closure," said Johnny Graham. "The plant's been mothballed, the power's pretty much cut off [and] the water supply's being cut off."

J.M. Clayton Co. in Cambridge was among the lucky ones. Co-owner Jack Brooks said the company got its request granted via the lottery for about 60 visas.

But then coronavirus intervened. Brooks said that with restaurants shut down and many people losing jobs, the demand for crabmeat is off, and he's not sure when or if it will come back. So, the company has arranged to bring in "a few more than 20" workers for now.

"We're looking at probably 30–45% capacity at best," Brooks said.

Though unable to process much crabmeat, processors say they're still able to sell live or steamed crabs. There appears to be a robust demand for the limited supply available in this slow-starting season.

Graham said the retail seafood store operated by his company has been selling crabs for carryout like it was the 4th of July, the traditional peak of demand for steamed crabs.

J.M. Clayton also has seen an uptick in retail crab sales, Brooks said. In response, the company has set up a makeshift drive-up window where customers can place

orders and pick them up.

"People blow a horn, we go to the window and talk to them," he said. That way, he explained, "people don't walk in like they used to" and risk getting or spreading coronavirus.

Processors said they're taking steps to try to keep their workers healthy. Brooks said Clayton is limiting the workforce in the picking room so workers are spaced 6 feet apart and wearing masks.

Watermen aren't as worried about social distancing but they do wonder if they'll be able to sell their catch when warmer weather usually brings more crabs into their boats.

"There haven't been many crabs so far," said Jeff Harrison, president of the Talbot Watermen Association. But demand is off, with restaurants closed and many markets not buying much seafood.

"Right now," he added, "there really isn't a problem selling them."

Harrison said he's worried about how long the coronavirus shutdowns are going to last. They already cut short what had turned out to be a good wild oyster harvest, he said. Now, even if restaurants and other businesses start to reopen in the coming month, he foresees a season where watermen won't earn as much for what they catch — and feel lucky just to be able to sell it at all.

Already, the dockside price has been about 30% or more below what it was at the start of the season last year, Harrison said. Meanwhile, he noted, the price of razor clams used as bait has gone up.

The \$2 trillion in COVID-19 economic relief passed by Congress in late March included \$300 million for the seafood industry. But that's to be distributed nationwide, and industry officials say it's far from enough to keep everyone afloat. Just in Virginia alone, losses to all commercial fisheries are estimated to range from \$53 million to \$68 million, according to data compiled by the Virginia Marine Resources Commission.

"Even if it lasts another month, it's still going to be a mess," Harrison said. "And if it goes two months, we're done."

Amid news reports that air and water quality have improved as a result of so many businesses closed and people ordered to stay home, Harrison said the effort to halt the spread of coronavirus is probably helping the Bay. But, he added, it's "not the way we wanted it to happen."



Debbie Fitzhugh sells fresh crab meat at a new service window at the J.M. Clayton Co. in Cambridge. (Dave Harp)



## HEALTH CONTINUED FROM 1

poor air quality in the mid-Atlantic, encompassing millions of residents across several states, a review of air-monitoring records shows. And in many cases, they are the same places with the highest coronavirus death rates, according to data reported early in the pandemic.

A leading public health expert said the deadly virus marks another disparity for communities of color, highlighting the urgency to address longstanding economic and health barriers there.

“COVID amplifies the injustices in our society,” said Dr. Aaron Bernstein, director of Harvard University’s Center for Climate Health and the Global Environment. “In our era of more frequent pandemics, the ideas of building resiliency and community health around the world couldn’t be more important.”

What about after the coronavirus? When future outbreaks start to spread — and they will, epidemiologists say — it may be even more difficult for such communities to defend themselves on the current trajectory.

## A growing threat

In April, the Harvard University T.H. Chan School of Public Health announced the findings of a

nationwide study that examined exposure to fine particulate air pollution, the soot emanating from vehicle tailpipes and power plant smokestacks.

It found that small differences in pollution levels can send the death rate soaring. Longtime residents in a county with high amounts of airborne particulate are 15% more likely to die from the disease than those from places where the level is just one microgram per cubic meter less.

The Harvard study was not peer-reviewed, meaning it hadn’t gotten a stamp of approval from other scientists before it was released.

But a German study linked higher death rates in certain parts of Europe to higher levels of another common pollutant: nitrogen dioxide. “These results indicate that the long-term exposure to this pollutant may be one of the most important contributors to fatality caused by the COVID-19 virus

in these regions and maybe across the whole world,” wrote Yaron Ogen, the study’s author.

Neither study could explain exactly why there are more deaths occurring in such places — whether the pollutants are helping to spread the virus or whether decades of exposure to poor air quality weaken the body’s defenses. But few experts are questioning the broad findings of the studies because there is already a strong body of evidence tying air pollution to a laundry list of health consequences, including asthma, heart disease and lung cancer.

“There’s going to be more people living in those communities who are going to have diseases associated with air pollution,” said Dr. Janet Phoenix, a public health expert at George Washington University. “They’re going to be more vulnerable when a respiratory disease like this comes through.”

## Unsafe to breathe

Emissions of nitrogen oxides from fossil fuel combustion — which are a major driver of ozone and particulate pollution — have decreased significantly over the past two decades. That’s been a boost for the Bay’s health, as those emissions are a major source of water-fouling nitrogen to the estuary.

*“There’s going to be more people living in those communities who are going to have diseases associated with air pollution. They’re going to be more vulnerable when a respiratory disease like this comes through.”*

— Dr. Janet Phoenix  
Department of Public Health  
George Washington University

But those reductions haven’t necessarily translated to improvements for people in many areas. Pinpointing the geographic areas where someone might be at higher risk because of bad air is complicated, especially in the mid-Atlantic. Air quality varies widely depending on where someone is breathing.

In its annual *State of Air* report, released April 21, the American Lung Association found that 150 million people in the United States, or nearly half of the population, live with polluted air. That total has increased steadily over the organization’s last four annual reports, said Kevin Stewart, director of environmental health, advocacy and public policy.

“We’re going in the wrong direction,” he said. The nonprofit tracks two ubiquitous pollutants, particulates and ozone, and classifies a region’s air quality as polluted if it gets a failing grade for one or both.



Keisha Allen, a community activist in Baltimore's Westport neighborhood, said residents there are plagued with asthma and other respiratory problems. (Submitted photo)

“We shouldn’t be adding more people at risk if we’re truly solving the air pollution problem.”

Particulate levels don’t show up in high levels in the sprawling DC-Baltimore metro, home to nearly 10 million residents. Particulate levels have been improving for 13 consecutive years in the 40-county urban area as industries improved emissions from diesel engines and coal-fired power plants, according to the American Lung Association report.

But air improvements haven’t been split evenly among the population. While particulate pollution has decreased, ozone has remained stubbornly high in urban areas largely because of relentless vehicle traffic. Ozone, a key ingredient in smog and a byproduct of different types of emissions mixing in the atmosphere under certain meteorological conditions, has been linked to several respiratory illnesses.

The DC-Baltimore region ranks 20th worst for the pollutant among the more than 200 U.S. metro areas tracked in the report.

Air-quality sensors are costly, so most states rarely have more than one or two locations per county where measurements are taken. Maryland, for example, operates 24 monitors. But eight of its 23 counties don’t have one.

Distinguishing air quality differences from one neighborhood to another is the goal of a \$500,000 study set to begin soon in Richmond. Volunteers coordinated by the Science Museum of Virginia will install 30 sensors around the city and examine the air for three years.

The racial and ethnic disparities among coronavirus patients underscore why the information needs to be collected, said Jeremy Hoffman, the museum’s chief scientist.

“By being able to look at [air quality] through the lens of this crisis, we see how acute it really is,” he said.

Prince George’s, the only suburban Maryland county with a majority black population, has had troubling numbers since the start of the pandemic. Its populace makes up about 16% of the state’s total



## HEALTH FROM PAGE 22

inhabitants, but it had seen 20% of all coronavirus-related deaths through April 23.

Those numbers are preliminary, at best. Because disease testing has been so uneven, the true racial and ethnic burdens of COVID-19 may not be known until long after it has passed.

What is known is that Prince George's was one of the many localities in the DC-Baltimore area to get a failing grade for ozone. It received an "A" for particulates, though.

That trend — low particulate levels but high ozone — is the case for much of the mid-Atlantic, including suburban areas. In Maryland, the association not only gave Baltimore County an "F" for ozone, but also its suburban counterparts, Cecil and Harford counties. The only county with a failing grade for the pollutant in Virginia was Arlington, located on DC's doorstep.

Like water pollution, air pollution doesn't stop at political boundaries, Stewart said. In Pennsylvania's Lancaster County, for instance, densely packed livestock operations spew large amounts of ammonia into the atmosphere, where it transforms

into particulate pollution. But those totals don't fully account for the county having some of the highest levels of sooty air in the Chesapeake Bay watershed, Stewart explained.

Lancaster demonstrates that poor air quality doesn't exclusively separate along racial fault lines either. The county is more than 80% white.

A good share of that tainted air drifts in from industry-heavy Pittsburgh and traffic-choked Philadelphia and Baltimore, he said. Last year, Maryland, Delaware, New York and three other northeastern states sued to force the U.S. Environmental Protection Agency to order a curb on

power plant emissions from upwind states in the Midwest. They argue that the imported pollution is complicating their efforts to reach smog-reduction goals.

A Massachusetts Institute of Technology study published in February added a new layer of urgency to the debate, finding that more than half of all premature deaths from poor air quality are tied to air wafting in from a different state.

**'Very concerning'**

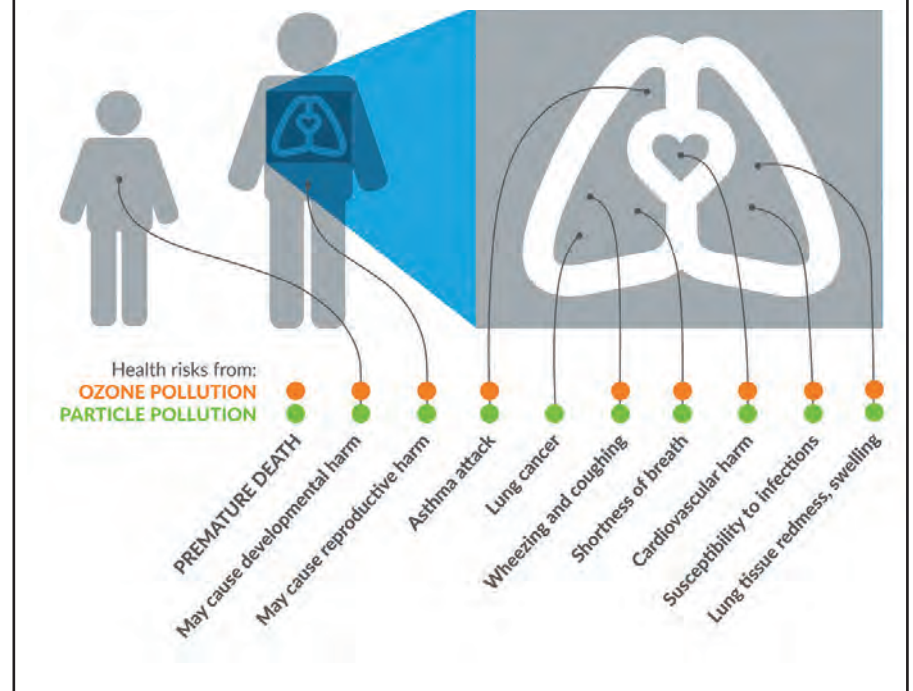
The EPA threshold for particulate pollution is 12 micrograms per cubic meter, averaged over three

*"With COVID, nature is really trying to tell us something. It's trying to rid us of a dangerous delusion we have that our health is separate from our environment."*

— Dr. Aaron Bernstein

Director  
Center for Climate Health  
and the Global Environment  
Harvard University

## Air Pollution Remains a Major Danger to the Health of Children & Adults



(American Lung Association)

years. The closest air monitor to an industrial area in the DC area, called Buzzard Point, recorded an average concentration of 8.2 in 2018, the most recent year for which information has been reported.

All good, right? Not so much, one local activist said.

"Just because it doesn't go above the red line doesn't mean people aren't feeling the impacts," said Rhonda Hamilton, a longtime resident of the southwest DC community.

A short walk around the vicinity is like running a gauntlet of air-pollution sources. Among them: a concrete processing plant, a power station, several active construction sites and a labyrinth of highways.

A 2016 community health assessment conducted by the District of Columbia's health department found higher rates of heart disease and cancer near Buzzard Point. Residents also reported higher rates of asthma than the rest of the city.

Hamilton said she suspects the air monitor readings shared publicly don't show the spikes in pollution she can see with her eyes. Many residents can't escape the bad air either, she added. Because they lack central air-conditioning, they keep their windows open day and night or use window units that don't filter particles from the incoming air.

The demographics of the neighborhood's 2,000 residents — largely African American, with high unemployment and great financial stress — all but prime it to be a hot spot for COVID-19, public health experts say.

The latest coronavirus figures seem to corroborate what many researchers and health advocates had feared: The disease is taking a heavier toll on African-Americans. Much data has yet to be reported, but the information available to date shows racial disparity. Although blacks represent 14% of the population in states reporting racial and ethnic breakdowns, they account for 33% of all deaths, according to an Associated Press analysis.

Baltimore's Westport neighborhood is part of the 21230 ZIP code, where 88 coronavirus cases had been documented by the state as of April 23. That's around middle of the pack for the city. But, Allen notes, the ZIP also contains whiter, more-affluent neighborhoods that are farther from the biggest sources of air pollution.

The disease's racial gaps have been stark in the nation's capital. Blacks make up about 45% of the population. But as of April 22, they comprised 80% of the 127 coronavirus-related deaths.

Ward 6, where Buzzard Point is located, has been one of the hardest-hit parts of the city. Out of the eight wards, it had lost the second-most lives to the disease, with 23, through that period.

"For me, it's just been very concerning," said Hamilton, who considers herself relatively healthy but finds herself getting winded on long walks. She also has been diagnosed with sleep apnea, which new research



A woman holds up a sign protesting air pollution at a Pennsylvania rally in 2015. (E. Bryan Crenshaw III / PA Clean Air Sierra Club)

HEALTH CONTINUES ON PAGE 24



*According to the American Lung Association, particulate levels in the air from diesel engines and coal-fired power plants have been improving for 13 consecutive years in the DC-Baltimore region, but improvements are not split evenly among the population. (Chesapeake Bay Program)*



## HEALTH FROM PAGE 23

has shown has ties to air pollution as well. “I just pray and hope we get the additional resources we need to address these health disparities.”

Some local governments have begun devoting more of their limited resources to vulnerable communities in recent weeks.

DC Mayor Muriel Bowser, for example, ordered the city’s Department of Health Care Finance to review claims data to identify people with underlying health conditions and check in on them to see if they have coronavirus symptoms. Such individuals are more likely to be people of color, according to long-standing health research.

After the crisis ends, Bowser said at a recent press conference, she hopes that the city will redouble its efforts to mend economic, housing and education inequities “that have led to these tremendous disparities that this pandemic has put a spotlight on.”

In Maryland’s Anne Arundel County, officials began hosting online health equity dialogues with dozens of representatives from nonprofits, the clergy, education and the government sector. The mission, officials said, was to gather information on ways to break down traditional health-care barriers that people of color often face.

### A dirtier future?

Public health officials and social activists worry that communities of color will face even greater health and



*Ozone has remained stubbornly high in urban areas largely because of relentless vehicle traffic. Ozone has been linked to several respiratory illnesses. (Dave Harp)*

economic disparities in the pandemic’s wake — that will make them more vulnerable to the next sweeping viral threat.

The coronavirus is certainly a health crisis, Bernstein said, but it’s also an environmental wake-up call.

“With COVID, nature is really trying to tell us something,” he explained. “It’s trying to rid us of a dangerous delusion we have that our health is separate from our environment.”

Climate change is setting the stage for pandemics to spring up more often and pack a heavier wallop on society, climate research suggests. Hotter weather is expected to boost ozone levels, increasing the amount of underlying conditions awaiting the next pandemic.

Animals, insects and other living creatures are predicted to be displaced as some parts of the world warm or get flooded. That could put them in contact with new species, potentially

allowing diseases to jump across barriers in new ways.

In some ways, the effects could be complex, even conflicting, expert say. Milder winters could temper the ferocity of flu seasons. But if people grow complacent with the disease, they may skip getting flu shots, making them more vulnerable when they catch it.

The authors of the Harvard air pollution study concluded with a stark warning, arguing that their results “underscore the importance of continuing to enforce existing air pollution regulations during the COVID-19 crisis.” Failing to do so, they added, may “potentially increase the COVID-19 death toll and hospitalizations.”

The Trump administration has spent most of its three years in power rolling back environmental regulations with the hope of spurring further economic growth. The federal government has attempted to lift several air quality protection efforts, including pulling out of the Paris climate accord and nixing the carbon dioxide-cutting Clean Power Plan.

The coronavirus hasn’t stopped the regulatory overhaul. About a week after Harvard’s study went public warning of the potential dangers of tiny, airborne particles for COVID-19 patients, the administration acted in an ongoing review of the pollutant. Brushing aside a strong consensus among scientists, the Environmental Protection Agency refused to strengthen controls on particulates.



# Bye-bye Bunny! Deer Depart! Scat Cat! Ta-ta Ticks! Move off Mosquitos!



Over the years, *Bay Journal* quizzes, columns and articles have often encouraged people to plant species that attract birds, butterflies, bees and a variety of other wildlife. But what if you don't want certain types of wildlife in your yard? Put down those pesticides, weapons and traps! Here are plants that will send some pest species packing. Match the animal with its "stay out" species. Answers are on page 36.

*Note: Not all plants will be a successful deterrent all of the time. They are most effective when grown around the perimeter of one's property as well as around any plants, shrubs or trees that might be attractive to a pest. Also, not all of the plants listed are native to the Chesapeake Bay watershed and some — daisy fleabane, pen-*

*nyroyal, hellebore, yarrow and catnip — can become weedy if not watched and kept under control.*

CAT  
DEER  
MOSQUITO  
RABBIT  
SNAKE  
TICK

1. Marigolds, garlic, onion
2. Coleus, rue, lavender, rosemary, pennyroyal
3. Monkshood, sage, thyme, rosemary, oregano, cucumbers, squash, bleeding hearts, peonies, boxwood, daffodils, lavender, iris, arrowwood viburnum, globe thistle, yarrow, hellebores.
4. Marigolds, lavender, garlic, rosemary, basil, catnip, citronella grass, richwood, lemon thyme, daisy fleabane
5. Chrysanthemums, citronella grass, rosemary, daisy fleabane
6. Crown imperial, onion, sweet cicely, coneflower, impatiens, garlic

— Kathleen A. Gaskell



*Plant rosemary around the perimeter of your property to help nearby plants that might attract hungry creatures. (Margalob / CC BY-SA 4.0)*



*When using daisy fleabane to repel pests, be sure to keep it under control, lest it become a plant pest. (Yonezawa-Shi / CC BY-SA 2.0)*



*Plant lavender, and you will not only repel some pests, but also attract pollinators. (TTaylor / CC BY-SA 3.0)*



*Sweet garlic can also be eaten. Just be sure that you have properly identified it. (Lynn Greyling / CC0 Public Domain)*



## Bay Buddies Creature Discomforts

Why do certain plants work better than a "Keep Out" sign for some troublesome animals? Turns out that when it comes to scents, what's perfume to humans is poison to pests. Others just don't feel right. Can you match these creatures with their complaints? Answers are on page 36.

CAT  
DEER  
MOSQUITO  
RABBIT  
SNAKE  
TICK

1. I am hurt that you don't want me in your yard. I don't eat your plants. I eat some of the animals that eat your plants! But many people are afraid of me and forget this. Plants with strong odors make me uncomfortable or can even make me lose my sense of direction when I slither over them. Plants with sharp leaves are also uncomfortable to pass through.

2. My kind is a finicky lot. What works to keep one of us out might not work for all of us. To prevent me from eating birds that visit your feeders or using your yard as a toilet, try plants that are too stinky for my delicate nose.

3. The heavy scents drifting from your flower bed, especially those that have a citrus-like smell, are not perfume to my nose. They confuse me by overpowering the scent I am looking for: you! A lot of the plants that ruin my day also repel flies.

4. The inside of my nose is lined with the receptors responsible for my sense of smell. I am constantly sniffing, or "twitching," which makes me overly sensitive to strong odors. Plants with sharp earthy, grassy or pungent scents are too much for me to take.

5. A lot of the plants that I find repulsive will also drive off fleas. Not only does the scent of some plants upset my metabolism — the body processes that keep me alive — they are sometimes enough to kill me. Lucky you! You don't have to worry: These plants don't bother humans or other warm-blooded creatures.

6. Your yard is my salad bar. That doesn't mean I am not picky. If you grow too many kinds of plants that I don't like, I'll go to your neighbor's yard to eat. I am not fond of fuzzy or hairy leaves. Or plants with thick or leathery leaves or prickly stems. My nose leads me to food, so onions or strong-scented herbs are a big turnoff.

— Kathleen A. Gaskell



# Union Canal ride leads passengers down path to past



Visitors to Union Canal Tunnel Park in Lebanon, PA, venture into the tunnel, a National Historic Landmark, on a guided boat tour. (Ad Crable)

BY AD CRABLE

Only a little more than a half-mile remains of the 80-mile Union Canal, the nation's first public works project, but a guided float on its placid waters in a replica canal boat drips with early American history when its founders dreamed big.

Aboard the open-air Lois H. Meily at Union Canal Tunnel Park on the outskirts of Lebanon, PA, narrator Ed Martel had just launched into the canal's eventful history when he pointed out two painted turtles sunning on a log. Deer, turtles and fish are common sights on the trip as the canal winds through open fields and woods in the 100-acre park.

We were floating along at about 4 miles per hour, the same speed the original canal boats would have been going when mules, tethered to the boats and walking the shoreline "towpath," lugged them toward their destinations. Some carried passengers, while others were weighed down with up to 25 tons of coal, lumber and other goods. Early canal boats were pulled by a single mule; later, with larger boats, it would take three.

Our replica was just as wide as the original boats — 8 feet — but shorter than their 50- to 90-foot length.

In 1690, Pennsylvania founder William Penn dreamed of a canal linking Philadelphia to the interior of the colony. Benjamin Franklin and others took action to pursue that vision many decades later, aiming to connect with Harrisburg along the Susquehanna River.

George Washington would visit the canal twice as president — once to hype the nation's first canal and again to quell fights that broke out during its construction between disgruntled Pennsylvania Dutch farmers, whose land was being cut in half by the canal, and rowdy Irish immigrant workers, hired to build it. The well-publicized conflict became known as the Myerstown Riots.

As Capt. Dave Smith plied the rudder in the stern of our boat, Martel explained how surveyors mapped the canal to connect Philadelphia through the Schuylkill River at Reading with the Susquehanna River to the west near Harrisburg. The route followed the lines of least resistance, along two streams with names of Native American origin, the Tulpehocken and Quittapahilla. The streams would also supply water for the canal.

Work began shortly after the Revolutionary War, in 1792. The canal company began recruiting newly arrived Irish laborers from the ports of Baltimore and New York for the back-breaking work. In addition to 12-hour daily shifts and six-day work weeks, they were guaranteed shots of whiskey each hour from teen "jigger boys" hired for the purpose.

Many farmers did not embrace the project, and the canal brought the country's first use of eminent domain.

Work crews labored on both ends toward the spot that now lies within Union Canal Park — the high point that sloped downhill toward each river. Here, they built the Union Canal Tunnel, the crowning achievement of the project and an engineering marvel for the time. The tour boat travels through it, and you will see markers noting it as both a National Historic Landmark and a National Historic Civil Engineering Landmark.

Workers tunneled through the ridge of solid rock by using gunpowder and relentlessly chipping away with sledgehammers and star point drills, one of which Martel passed around to his passengers.

The tunnel was completed in 1827, two years after it was started. The canal opened to traffic the next year. As our boat entered the dark tunnel, Martel used a floodlight to illuminate the straight lines where the gunpowder was packed. Once, an explosion sent the roof crashing down on four workers, killing all of them. The only other recorded death in the narrow tunnel was that of a tipsy boat captain who fell overboard and was crushed against the stone wall. Certainly, there were many crushed bones and concussions to workers that were not documented.

The ceiling and walls of the tunnel are ragged. The aim was to etch out just a minimal clearance for the boats to pass through, with no regard for aesthetics. Passage was so tight that some boat captains laid on top of their cargo and pushed the boat through with their feet against the



In addition to highlighting remnants of the historic canal, Union Canal Tunnel Park offers several hiking trails that are open dawn to dusk. (Fritz Heilman)





Tour guide Ed Martel “poles” a replica canal boat on a leisurely tour at the Union Canal Tunnel Park in Pennsylvania. (Ad Crable)

ceiling. Most, though, poled their way through as their mules were led up and over the ridge. Martel demonstrated with a bamboo pole.

To alert oncoming boats they were about to enter the tunnel, captains would blow large conch shells with one end sawed off. Martel had a conch shell on hand and demonstrated its surprisingly robust imitation of a foghorn.

Passengers may get dripped on but don't worry, the water is pretty clean, having been filtered through 80 feet of rock overhead.

The original tunnel was 729 feet long but was shortened to 600 feet in 1858 when enlarged to accommodate higher freight loads.

There are no bats in the tunnel — they do not roost over water — but we did see a screech owl in a nest peering out wide-eyed from the ceiling.

Not long after exiting the tunnel, the restored canal ends at one of the 90 locks on the main canal. Like most of the locks, this one was cannibalized long ago. Its hand-cut sandstone blocks were whisked away for other uses.

We turned around and began our return trip. In response to our many questions, Martel explained how canal boats going in different directions passed each other, when mules going in opposite directions were sharing a single towpath. The mule pulling one of the boats would stop and the tether rope would sink, allowing the other

boat to pass by.

Unlike our leisurely float, life aboard a working canal boat was hard, demanding work. The boats were privately owned, many by families who lived in an 8-by-8-foot cabin. Typically, the father would be up front, on the lookout for debris or perhaps for a snapping turtle to use in a soup. The wife steered the boat.

Children often were mule walkers, following the towpath all day. Younger children were fitted with a rope so they could be dragged back in if they fell overboard while playing.

A feeder branch canal was added in 1829 to tap cargo from coal country which, along with lumber, was vitally important for the emerging Industrial Revolution. Boats coming back from Philadelphia brought whiskey, molasses, cast iron skillets and other goods to the interior settlements. Most of the large bells still ringing in Lebanon County churches arrived on canal boats.

When the canal opened, it revolutionized transportation, quickly outpacing the prevailing means of hauling goods: the Conestoga wagon with its teams of horses and mules and smaller loads.

“This was the superhighway of its day,” Martel said. “This was the Pennsylvania Turnpike of its day.”

For a while, the canal thrived with up to 100 freight and passenger boats a day. But the canal's days as a lifeblood of commerce were short-lived. Its overseers had made a blunder

when, despite enlarging the tunnel to handle longer boats with triple the loads, they kept the locks at only 8.5 feet wide. That prohibited the larger canal boats, which were becoming the norm.

The canal was doomed, too, by the emergence of railroads that could operate year-round and carry more freight. The final nail in the coffin was the flood of 1862, which destroyed the all-important feeder canal in coal land. The canal's owners filed for bankruptcy and the canal

closed in 1885 after a run of 57 years. Much of the land was sold to railroads that built their lines on top of the tow path or filled in the canal and laid track on top of it.

To preserve the vanishing canal, the Lebanon County Historical Society purchased a portion and began acquiring adjacent properties. It dredged the canal, filled it back up with water, fixed a wall of the tunnel that had collapsed and created the Union Canal Tunnel Park in 1998. The popular boat tours were launched in 2001.



Workers hand-cut stone in the 1820s to forge this tunnel on the Union Canal, built to connect commerce between Philadelphia on the Schuylkill River and Harrisburg along the Susquehanna. (Ad Crable)

## Explore the Union Canal by land or water

The 100-acre Union Canal Tunnel Park ([Lebanoncountyhistorical-society.org](http://Lebanoncountyhistorical-society.org)), located at 25th Street and Union Canal Drive, Lebanon, PA, is open dawn to dusk year-round, with free admission. Its featured attraction is the Union Canal Tunnel, built by hand from 1825-27. There are picnic tables, pavilions and benches, and hiking trails on both sides of the canal.

You can walk to the tunnel and over it, just like the mules did. Or — if the coronavirus restrictions are lifted — you can take a one-hour narrated boat tour on a restored section of the canal and through the tunnel on Sunday afternoons from June through September. In general, tours will run the first three Sundays of the month from 12:30-3:30 p.m.

The cost is \$10 for adults and \$5 for ages 6-17. Children 5 & younger are free. There are no advanced reservations. Private tours with a minimum of 10 people can be reserved at least 2 weeks in advance by calling 717-272-1473 or emailing [office@LCHSociety.org](mailto:office@LCHSociety.org).



# The cold hard facts of spring paddling: Be prepared



*Paddling safety needs extra attention in spring, when the air temperature warms but the water temperature can still pose risks. (Dave Harp)*

It happens every spring across the Chesapeake Bay region. Warm, sunny weather beckons to thousands of stir-crazy people who drag canoes and kayaks to the water.

The desire to get outdoors is even more pronounced now with home isolation from the coronavirus keeping people cooped up. Canoeing and kayaking are currently permitted in all of the Bay drainage states, even though as of April 23 some forms of recreational boating are not.

But officials and paddling groups are warning the public about a false sense of security: The air is warmer, but the water remains cool and dangerous.

The sobering fact is that, too often, paddlers go unprepared and overturn. April is the second-deadliest month for paddling accidents, and kayakers and canoeists made up 20% of all recreational boating accidents in the United States in 2018, according to the U.S. Coast Guard.

"I hear it time after time. There's a lot of people who believe they will never fall out of their kayaks. And that's just unrealistic," said Devin Winand, a kayak instructor and guide for Shank's Mare Outfitters along the Susquehanna River in York County, PA. "You need to assume you're going to end up in the water. You dress for water temperature, not air temperature."

Paddling doesn't have to be cumbersome to be safe, stressed Ralph Heimlich, a leader of the Chesapeake Paddlers Association who has canoed and kayaked for 68 years. "The biggest single thing is to wear your PFD [personal flotation device] — don't just have it," Heimlich said.

Some paddlers may have heard seemingly simple advice: Add the air and water temperatures together and use the sum as a guideline for safe conditions — a sum below a certain number, for example, would indicate the need for a wetsuit. The National Center for Coldwater Safety calls this a myth. According to an example on its website, such a formula could suggest no protection is needed in water

with a temperature in the low 50s. "That's simply incorrect," the center states. "The only thing that matters when you're in the water is the water temperature."

Debilitating cold water reactions are the biggest killers of paddlers. Water as warm as 60 degrees can cause a common phenomenon known as cold water shock, causing the overturned paddler to make involuntarily gasps for air. Often that happens when the paddler is at least partially under water, and gulping water puts him or her on the path to drowning, the leading cause of paddling deaths, noted Julie Brown, boating education coordinator for the Maryland Natural Resources Police.

Even water in the 70–77 degree range can impede survival and, as of late April, water temperatures in the Bay were ranging from the mid-50s to low 60s. Without a drysuit, or at least a wetsuit, a spill in water at 55 degrees would immediately set off cold water shock, Brown noted. If a paddler survived that, he or she would experience a quick increase in blood pressure and heart rate, which could lead to disorientation and even a heart attack.

"Without proper equipment and apparel, the body can become incapacitated in just a few minutes, and without a life jacket this can be a very dangerous and often fatal combination."

Even if a paddler is wearing a life jacket — and not just storing it onboard as some states require — a dunk in the drink is still dangerous territory. The cold quickly drains feeling in the hands and prevents the paddler from being able to swim far.

As the core body temperature drops and hypothermia sets in, the paddler loses the strength to right the capsized canoe or kayak and climb back on board. In water of 50–60 degrees, a paddler hanging onto the craft may only survive six hours or less.

Paddlers should also be wary of wind. "If you're not familiar with it, wind can be an overwhelming force, and you have to compensate for that. People get in that chop and are not used to it and flip over," Heimlich said.

Look for routes protected from strong winds, such as narrow creeks and marsh guts, where the shoreline is reasonably close and the water is shallower.

But regardless of where you paddle, learning and practicing self-rescue skills should be part of owning a kayak or canoe, Heimlich said. Learn how to right an overturned craft and get back into it from the water.

Heimlich points out that a lot of smaller recreational kayaks are not built for safety. Adding floats to the bow and stern can help stabilize them.

If you venture out, follow these safety rules. For more information, visit the National Center for Cold Water Safety website at [coldwatersafety.org](http://coldwatersafety.org).

- Wear a life jacket. Don't just have it on board.
- Paddle with a buddy or group. During the coronavirus crisis, practice social distancing at all times.
- Explain your route and expected return time to family or friends. Remember to call them as soon as possible to confirm your safe return.
- Carry a whistle to alert others in case of danger.
- Dress for the water temperature, not the air temperature. When the water temperature is 60 degrees or below, a wetsuit is a must and a drysuit is recommended.
- Field test your gear each time before going out.
- Take a safety course, and learn how to self rescue if you overturn. For an online course, visit [boaterexam.com/paddling](http://boaterexam.com/paddling). The Chesapeake Paddlers Association also offers classes. For information, visit [cpakayaker.com](http://cpakayaker.com).

BY AD CRABLE



# Our generous readers are the bloomin' bee's knees!

There's no greater sign of the *Bay Journal's* success than the compliments and donations received from readers like you. Your gifts to the Bay Journal Fund continue to make our work possible, from coverage of the Bay restoration and the health of its rivers, to the impacts of climate change, toxics, growth and invasive species on the region's ecosystem. Our staff works every day to bring you the best reporting on environmental issues in the Bay region. We are grateful for your donations. Please continue to support our success!

## CHAMPION

Jennifer Stanley  
Oxford, MD

## ADVOCATE

J. Frank Bernheisel  
Falls Church, VA

Michael Reis  
Silver Spring, MD

Monica Sullivan  
Washington, DC

Darwin Aurand  
Shermans Dale, PA

Dr. & Mrs. Kenneth B. Lewis  
Cockeysville, MD

Robert & Ann Whitcomb  
Annapolis, MD

Harold Davis  
Ellicott City, MD

David & Mary Hess  
Harrisburg, PA

Al Tober  
Artemas, MD

John Vail  
Worton, MD  
Susan & John Wierman  
Towson, MD

## BENEFACTOR

John Healy  
Ellicott City, MD

Mark & Karen Perreault  
Norfolk, VA

James Stacy  
Beltsville, MD

Bernard Anthony  
New Oxford, PA

Douglas Burdick  
Gray, ME

Walter & Randy Childs  
Cape Charles, VA

Carol Dunahoo  
Washington, DC

William Dunson  
Boone, NC

Bruce & Mary Edwards  
Annapolis, MD

*In memory of*  
Matthew Graninger  
from Ruth Anne Graninger  
Berlin, MD

William T. Powel  
Lynchburg, VA

Tom & Lisa Sweeney  
West Chester, PA

Evan Wilson  
Austin, TX

## SPONSOR

Bob & Laurie Bokulic  
Columbia, MD

Edward Robinson  
Oceanside CA

John & Margaret Christie  
Chestertown, MD

Rugh & Sylvia Henderson  
Palmyra, PA

Jeff Lape  
Chevy Chase, MD

Judy & John Blomquist  
Havre De Grace, MD

Roger Bollman  
Easton, MD



A bumble bee drinks nectar from a redbud. (Dave Harp)

Donald R. Callihan  
Cockeysville, MD

Nick & Margaret Carter  
Greensboro, MD

Catherine Cooper  
Easton, MD

Jan Crable  
Salt Lake City UT

Bill & Linda Crosswell  
Lancaster, PA

Lynette & Terry Delprete  
Severna Park, MD

Frances Flanigan  
Baltimore, MD

Jeff Fletcher  
Washington, DC

William Gibbs  
Westminster, MD

Frederick J. Heagy  
Middletown, PA

Iris Heissenbittel  
Montross, VA

Norman Hines, Sr.  
Kensington, MD

Joseph Howard  
Silver Spring, MD

Woodrow C. Kamp  
Kutztown, PA

Margaret L'Hommedieu  
Deale, MD

Ernest Lehman  
Alexandria, VA

Michael Liebert  
Timonium, MD

Daniel Marcin  
Silver Spring, MD

Edgar L. Miller, Jr.  
Cambridge, MD

Leann Miller  
Chestertown, MD

Ray Moses  
Virginia Beach, VA

Mr. & Mrs. John W. Plowman  
Harrisburg, PA

Edward Portner  
Silver Spring, MD

Robert Pugh  
North Chesterfield, VA

Susan Rivers  
Frederick, MD

Jude Ruskay  
Wilmington, DE

George & Shirley Schmidt  
Chesapeake Beach, MD

Stanley Sienkiewicz  
Washington, DC

William Smyth  
Powhatan, VA

Arthur Turowski  
Fishing Creek, MD

Steve Wann & Rosana  
Fuhrmann

Hayes, VA

Lothar Weber  
Parkton, MD

## SUPPORTER

George W. .Belt  
Stewartstown, PA

James Bunce  
Annapolis, MD

Timothy Cunningham  
Towson, MD

**Yes!** I want to help the *Bay Journal* maintain and expand coverage of issues related to the Chesapeake Bay and its watershed.

Enclosed is my tax-deductible gift of \$ \_\_\_\_\_

- ☐ My check made payable to "Bay Journal Fund" is enclosed.  
☐ Charge my Visa/MasterCard/Discover/AMEX.

Card # \_\_\_\_\_ Expires: \_\_\_\_\_ Security Code: \_\_\_\_\_

Name(s): \_\_\_\_\_

Address: \_\_\_\_\_

City, State, Zip Code: \_\_\_\_\_

Is this a memorial? Write name here: \_\_\_\_\_

Is this in someone's honor? Write name here: \_\_\_\_\_

☐ From time to time, the *Bay Journal* may include a list of its supporters in the print edition. Please check here if you would like your gift to remain anonymous and not be recognized in the *Bay Journal*.

Please mail your donations to The Bay Journal Fund, P.O. Box 222, Jacobus, PA 17407-0222  
The Bay Journal Fund does not share the names of its donors or their addresses with other organizations.

☐ \$15-\$49

☐ \$50-\$99

☐ \$100-\$149

☐ \$150-\$249

☐ \$250-\$499

☐ \$500-\$999

☐ \$1,000-\$2,499

☐ \$2,500-\$4,999

☐ \$5,000 & Up

Friend

Supporter

Sponsor

Benefactor

Advocate

Booster

Champion

Guarantor

Philanthropist



CONTINUED FROM 29

Don Hammerlund  
Charlotte Hall, MD

Stephan Harper  
Rockville, MD

Pat & Jim Kelly  
Towson, MD

Jonathan Phinney  
Alexandria, VA

Vincent J. Rose  
Oley, PA

Darcel Stephan  
Virginia Beach, VA

G. Tornell  
Port Republic, MD

Ron Wisniewski  
Ruther Glen, VA

Mark Zadrozny McKees  
Rocks, PA

The Bugbees Family  
Red Lion, PA

Kimberly Freeman  
Catonsville, MD

Mr. & Mrs. Lee Weaver  
East Springfield, PA

Edward Dexter  
Baltimore, MD

Durand Little  
Aspers, PA

Barry Mates  
Alexandria, VA

S. Ridgely Morison  
Delmar, MD

Mr. & Mrs. William W. Thompson  
Carlisle, PA

Warren & Cheryl Evans  
Dunnsville, VA

Matilda B. Shaffer  
Pasadena, MD

Bruno & Dorothy M. Vasta  
Lusby, MD

Don Allen  
Bethesda, MD

Richard Anderson  
Baldwin, MD

Mr. & Mrs. James O. Armacost  
Baltimore, MD

Dr. Zaven S. Ayanian  
Rockville, MD

Back River Neck Peninsula  
Community Association  
Baltimore, MD

Michael Barbour  
Abell, MD

Michael E. Barney, Inc.  
Virginia Beach, VA

George & Peggy Bogdan  
Baltimore, MD

Stephen Bowler  
Catonsville, MD

Anne Bredlow  
Street, MD

*In memory*  
of Justin Lee Howard  
from Mike Brindock  
Ruther Glen, VA

Denis & Theresa Brion  
Alexandria, VA

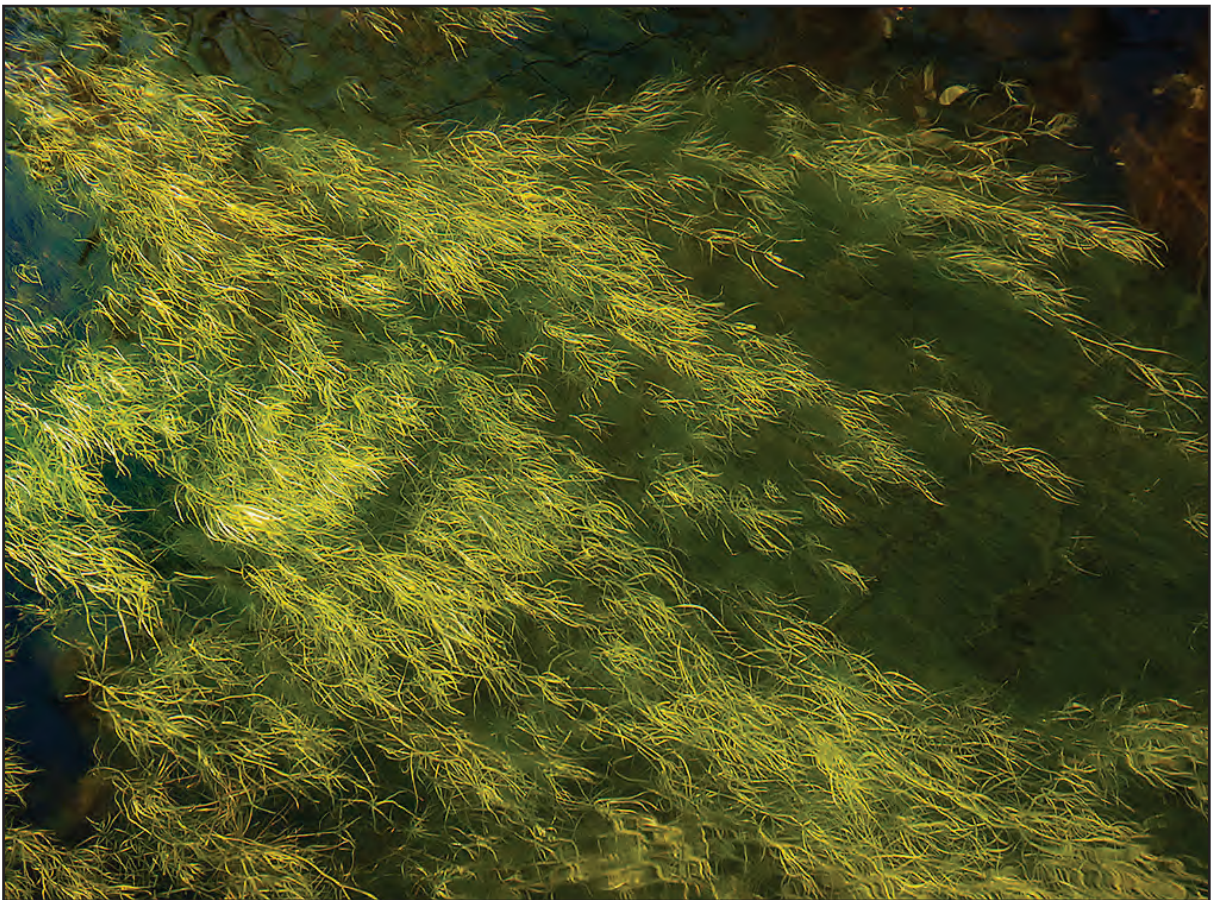
Carlo Bruce  
Lancaster, PA

Allison Burnett  
Hughesville, MD

Rita Buschman  
Glen Rock, PA

Perry & Katharine Conley  
Parkville, MD

Chris Craig & Ed Wheelless  
Harpers Ferry, WV



*Callitriche, a submerged aquatic plant, is in its verdant green stage in the clear water of the upper Marshyhope Creek, a tributary of the Nanticoke River on the Delmarva Peninsula. (Dave Harp)*

Maurice Crawford  
Salisbury, MD

Darlene Custer & Janet Golden  
Hanover, PA

Brian & Karen Czarnowski  
Galesville, MD

Herman Daly  
Midlothian, VA

John S. Davis  
Cooperstown, NY

Robert & Nancy Day  
Colorado Springs, CO

Frank Diller  
Baltimore, MD

Fred Dolezal  
Deltaville, VA

John M. Elkin, Jr.  
Urbanna, VA

Ralph Eshelman  
Lusby, MD

Lyle & Dorothy Feisel  
Chestertown, MD

David Foster  
Joppa, MD

John Gownley  
Ellicott City, MD

Ridgway Hall  
Washington, DC

Mr. & Mrs. Elwood F.  
Harrison, Jr.  
Mechanicsville, VA

*In memory*  
of Lauren "Big Boy" Ferguson  
from Warren Hollaway  
Poquoson, VA

David Hutton  
Catonsville, MD

James R. Jarvis, Jr.  
Glen Burnie, MD

Bill Jenkins  
Royal Oak, MD

Melvyn L. Kay  
Reston, VA

Cathy Keifer  
Gaithersburg, MD

Mr. & Mrs. Michael D. Killian  
Spotsylvania, VA

Connie Kirkland  
Oakton, VA

Stan & Alice Kotala  
Altoona, PA

Mike, Pete & Greg Kozlowski  
Fund Sayre, PA

John D. Lahr  
Pequea, PA

George Lea  
McLean, VA

Kristie LeGates  
Milton, DE

Stanley Lehman  
Clarks Summit, PA

Suzanne & Fred Lepple  
Alexandria, VA

Michael Lukes  
Saint Paul, MN

Alicia A. Meenan  
Virginia Beach, VA

Patty Mochel & Gerry Willse  
Towson, MD

Henry Mortimer  
Sherwood Forest, MD

Mrs. Robert Mosher  
Charlton, NY

David Moulshy  
Baltimore, MD

Sylvia Moyer  
Hatfield, PA

Judy Murphy  
Grasonville, MD

John & Ann S. Neild, Jr.  
Cambridge, MD

Wilson Nobles, Jr.  
Hallieford, VA

Gertrude O'Leary  
Ambler, PA

Kenneth Peebles  
Norfolk, VA

Oliver W. Perry  
Chambersburg, PA

Paulding Phelps  
Kennett Square, PA

John J. Reynolds  
Leesburg, VA

Marilyn E. Sadowski  
Rochelle Park, NJ

Michael J. Schaffer  
& Ellen E. Fritz  
Lewes, DE

Henry Schlenker  
Solomons, MD

Scott D. Schwenk  
Reading, PA

Kevin Seed  
Ellicott City, MD

Judy Smith  
Solomons, MD

Paul Solomon  
New Freedom, PA

Joseph Southerton  
Lewisburg, PA

Susan & Richard Sprout  
Picture Rocks, PA

Paul & Nicki Tiffany  
Cape Charles, VA

Roy Trent  
Oakton, VA

Bryan Vagenos, Sr.  
Essex, MD

Tracey & George Waite  
Bel Air, MD

Diana K. Weatherby  
Silver Spring, MD

John C. Wilhelm  
La Plata, MD

Harold E Wingert  
Enola, PA

**FRIEND**

Audrey E. Brown  
Easton, MD

Pat Chase  
Cap, PA

Brian MacElroy  
Pottstown, PA

Eric & Marianne Pluchino  
Cape Canaveral, FL

Tom & Karen Riley  
Ocean View, DE

Norma Ruffing  
Glenshaw, PA

Jim Steele  
Spotsylvania, VA

Bill Artemas  
Lancaster, VA

Philip Barber  
McLean, VA

Mary Blayney  
Port Republic, MD

Tim & Susie Brown  
Greenbush, VA

Jack & Audrey Buck  
North East, MD

Troy & Joan Cowan  
Lexington Park, MD

George & Christine Gaa  
Baltimore, MD

Robert Geisler  
Woolford, MD

William M. Giese, Jr.  
Cambridge, MD

Linda Howard  
Washington, DC

Jack Janos  
Phoenix, MD

Patricia Jud  
Warrington, PA

Jerry Krebs  
Manchester, MD

Carol Larkin  
Loretto, PA

Marie Lerch  
Kensington, MD

Peter Lord  
Richmond, VA

David & Margaret Malkus  
Dundalk, MD

Lynn & Kelley Moore  
Triadelphia, WV

Bryan Orman  
Parkville, MD

James T. Redd  
Santa Fe, NM

Tom Reed  
Annapolis, MD

Cyril & Caroline Reshetiloff  
Annapolis, MD

Kay Saderholm  
Hyde Park, NY

Frank Sanford  
Chevy Chase, MD

Charles Stamm  
Lexington Park, MD

Mike Topper  
Manchester, PA

Andrea Walter  
Hollidaysburg, PA

Christine West  
Annapolis, MD

Ernie Willoughby  
Solomons, MD

Leonard Schreiber  
Bethesda, MD

Armin & Jean Behr  
Bethesda, MD

Roger Blakeney  
Round Hill, VA

Bob Cassilly  
Bel Air, MD

Steven Frey  
Chambersburg, PA

Than Hitt  
Shepherdstown, WV

Harry Prince  
Ijamsville, MD

Mary & Victor Rollins  
Heathsville, VA

Richard & Susan Sellman  
Rotonda West, FL

Robert Sullivan  
Baltimore, MD

Todd Toburen  
Manheim, PA

Trippe Callahan  
Queen Anne, MD

Charlene Crable  
Bradenton, FL

William Grove  
Fawn Grove, PA

Bruce Hilpert  
Tucson AZ

Joseph Lane  
Smithsburg, MD

Dudley Lindsley  
California, MD

James R. Lyle Providence  
Forge, VA

David Peterson  
Media, PA

Rebecca Reed  
Fredericksburg, VA

CONTINUED ON PAGE 31



CONTINUED FROM 30

- In memory*  
of Megan Richardson  
from Karen Richardson  
Pasadena, MD
- Rudy Rohrbaugh  
Dover, PA
- Charles & Margaret Schenck  
Ulysses, PA
- Price Shuler  
Denton, MD
- Stuart S. Speaker  
Takoma Park, MD
- John Streb  
Pasadena, MD
- In memory*  
of Helen Bass Whitehead  
from Raymond & Ann Allen  
Vinton, VA
- Dennis Allison  
Hampton, VA
- Priscilla Arenas  
Kensington, MD
- David Bagwell  
Silver Spring, MD
- George Bankert  
York Springs, PA
- Patricia Benson  
Berlin, MD
- Nancy Bernhardt  
Media, PA
- Clarke Bowie  
Bel Air, MD
- David Boyer  
Dover, PA
- Caroline Braun  
California, MD
- Kenneth E Bright  
Madison, MD
- John Buckwalter  
Alfred Station, NY
- Leroy Bupp  
Seven Valleys, PA
- Robert Byrd  
Laurel, MD
- Arnold Ching  
Mechanicsville, MD
- Wilma Clark  
Norfolk, VA
- Lynda Clary  
Tangier, VA
- John Cleary  
Worton, MD
- Robert & Mary Crafton  
Grasonville, MD
- The Crockett Family  
Shickshinny, PA
- Frank Dederbeck  
Denville, NJ
- Nancy Diangelo  
Chestertown, MD
- Lisa Dorsey  
Westminster, MD



A wild azalea shows its colors along a trail in the Eastern Shore Land Conservancy's Lynch Preserve. The preserve is located on the Choptank River and Robins Creek in Caroline County, MD. (Dave Harp)

- Cindy Douglass  
Cambridge, MD
- Michael Duane  
Center Valley, PA
- Charles Epes  
Richmond, VA
- Arnold Evans  
Saxis, VA
- Ellen Farr  
Silver Spring, MD
- Ralph M. Faust  
Adelphi, MD
- Eleonora Florance  
Leesburg, VA
- John Freeney  
Towson, MD
- Lydia L. Grinage  
Pikesville, MD
- Alma Hackett  
Salisbury, MD
- Mike Hamracek  
Lothian, MD
- Edgar Harman  
Oakland, MD

- Wilson Hart  
Nottingham, MD
- Elaine Hendricks  
Greenbelt, MD
- Drew F. Hoff  
Chestertown, MD
- Phil Holzinger  
Lancaster, PA
- Mary L. Humphreys  
Brandywine, MD
- Doug Hutzell  
Hagerstown, MD
- Peter Johnson  
Washington, DC
- Barbara Jones  
White Stone, VA
- Anne & Stacy Karras  
Reading, PA
- Mary Kempf  
Rockville, MD
- Jdkjdhhk Khkhk  
New York, NY
- W. Robert Kilbourn  
Joppa, MD

- Jerome Klasmeier  
Crownsville, MD
- Stuart Knudsen  
Locust Hill, VA
- Angie Kobold  
Annapolis, MD
- Dennis Krizek  
Annapolis, MD
- Dan Kulp  
Doylestown, PA
- Richard Kurtz  
Ithaca, NY
- Barbara Lockwood  
Gore, VA
- Francis Glenn Lumpkins  
Lusby, MD
- Michael Lynch  
Upper Black Eddy, PA
- Charles R. McClain  
Severna Park, MD
- Ronald McLucas  
Hockessin, DE

- In memory*  
of Helen Bass Whitehead  
from Elvira Morse  
Amherst, VA
- Ralph Motta  
Hingham, MA
- Denis Newbird  
Cochranville, PA
- Ted Nutter  
Dover, DE
- Randy Packett  
Warsaw, VA
- Karen Palmer  
Gaithersburg, MD
- Robert Pawlowski  
West Mifflin, PA
- Robert B. Pieper  
Essex, MD
- St. George Pinckney  
Richmond, VA
- Denny & Sherri Porter  
Gaithersburg, MD
- Bill Poulos  
Kensington, MD

- Price Valley Farm, LLC  
Warwick, MD
- Phil Prickett  
Tabernacle, NJ
- Charles Rand  
Knoxville, MD
- Lee Rich  
Yorktown, VA
- William Rider  
Richmond, VA
- Joan Ripley  
Charlottesville, VA
- Tamara Rupp  
Clarksburg, MD
- Michael F. Ruth  
Baltimore, MD
- David Sanford  
Silver Spring, MD
- Arthur & Geraldine Saunders  
Melfa, VA
- William Say  
Dundalk, MD
- Steve Scala  
Rockville, MD
- Henry Schaffer  
Perry Hall, MD
- Janice & James Scheler  
Rosedale, MD
- Spencer L. Schmidt  
Poolesville, MD
- Claudia & Michael Scibek  
Bear, DE
- Paul & Donna Shogren  
Oakland, MD
- Christine Simmers  
Rising Sun, MD
- Caroline Skinner  
Portland OR
- Ted Snyder, Jr.  
Oley, PA
- M. Stairs  
Virginia Beach, VA
- Judy Stevens  
Brownstown, PA
- Karen Stickel  
White Stone, VA
- David & Margaret Sudekum  
Delmar, MD
- Philip Sze  
Gaithersburg, MD
- The Robert & Zoda May  
Headlands Trust  
Greencastle, PA
- Joseph Tiernan  
Severna Park, MD
- Geoffrey Tobias  
West River, MD
- Mike Tolker  
East New Market, MD
- Ronald Torbeck  
Parkville, MD
- Brion Townshend  
Baltimore, MD

Thank You To These Philanthropic Donors







## FORUM

## COMMENTARY • LETTERS • PERSPECTIVES

*From rooftops to rivers: Solving stormwater woes with local solutions*

By HARRY CAMPBELL

You may not realize it, but the water we drink, shower and bathe with, as well as recreate in, was once stormwater.

When it rains, water that runs off hard surfaces like rooftops, parking lots, roads and even lawns is often shuttled to the nearest river or stream by underground pipes and open swales. Along the way, things like motor oil, pet waste, lawn chemicals and fertilizers, cigarette butts and garbage hitch a ride.

Too much stormwater can overwhelm Pennsylvania's undersized and under-maintained infrastructure. In many areas, this is often combined with human waste and can cause raw sewage overflows into streams and streets. Flooding plagues most of our older towns and boroughs, and floodwater is sometimes unsafe for human contact. Pennsylvania has more of these "combined sewer overflows" than any other state.

About 5,200 miles of our streams are classified as impaired from polluted stormwater runoff.

While we all want less of the dirty stuff flooding and polluting the water we rely on, agreement on how to reduce, clean and manage polluted runoff isn't as easy to come by.

More than 1,700 governments nationwide, including more than two dozen in Pennsylvania, have chosen to establish local stormwater fees. One common feature of all of these is that they're based on local solutions to a big problem.

As the flood of reporting about stormwater fees continues, several points deserve clarification.

Back in 1987, Congress recognized that stormwater was a big and growing problem in the nation. Starting in 1990, as part of the federal Clean Water Act, municipalities of a certain size or larger were required to start reducing stormwater runoff. Today, there are more than 1,000 such municipalities in Pennsylvania.



*One inch of rain on just one acre of hardened surface produces about 27,000 gallons of polluted runoff. (Dave Harp)*

Municipalities are not mandated by the U.S. Environmental Protection Agency or state Department of Environmental Protection to have stormwater fees. Instead, municipalities choose how to pay for stormwater projects.

The stormwater fee is not a tax on the amount of rain that falls from the sky and onto the land. Because it is not a tax, the fee often provides that tax-exempt properties pay their fair share. Some municipalities apply cal-

culated stormwater fees to agriculture, churches, schools and government properties. Others ask for a flat fee.

For other landowners, such as businesses, the fee is based on the property's amount of hard surface and how much polluted runoff the property sends into the stormwater system. It's an impact fee.

Most programs offer credits or discounts for property owners who add trees, rain gardens and other practices that reduce stormwater pollution.

Fees can vary. For example, households in the city of Lancaster, PA, pay about \$0.10 a day. Derry Township in Dauphin County has a fee of \$0.21 a day. The Wyoming Valley Sanitary Authority fee is around \$0.16 a day. People who buy fast-food coffee three times a week would pay more each month.

The revenues from fees are usually dedicated to the local stormwater authority, to be used only for reducing the amount of polluted runoff and its impacts.

One inch of rain on just one acre

of hardened surface produces about 27,000 gallons of polluted runoff. That's almost enough to fill a large, in-ground swimming pool. For most local systems — some of which haven't been maintained or updated for 25, 50, even 100 years — the water hits our streams hard and fast. It blows them out of their banks causing flooding to roads, downtowns, backyards and basements.

A recent opinion piece that appeared in a number of Pennsylvania newspapers called for the state DEP to provide "substantiated, comprehensive data" of local water quality and plans for monitoring improvements.

There's a surprisingly large amount of stream water quality monitoring data in Pennsylvania already. It's been collected by federal and state agencies, academic institutions, and even local watershed groups sometimes for decades. Much of it, after review for accuracy, is used to help scientists understand what's going on in our streams and why.

Models, however, do something monitoring simply can't. They're used to predict the outcomes of different scenarios, sometimes including cost estimates that can ultimately save citizens money.

More monitoring can be helpful. But without increased investments in the programs and people to make it happen, the question becomes how will the monitoring be done and by whom? DEP staffing is at levels comparable to those in the mid-90s, and the water programs have been chronically underfunded for more than a decade. The governor's 2020–21 budget proposed that DEP funding rise above 1994–95 levels for the first time in a decade.

Another point worth clarifying. The Chesapeake Bay Foundation has not said it will sue Pennsylvania for being significantly behind in meeting its clean water commitments. The state of Maryland has said that. Both Maryland and CBF have said that the EPA is subject to suit for not holding the commonwealth accountable for repeatedly missing its targets.

Locally created and controlled stormwater programs are critical to ensuring that we have clean and abundant water.

Our health, well-being and quality of life depend on it.

*Harry Campbell is the Pennsylvania science policy and advocacy director of the Chesapeake Bay Foundation.*

## LET US KNOW

The BAY JOURNAL welcomes letters pertaining to Chesapeake Bay issues. Letters should be no more than 400 words. Send letters to: Editor, BAY JOURNAL, 619 Oakwood Drive, Seven Valleys, PA 17360-9395. E-mail letters to: bayjournal@earthlink.net

Letter writers should include a phone number where they can be reached. Longer commentaries should be arranged in advance with the editor. Call: 717-428-2819.

Views expressed are those of the writers and do not necessarily reflect those of the BAY JOURNAL or Bay Journal Media.



## FORUM

## COMMENTARY • LETTERS • PERSPECTIVES

## Do good – not just 'less bad' – if restoration is to gain any ground

BY TOM HORTON

*The Man Who Planted Trees* is the compelling tale by writer Jean Giono of his meeting a shepherd wandering the wrecked landscapes of France after World War I, tending his small flock, planting acorns — living simply, sowing beauty and enhancing life, renaturing whole valleys through the decades.

The story, written in 1953, was translated into several languages and made into a popular movie, inspiring people worldwide. And it was just fiction, Giono revealed in his later years.

He wrote it “so that people would like trees more.” It was, as Picasso said of the illusion that is art, the “lie that makes us realize the truth.”

Indeed, something in us, I believe, resonates with the notion of a simpler life that adds to nature rather than merely subtracting less — being restorative rather than being merely less bad.

We’ve become quite good at being less bad. I’ve grown wearily expert at detailing how and why we fall short of a truly sustainable relationship with the rest of nature.

We understand how ecosystems unravel, but are just scratching the surface of how they regenerate.

We need environmental restoration to burgeon, to vault beyond “mitigation,” “amelioration,” “remediation,” “rehabilitation” — all of those code words for being less bad. We need it for the Chesapeake and the planet, but equally to keep our spirits up, keep our heads in what’s going to be a long game.

This column was sparked by a chance meeting with Wes Gould, who only a few years back had been a student in the Environmental Studies Department, where I teach at Salisbury University.

He’s working with the Maryland Department of Natural Resources’ Center for Habitat Restoration and Conservation, a small unit that is recently able to tap serious money, thanks largely to a tax on car rentals that generates around \$55 million dollars annually.

Wes’s current projects, restoration of a couple of stretches of a couple streams in the Gunpowder River drainage of northern Maryland, won’t change the world. But they’re aiming to be genuinely restorative, to recapture how the Chesapeake landscape sheds its water in ways that made a pristine Bay.

They take guidance from the



*Trees wait at the edge of a stream where they will be planted as part of a buffer to filter sediments and nutrients out of runoff or groundwater before it enters the waterway. (Dave Harp)*



## Chesapeake Born

millions of beavers that once dammed and ponded and slowed runoff across the watershed’s 64,000 square miles, filtering and purifying it.

“Streams as we know them are not as they used to be,” explained Claudia Donegan, who heads the DNR’s habitat restoration center. Rather than today’s single thread of water, chiseling gullies through floodplains clogged with sediment (from centuries of deforesting

and farming), original streams were broad oozes, braided channels spread through lush wetlands that filled whole valley bottoms.

Wes is still negotiating with other agencies for necessary permits and with skeptics in his own department — but it’s likely that his little restorations are going to turn out a lot better than just less bad.

Claudia is looking to move more boldly; she has become DNR’s beaver apostle, working to reverse our

ecological amnesia as to how the original watershed worked, to show how humans can emulate beavers and even co-exist with them and encourage their return.

In Pennsylvania, Big Spring Run in Lancaster County is another success in restoration, wrought with bulldozers and backhoes, not beavers.

Based on research by two professors at Franklin and Marshall College, Pennsylvania removed 22,000 tons of “legacy” sediment from massive 18th- and 19th-century erosion. They took 3,000 feet of stream banks down to their original, flatter, wider, slower-moving profile — allowing the water to spread out, to seep and dribble through lush wetlands.

The project cost about a million bucks, but the monitored reductions in pollution heading for the Chesapeake indicate that replicating it widely in Lancaster County alone could meet the whole state’s 2025 goals for reducing

sediment and phosphorus to the Bay.

There’s reason to hope restoration’s time is coming. A 2015 study for the Walton Family Foundation showed that ecological restoration employs 126,000 people nationally. That’s more than logging and coal mining combined, according to the latest figures from the U.S. Bureau of Labor Statistics.

The Walton study estimated the “restoration economy” to have \$9.5 billion in direct economic impact, and another \$15 billion indirectly. In terms of jobs per million dollars of investment, restoration projects ran from seven to 40 jobs. Oil and gas industries are about 5 jobs per million. Gas pipeline construction is about 20.

We know enough about restoration to start scaling it up, from the earth-moving projects like Big Spring Run, to the science and social accommodation of reintroducing beavers — even including what kind of tree to plant in your backyards to most help birds (that would be oaks, which host a huge variety of insects, according to research by Douglas Tallamy at the University of Delaware).

I’ll end with some thoughts I read in an interview with 81-year-old Patagonia founder Yvon Chouinard: “Everything Man does creates more harm than good. We have to accept that fact and not delude ourselves into thinking something is sustainable.”

And yet Chouinard and Patagonia press forward, founding a movement through which businesses have generated a quarter billion dollars for the environment. Also using fibers from plants to replace the petroleum in fleece; creating a million-acre park in South America chosen to maximize carbon storage; growing cotton with 580 small farmers in India with practices that go beyond organic and actually enhance nature and soil quality.

Much of this is not ready for global scaling, Chouinard concedes. “Growth is destroying the planet,” he says, admitting to mixed feelings about his own company’s growth and billion-dollar value.

All you can do, he says, is keep moving forward.

And no better path to take than restoration.

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



# FORUM

## COMMENTARY • LETTERS • PERSPECTIVES

### Accountability for pollution caused by agriculture falls on all of us

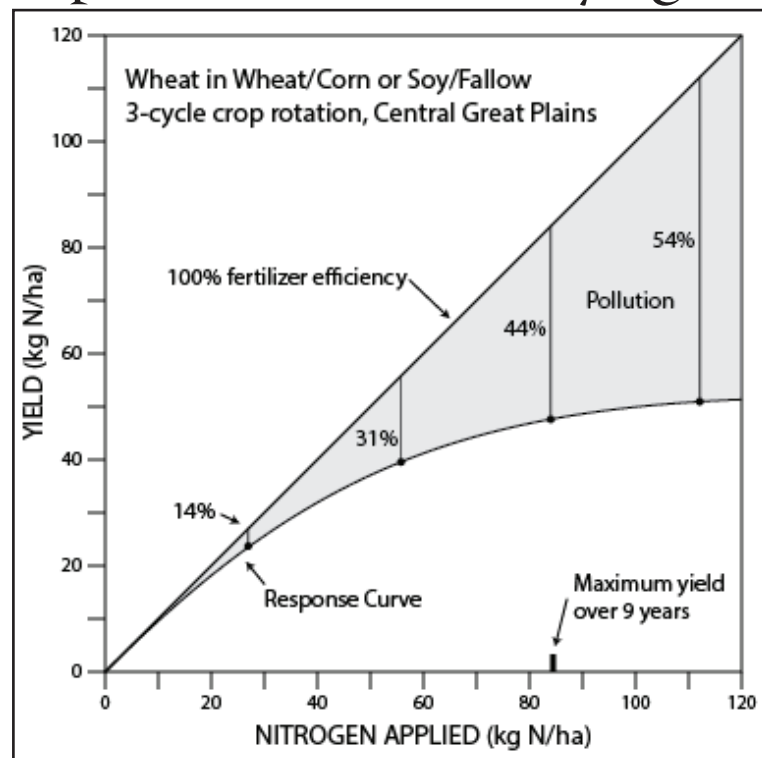
By. LYNTON S. LAND

Gerald Winegrad's *Bay Journal* Forum piece, 36 years after first *Bay Agreement*, its restoration is still a pipe dream, (January-February 2020) should be required reading for anyone concerned about the health of Chesapeake Bay. As a knowledgeable retired Maryland legislator, his guest entry in Howard Ernst's book *Fight for the Bay*, states that his most regrettable failure was not to require mandatory controls on agricultural pollution, the largest single factor causing the Bay's decline. Five pushes between 1989 and 1994 could not overcome opposition from "the farm community, the agricultural lobby and their supporters in the government."

Society needs to understand the Bay's problem in simple, accurate terms. The science is sound, the politics is in the way. Most of the nitrogen and phosphorus pollution in the Chesapeake Bay, and other bodies of water worldwide, is caused by inefficient crop fertilization. No fertilization process can be 100% efficient so it is impossible for all of the nitrogen and phosphorus applied to end up in the crop. Some pollution is inevitable. Farmers do not pay for the pollution they cause. In economic terms, the cost of pollution is an "externality" — the economic consequences of fertilizer not sequestered in the crop affects other parties but is not accounted for. Simply stated, farmers seek to minimize their costs and provide society with the cheapest possible food while avoiding economic consequences for the pollution they cause.

In the case of chemical fertilizer applied only at the time of planting, no more than about two-thirds is sequestered in the crop. Given a fertilization rate of 185 pounds of nitrogen per acre (for the maximum yield experienced over nine years in the diagram), about 80 pounds of nitrogen per acre were released to the environment each year. Imagine sixteen 50-pound bags of 10-10-10 fertilizer, each of which contains 5 pounds of nitrogen, being dumped in the Bay for every acre of corn or small grain grown in the watershed, and you get an idea of the massive nature of nutrient pollution when this fertilization practice is used.

An alternative to applying fertilizer only at the time of planting is to



A "response" curve depicts what happens as nitrogen is applied to a crop. The applied nitrogen in kilograms per hectare (about the same as pounds/acre) is plotted horizontally versus the nitrogen taken up by the crop using the same units. The values are identical along a sloping line labeled "100% fertilization efficiency." This result can never be achieved. The curve, which is typical, depicts observed nitrogen uptake by the crop as the amount of applied nitrogen increases. The gray area between the curve and the sloping line is potential pollution. The higher the rate of nitrogen application, the higher the pollution. (Submitted by Lynton Land)

apply it at one or more times during the growth of the crop, commonly called "split fertilizer application" or "side-dressing." This practice uses less fertilizer, but the farmer must weigh the reduced cost of fertilizer against the time, fuel and wear-and-tear on the machinery caused by more passes through the field. Farmers obviously don't want to waste money on fertilizer that will not benefit the crop, but farmers do tend to be optimistic about crop yields and often fertilize with hopes of "bumper" crops. Thus they usually err on the side of high fertilization rates, often resulting in high pollution rates. I have found few reliable data on private farm fertilization practices.

The most highly polluting form of fertilization is the disposal of animal waste (poultry litter, municipal sewage sludge and manure) by land application in the guise of "free fertilizer." All of the verbose, complex and highly permissive laws in Bay watershed states that govern the disposal of animal

analysis for phosphorus."

As Winegrad stated, such a simple requirement would meet violent opposition from "the farm community, the agricultural lobby and their supporters in the government" (especially politicians who receive contributions from the agricultural lobby) because it would require a lot of additional acreage to dispose of the waste onto soils that already contain phosphorus.

Also, because that low application rate could no longer supply the nitrogen needs of the crop, additional chemical fertilizer would be required. Bay pollution would be significantly reduced by this single simple action because, unlike existing regulations, it prioritizes water quality.

Until the technology evolves to recycle phosphorus economically, excess animal waste could be disposed in dedicated landfills designed to harvest methane. The nation's reserves of phosphorus ore will be consumed within the lifetimes of children being

waste by land application should be replaced by a single sentence that would protect water quality instead of continuing to permit the cheap disposal of the waste: "The land application of poultry litter, sludge and manure shall be limited to the amount of phosphorus necessary to support growth of the next crop based on a soil

waste by land application should be replaced by a single sentence that would protect water quality instead of continuing to permit the cheap disposal of the waste: "The land application of poultry litter, sludge and manure shall be limited to the amount of phosphorus necessary to support growth of the next crop based on a soil

born today and then phosphorus will need to be supplied from Middle Eastern countries. We would be wise to use phosphorus sustainably now rather than continuing to pollute water bodies like the Bay and forcing our successors to face running out in the future.

In the case of chemical fertilizers, "precision farming" machines that measure a plant's health "on the run" and apply only the needed fertilizer are being developed. But how long will it take for them to be available and affordable to the average farmer? How much will they reduce pollution rather than just increase crop yield? A readily available option today is to use "encapsulated" (slow-, timed- or controlled-release) fertilizers that provide nutrients as the crop grows, and should be exhausted after the crop has matured and is drying in the field. These kinds of fertilizers are expensive and not fully responsive to unpredictable growth rates caused by uncertain temperature, rainfall etc. They can never be perfect, but they can certainly significantly reduce chemical fertilizer pollution. Could they be subsidized? Imposing a federal "pollution tax" on conventional chemical fertilizer (good luck!) would encourage alternatives.

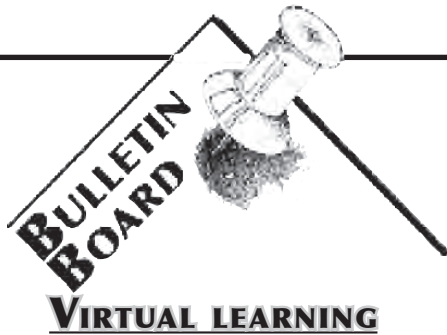
Volunteerism to control nutrient pollution has been ineffective, even for simple, obvious actions like fencing animals out of streams. It is past time for the enactment of regulations that meaningfully address pollution from crop fertilization. Reliable data must document the improvements, not just pie-in-the-sky words from biased practitioners.

Society must recognize that its choices regarding food and elected officials bear on the state of the Bay. Is society willing to pay more for meat so that animal waste can be responsibly disposed of without water pollution? Is society willing to eat more plants rather than killing and eating the animals that eat the plants and then produce the manure?

Society must be willing to point an accusatory finger at itself and actively demand rational solutions to this well-understood problem, and be willing to pay for them.

Dr. Lynton S. Land is emeritus professor of geological sciences at the University of Texas in Austin and now lives in Ophelia, VA. His website is [VABayBlues.org](http://VABayBlues.org).





## New! *Bulletin Board* goes online

The *Bay Journal* website has a new look! It also has a new section called *Bulletin Board*, where you can log in and post your own events — and even include a photo! Visit [bayjournal.com](http://bayjournal.com) and click on “Bulletin Board.”

### VA Living Museum

Virtual learning programs offered daily by the Virginia Living Museum in Newport News feature lessons, animal ambassadors, adventure challenges, live feeds and other activities for all ages. The programs are available across several social media platforms: Facebook [F], Twitter [T] and Instagram [I]. Here's the schedule:

☞ *Diet of the Day*: 8 a.m. Learn about VLM animals' diets. [F, I, T]

☞ *Awesome Animal Ambassadors*: 10 a.m. Meet a VLM ambassador animal. [F]

☞ *VLM Live*: 11 a.m. Fish & animal feedings / enrichment. [F]

☞ *Nature at Noon*: 12 p.m. Learn about what's in your own backyard. [F, I, T]

☞ *Social Picks*: 2 p.m. Popular topics. [F, I, T - platform may vary].

∞ *Monday Who Knows? Bo Knows Mammals*: Learn about an ambassador animal.

∞ *Tuesday Twitter Chat*: Ask your science questions. [I]

∞ *Wednesday Weird & Wild*: Odd animal facts.

∞ *Thursday Outdoor Adventure*: Discover an outdoor educational activity.

∞ *Science Friday*: A do-at-home science experiment is featured.

∞ *Saturday Living Green Sustainably*: Think like a conservationist.

∞ *Sunday Starry Stories*: All about astronomy – constellations, myths, & legends.

☞ *VLM Live*: 2:30 p.m. Fish & animal feedings / enrichment. [F]

☞ *VLM Mysteries- What is it?*: 4 p.m. Try to identify what the daily photo is a picture of. It could be part of an animal or an item from VLM's collections. Answer revealed the next day. [I]

☞ *Virginia Skies*: 6 p.m. Stargaze, learn stellar facts. [F, I, T]

☞ *Night Night Nature*: 8 p.m. Bedtime story targeted to ages 5 & younger. [F]

Info: [thevlm.org](http://thevlm.org), 757-595-1900, [facebook.com/VirginiaLivingMuseum](https://facebook.com/VirginiaLivingMuseum), [twitter](https://twitter.com/VirginiaLivingMuseum).

[com/VLMuseum](http://com/VLMuseum), [instagram.com/valivingmuseum](https://instagram.com/valivingmuseum).

### Annapolis Maritime Museum

The Annapolis Maritime Museum & Park is providing students, as well as adults, with worksheets, crafts, videos and lesson plans at its *Virtual Learning Resources* page on its website, [amaritime.org/education/virtual-learning-resources](http://amaritime.org/education/virtual-learning-resources). Go on a trash scavenger hunt, explore the museum's Oral Histories Collection, learn about the life cycle of Chesapeake creatures or take a virtual tour of the museum's exhibits.

## ACTIVITIES / EVENTS

### Walk off the trash

Official cleanups have been canceled until further notice, but that doesn't mean you can't wear gloves and take a trash bag along on your next walk. Help to clean up your local environment.

### Treat yourself to a tree

Using the extra time at home time to spruce up your landscape? Put “*How to plant a container tree Maryland DNR*” in your search engine for a YouTube video.

### 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*, *A Hobbyist's Guide to*

*Maple Sugaring*.

☞ *Bouquets for the Bay*: Visit [NativePlantCenter.net](http://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](http://stormwater.allianceforthebay.org).

### MD DNR photo contest

The Maryland Department of Natural Resources is accepting entries for its annual photo contest. Images can be: birds, fauna, flora, insects, natural phenomena, outdoor recreation, scenic landscapes, weather, wildlife. First, second, third place are awarded for each season. An overall grand prize winner will be chosen from the first-prize winners. Social media users may select a “Fan Favorite” via the department's Facebook page. Photographers, novice or professional, may submit up to three entries for \$10 with additional entries (no limit) at \$3 each until Aug. 31. The contest is open to residents and out-of-state visitors alike, but only photos of Maryland qualify. The best overall photo receives a grand prize of \$500 cash, a one-year Maryland State Park and Trail Passport, a complimentary five-year subscription to *Maryland Natural Resource* magazine and five copies of the 2021 calendar. First, second, and third place winners also receive prizes. Winning entries will be posted online, featured in an issue of the magazine, placed in the 2021 wall calendar. Visit [dnr.maryland.gov/Pages/photocontest.aspx](http://dnr.maryland.gov/Pages/photocontest.aspx) for rules.

### Susquehanna history cruise

Join Susquehanna Jack (historian John Moore) and educational musician Van Wagner for tales of the Susquehanna

River in the Williamsport region and beyond during *History Aboard the Hiawatha* 10–11 a.m. June 16 aboard the Hiawatha Riverboat in Williamsport, PA. Wagner, a local musician has recorded more than 20 albums of original regionally based songs. Moore is a professional storyteller who specializes in Pennsylvania's colonial history. Dressed in 18th-century clothing, he takes on the persona of Susquehanna Jack and talks about the native peoples and settlers of European descent who lived in the West Branch Valley. The event is part of the 2020 Floating Classroom series conducted by the Middle Susquehanna Riverkeeper Association and John Zaktansky, Middle Susquehanna Riverkeeper. The cost is \$10 / ages 18 or younger per session; \$8 / additional children in the same family; \$5 / adult family member or guardian. Ticket purchases must be completed through the Hiawatha's system Info: [midsusriver@gmail.com](mailto:midsusriver@gmail.com). If COVID-19 restrictions are in place at that time of the cruise, it will be postponed until state and local guidelines allow it to be rescheduled. Info: [MiddleSusquehannaRiverkeeper.org](http://MiddleSusquehannaRiverkeeper.org).

### Annapolis Decoy Show

The Potomac Decoy Collectors Association's *Annapolis Decoy Show* is scheduled 9 a.m.–3 p.m. June 7 at the Annapolis Elks Lodge in Edgewater. (Check to see what COVID 19-related restrictions, if any, are in effect before going.) Attendees can view, buy, sell or trade classic antique duck decoys, hunting & fishing items, paintings, prints & sporting art, books, vintage collectibles / accessories from more than 30 dealers. Several world-class contemporary decoy carvers from Maryland will also be exhibiting, selling their work. Visitors can bring in old decoys for free identification and appraisals provided by the Potomac Decoy Collectors Association and *Decoy Magazine*. Free admission & parking. Map: [elks622.com](http://elks622.com). Info: [chad.tragakis@gmail.com](mailto:chad.tragakis@gmail.com), 703-593-3024.





BULLETIN FROM PAGE 35

## **VOLUNTEER OPPORTUNITIES**

### **MD angler survey**

Become a citizen scientist by helping the MD Department of Natural Resources collect species, location, size data on a smartphone using its *Volunteer Angler Survey*. The data is used to develop management strategies. The artificial reef initiative, blue crab, freshwater fisheries, muskie, shad and striped bass programs also have upgraded mobile-friendly methods to record data. Win quarterly prizes. Info: [dnr.maryland.gov/Fisheries/Pages/survey/index.aspx](http://dnr.maryland.gov/Fisheries/Pages/survey/index.aspx).

### **Mount Harmon Plantation**

Help Mount Harmon Plantation in Earleville, MD, with manor house student tours, colonial crafts, hearth cooking, guided nature walks, herb garden. Special event volunteers assist with manor house tours, admission/ticket sales, gift shop, auction & raffle fundraisers. Training provided. Docents are asked to commit to 8 hours of service per

month during tour season: 10–3 p.m. Thursdays–Sundays, May–October. Info: 410-275-8819, [info@mountharmon.org](mailto:info@mountharmon.org).

### **VA Master Naturalists**

VA Master Naturalists are a corps of volunteers who help to manage, protect natural areas through plant & animal surveys, stream monitoring, trail rehabilitation, teaching in nature centers. Training covers ecology, geology, soils, native flora & fauna, habitat management. Info: [virginiamasternaturalist.org](http://virginiamasternaturalist.org).

### **Creek Critters app**

Use Audubon Naturalist's Creek Critters app to check a stream's health by finding, identifying small organisms that live in freshwater, then creating a report based on what is found. Get the free program at the App Store, Google Play. Info: [anshome.org/creek-critters](http://anshome.org/creek-critters). To learn about partnerships/ host a Creek Critters event: [cleanstreams@anshome.org](mailto:cleanstreams@anshome.org).

### **Project Clean Stream**

Spring may be almost over but it's not too late to plan a cleanup event for the fall. Be part of the Alliance for the Chesapeake Bay's *Project Clean Stream*. Volunteers in all 6 Bay states and the district pick up trash in waterways, parks using supplies (trash bags, gloves) provided by the Alliance. Residents, local businesses, environmental organizations, local governments,

community groups, houses of worship, schools, universities are invited to participate. Learn about projects that are scheduled to coincide with the National Day of Service on Sept. 11. Info: [chesapeakeanetwork.org/groups/project-clean-stream/](http://chesapeakeanetwork.org/groups/project-clean-stream/) [projectcleanstream@allianceforthebay.org](mailto:projectcleanstream@allianceforthebay.org).

### **Howard County Conservancy**

The Howard County Conservancy needs volunteers to lead elementary and secondary school hikes. No experience is necessary. Volunteers choose which hikes they would like to do. No minimum or maximum time requirement. Volunteers are also needed for various events. Info: Carole at 410-465-8877, [volunteer@hcconservancy.org](mailto:volunteer@hcconservancy.org).

### **Patuxent Refuge bookstore**

The Wildlife Images Bookstore at the National Wildlife Visitor Center of the U.S. Fish and Wildlife Service's Patuxent Research Refuge in Laurel, MD, needs volunteers to open & close the store, run the register. Training provided. Info: 301-497-5771, [lindaleechilds@hotmail.com](mailto:lindaleechilds@hotmail.com).

### **CBL Visitor Center**

The Chesapeake Biological Laboratory's Visitor Center on Solomons Island, MD, needs volunteers, 16 & older. They must commit to a minimum of two, 3– to 4-hour shifts each month in spring, summer, fall. Training sessions required. Info: [brzezins@umces.edu](mailto:brzezins@umces.edu).

### **Adopt-a-Stream**

The Prince William Soil & Water Conservation District in Manassas, VA, gives stream cleanup events the supplies, support they need for trash removal projects. Groups also receive an Adopt-A-Stream sign recognizing their efforts. For info / to adopt a stream / get a proposed site: [waterquality@pwsacd.org](mailto:waterquality@pwsacd.org). Register events at [trashnetwork.fergusonfoundation.org](http://trashnetwork.fergusonfoundation.org).

### **Test for chemicals in water**

The Prince William (County) Soil and Water Conservation District, and the Virginia Department of Environmental Quality need volunteers to join their *Chemical Water Quality*

*Monitoring Teams*, who collect data from local streams. DEQ will teach volunteers techniques to collect and read the data. Monitoring sites are accessible for easy collection. Info: [pwsacd.org](http://pwsacd.org), [waterquality@pwsacd.org](mailto:waterquality@pwsacd.org).

### **Volunteer at CBEC**

The Chesapeake Bay Environmental Center in Grasonville, MD, has volunteer openings for people who only want to drop in a few times a month as well as those who want to help more frequently. Openings include: helping with educational programs; guiding kayak trips or hikes; staffing the front desk; maintaining trails, landscapes & pollinator garden; feeding or handling captive birds of prey; maintaining birds' living quarters; participating in CBEC's team of wood duck box monitors & other wildlife initiatives. Other opportunities include fundraising events, website development, writing for newsletters and events, developing photo archives and 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](mailto:volunteercoordinator@bayrestoration.org).

## **RESOURCES**

### **Chesapeake Network**

Join the Alliance for the Chesapeake Bay's Chesapeake Network (search engine those terms) to learn about actions you can take — from webinars to job postings to other resources. Stay connected with the conservation world.

### **Bilingual educator resources**

Educational programs are available in English and Spanish from the Interstate Commission on the Potomac River Basin. Info: [potomacriver.org/resources/educator](http://potomacriver.org/resources/educator).

### **Track Severn River's health**

Check the health of the Severn River online at [cmc.vims.edu/#/home](http://cmc.vims.edu/#/home). Water quality data collected from the Severn River Association's network of 41 monitoring

### **Chesapeake Challenge**

Answers to

**Bye-bye Bunny! Deer Depart! Scat Cat!  
Ta-ta Ticks! Move off Mosquitos!**

on page 25.

1. Snake 2. Cat 3. Deer
4. Mosquito 5. Tick 6. Rabbit

### **Bay Buddies**

Answers to

**Creature Discomforts**

on page 25.

1. Snake 2. Cat 3. Mosquito
4. Rabbit 5. Tick 6. Deer

*The bulbs of the daffodil are poisonous, so be careful when planting this flower where children play. (Geoff Doggett / CC0 Public Domain)*







## BULLETIN FROM PAGE 36

stations, from Indian Landing near the headwaters to Lake Ogleton and the creeks of Whitehall Bay, are posted on Data Explorer, a data-sharing platform run by the Chesapeake Monitoring Cooperative. The site also contains SRA water quality monitoring data for 2018 and 2019 and fecal bacteria levels collected by Operation Clearwater, run by Professor Tammy Domansky at Anne Arundel Community College. Anne Arundel County's bacteria reports are also posted.

## Severn River speakers online

Severn River Association's John Wright Speaker Series presentations are available online. Titles include *Oyster Farming in St. Jerome's Creek*; *The Demise of Our Yellow Perch Fishery*; *Land Preservation: How Does it Work?*; *Tree Care In The Critical Area*; *Enjoy The Severn River – Standing Up!*; *Runoff, Permits & Water Quality*; *Annapolis Neck – Mud Floods*; *Fishing on the Severn*; and *Will Butterflies & Bees Survive?* These, and other titles, are available at [severnriver.org/category/speaker-series](http://severnriver.org/category/speaker-series).

## Watershed capsules

Prince William (VA) Soil and Water Conservation District's Watershed Capsules, which teach students about the important functions of watersheds, are available, first-come, first-served. Info: [pwsacd.org/capsules](http://pwsacd.org/capsules).

## Boating safety instruction

Boating safety classes are required for operators of recreational boats in Virginia, Maryland, the District of Columbia, most other states. Online opportunities include:

- ≈ Virginians: [boat-ed.com/virginia](http://boat-ed.com/virginia)
- ≈ Marylanders: [boatus.org/maryland](http://boatus.org/maryland)
- ≈ DC residents & nonresidents: [boat-ed.com/districtofcolumbia](http://boat-ed.com/districtofcolumbia)
- ≈ Comprehensive list of

# SUBMISSION GUIDELINES

The *Bay Journal* regrets it is not always able to print every notice it receives because of space limitations. Priority is given to events or programs that most closely relate to the preservation and appreciation of the Bay, its watershed and resources. Items published in *Bulletin Board* are posted on the online calendar; unpublished items are posted online if staffing permits. Guidelines:

≈ **Send notices to [kgaskell@bayjournal.com](mailto:kgaskell@bayjournal.com).** Items sent to other addresses are not always forwarded before the deadline.

≈ *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 month. Deadlines run at least two months in advance.

See below.

≈ Submissions to *Bulletin Board* must be sent either as a Word or Pages document, or as simple text in the body of an e-mail. PDFs, newsletters or other formats may be considered if there is space and if information can be easily extracted.

≈ Programs must contain all of the following information: a phone number (include the area code) or e-mail address of a contact person; the title, time (online calendar requires an end time as well as a start time), date and place of the event or program. Submissions must state if the program is free, requires a fee, has age requirements, has a registration deadline or welcomes drop-ins.

≈ **June issue: May 11**

≈ **July-August issue: June 11**

training options: [uscgboating.org/recreational-boaters/boating-safety-courses.php](http://uscgboating.org/recreational-boaters/boating-safety-courses.php)

≈ Free boating safety tools & materials from the Coast Guard Auxiliary: Info/search engine: recreational boating safety outreach.

## Stormwater class

The Alliance for the Chesapeake Bay's Municipal Online Stormwater Training Center's *Dig Once Course* suggests how local leaders can integrate green infrastructure into community capital projects such as road construction, school & park improvements. Interactive lessons, videos in a user-friendly format give communities tools to build, enhance local stormwater programs. Info: [mostcenter.org](http://mostcenter.org).

## Is your yard Bay-Wise?

Master Gardeners in Prince George's County, MD, are part of *Bay-Wise*, a program offering free consultations on environmental practices to help county residents certify their landscapes. Those who demonstrate healthy lawn maintenance, efficient watering, pest control, creating habitat for native trees & plants for wildlife receive Bay-Wise signs.

Homeowners can evaluate their property online using the MD Yardstick, which tallies pollution-reducing gardening, landscaping practices. To be certified, though, a landscape must be visited, evaluated by a Master Gardener. Info: Esther Mitchell at [estherm@umd.edu](mailto:estherm@umd.edu), [extension.umd.edu/baywise/program-certification](http://extension.umd.edu/baywise/program-certification). Click on "download the yardstick" to evaluate a landscape and/or vegetable garden online.

## Wetlands Work website

The Chesapeake Bay Program's website, Wetlands Work, at [wetlandswork.org](http://wetlandswork.org), connects agricultural landowners with people, programs that can support wetland development, restoration on their land.

## Marine debris toolkit

The National Oceanic and Atmospheric Administration's offices of National Marine Sanctuaries and Marine Debris Program have developed a toolkit for students, educators in coastal and inland areas to learn about marine debris, how to monitor local waterways. The toolkit supports efforts to reduce impacts on marine ecosystems through hands-on citizen science, education, community outreach.

Info/search engine: marine debris monitoring toolkit for educators.

## Turf / lawn programs

For information on Prince William (VA) Cooperative Extension's *12 Steps to a Greener Lawn / Building Environmental Sustainable Turf BEST Lawns* low-cost, research-based programs for lawn education, contact: [bestlawns@pwcgov.org](mailto:bestlawns@pwcgov.org), 703-792-4037.

## Floatable monitoring program

Help the Prince William Soil & Water Conservation District in Manassas, VA, assess, trace trash in streams to reduce nonpoint source pollutants in urbanized, industrialized areas in relation to the County's Municipal Separate Storm Sewers (MS4) permit. Cleanup supplies provided. Info: [waterquality@pwsacd.org](mailto:waterquality@pwsacd.org).

## Baltimore Biodiversity Toolkit

To help meet habitat needs of native plants & animals, the *Baltimore Biodiversity Toolkit* identifies species that represent habitats within and historic to a community. It shows how to support specific wildlife needs; helps citizen scientists monitor, collect data; develops a culture of conservation and stewardship. Using 20 ambassador species from four habitats, the toolkit helps prioritize community greening projects based on representative species, citizen science data and spatial analysis that includes social, economic and ecological indicators. Info: [fws.gov](http://fws.gov).

## Wildlife education trunks

MD Department of Natural Resources *Wildlife Education Trunks* are available to teachers, home-school educators, naturalists. Free, interdisciplinary tools are designed to interest students in local wildlife while building on art, language arts, math, physical education, science, social studies skills. It contains an educator guide, lesson plans, hands-on K-12 activities, supplies, books, furs, replica tracks, videos. Subjects include aquatic invasive species, bats, black bears, furbearers, white-tailed deer, wild turkeys. Trunks can be borrowed on a first-come, first-served basis for up to two weeks. Info/search engine: Wildlife Education Trunks.



# Celebrate the Bay by supporting those who bring us locally harvested food

By ADAM BRAY & NISSA DEAN

Every year in early June — and this year, depending on COVID-19 restrictions — the Alliance for the Chesapeake Bay recognizes Chesapeake Bay Awareness Week and celebrates the many connections we have to the Bay.

First championed by the Chesapeake Bay Commission in 2016, the week is intended to raise awareness about the Bay as a valuable economic and environmental resource. Normally, the Alliance would be very busy right now partnering with local restaurants to promote one delicious bounty: the Chesapeake Bay blue crab and crab cake. Last year, the Alliance hosted our first Crab Cake Week in Richmond and Williamsburg, VA, to increase awareness about the importance of a healthy Chesapeake to the food we love to eat.

This year, though, partnering with local restaurants has taken on an entirely different meaning. And need. In the wake of COVID-19, our region's food industries are struggling and need our help.

If you live in the Bay watershed, you've undoubtedly enjoyed some of the amazing food that is grown and harvested in our region. Sometimes it is easy to lose sight of just how abundant and diverse our foodshed really is. Approximately 64,000 square miles of land and 150 major rivers and streams drain into the Chesapeake.

In just a few hours' drive, you can catch blue crabs or rockfish from Bay waters or forage for ramps, or morels and other mushrooms in the shadow of the Blue Ridge mountains. And the land in between, the fertile Piedmont soil, is home to more than 87,000 farms producing meat, dairy, fruits, vegetables and grains. Given this close proximity to such a bounty of fresh, local ingredients, it's no surprise that the Chesapeake region is home to some of the country's best restaurants, chefs and food scenes.

In normal times, it is easy to take all of this for granted. But, as we respond to the COVID-19 pandemic by physically distancing ourselves from each other, we're ironically reminded how interconnected we all really are. As it becomes more difficult to find the food and necessities we rely on daily, it's obvious that we've become very dependent on restaurants, farmers, fishermen and the many people responsible for providing us with amazing local food. Restaurants have been hit especially hard at this time, and so have small-scale producers who sell to local markets.

The Chesapeake Bay seafood industry is struggling more than ever. With



Members of the Chesapeake Bay Program Forestry Workgroup catch and sort blue crabs using crab pots while exploring Smith Island, MD, on Oct. 28, 2014. The visitors learned about watermen culture, which benefits from the restoration efforts the foresters employ upstream. They hauled up their own crab pots, sorted oysters on the water and experienced life in the Smith Island communities of Tylerton, Ewell and Rhodes Point. (Will Parson / Chesapeake Bay Program)

*As it becomes more difficult to find the food and necessities we rely on daily, it's obvious that we've become very dependent on restaurants, farmers, fishermen and the many people responsible for providing us with amazing local food.*

restaurants permanently or temporarily closing, or offering limited menus, watermen and oyster farmers are struggling for business and increasingly worried as the blue crab season begins. What can we all do to help?

## Four Things You Can Do

1. *Order delivery or takeout from local restaurants.* Many restaurants are offering delivery or takeout-only options. Support them, if possible, and



be sure to tip! Wait staff generally rely on tips as an important part of their income, so tip for the delivery or pickup what you normally would for a sit-down meal. Consider purchasing gift cards now that you can use after the threat has passed.

2. *Connect with local farmers or fishermen/women.* Many local farms and fishermen/women rely on restaurants to buy their catch. Now that restaurants are closed, they are selling directly to the consumer through online orders and community-supported agriculture.

3. *Eat local produce and seafood.* Whether you buy your food from a restaurant or at a grocery store, try to

focus on what's local. This not only helps the restaurants, groceries, growers and suppliers, but it also helps the environment. Buying local cuts down on the distance food has to travel to get to your plate, and results in better air and water quality.

4. *Shop small.* The larger farms, grocery stores and chain restaurants will weather COVID-19 much more easily than smaller grocers, restaurants and farms. If you have the option in your area, shop small to support your local economy, build community and lessen the environmental impact of your purchases.

Remember, our actions at home have an impact on the health of our neighbors, lands, rivers, the Chesapeake Bay and our economy. Let's work together to keep everything and everyone healthy. For information, visit [allianceforthebay.org/food](http://allianceforthebay.org/food).

Adam Bray is the program assistant in the Alliance for the Chesapeake Bay's Richmond Office.

Nissa Dean is the Virginia director of the Alliance for the Chesapeake Bay.



# Joy of yellow-throated warbler lingers, a spark in these dark days

By MIKE BURKE

Wood warblers are the joy of North American birders. These birds are small, colorful, and as their name suggests, wonderful songsters.

As neotropical migrants, they are ephemeral, giving us a limited time to revel in their glory. Some just pass through on their way to breeding territory farther north. Others stay for the summer to breed the next generation before returning to the tropics for winter.

The gorgeous yellow-throated warbler kicks off the seasonal fun, and is often the first warbler to arrive in the Chesapeake watershed. On March 9, a yellow-throat was spotted in Washington, DC. Like many others, Pat and I sprang at the chance to see this real harbinger of spring. (Little did we know that social distancing guidelines would be issued days later.)

East Potomac Park sits on a small peninsula south of the Jefferson Memorial. The park has a public golf course, an indoor tennis bubble and an Irish rugby club. On that early March morning, it also had a yellow-throated warbler (*Setophaga dominica*). With the help of other birders, we found the warbler high in the tall trees bordering the golf course parking lot off Ohio Drive.

Many birds have confounding names, but not this one. The bird sports a brilliant yellow throat and upper breast offset by its white undersides. Generally black, gray and white, the flaming yellow jumps off the bird like a beacon.

The flanks are heavily streaked with black. The face is also black, with a broad white eyebrow and white patch behind the ears.

On top, it's a smoky gray. The wings have a pair of white bars. Most of the bird's features are bold, but the small yellow spots in front of the eyes are tough to see; so are the white circles under the eyes.

The sexes are similar, although females and immature birds are usually a bit paler. These tiny warblers are only a little more than 5 inches long. They weigh a mere one-third of an ounce.

Yellow-throats love life in a tree's canopy. There, they breed and feed, and males perch to sing. They rarely come down lower; be prepared to crane your neck if you hope to see one. Fortunately, in spring and through June, the males sing incessantly from dawn to dusk, making it easier to find them.

A key reason for yellow-throats to arrive first is they don't have far to go. The eastern U.S. birds generally winter in south Florida and the Caribbean.



The yellow-throated warbler kicks off the spring season, as it is often the first warbler to arrive in the Chesapeake watershed. (Mike Burke)



The birds west of the Appalachian Mountains mostly winter in Mexico and parts of Central America.

There are small resident populations in south Alabama, south Georgia, north Florida and coastal South Carolina.

The breeding range is limited to the eastern United States, from New Jersey across to the Great Lakes and down through Louisiana. Typically, yellow-throats arrive in the Chesapeake region in early to mid-March. The stately loblolly pines of the Delmarva are a favorite habitat.

In the Mississippi basin, the birds

are more likely to be found in sycamore bottomlands. Although some live in high elevations (above 3,000 feet) in their winter habitat, these warblers tend to avoid the peaks of the Appalachia ridge during summer.

Females start nest construction soon after they arrive at their breeding site. In southern states, these birds use Spanish moss for nesting. On the Delmarva, they use clumps of pine needles. Nests are placed among the top limbs of trees.

Only females have a brood patch. They incubate their four-egg clutches 12–13 days. Both parents feed the nestlings, which take wing on day 10.

Many yellow-throats in the South will have a second clutch in midsummer.

The species is thought to be monogamous, at least seasonally. Overall, the population is stable.

The unusually long bills of yellow-throated warblers are designed to probe deep in the crevices of bark in search of food. Those long bills are also ideal for reaching the recesses of pinecones. Arthropods, especially the larvae of moths and butterflies, constitute a dietary mainstay. Yellow-throats also eat all manner of flies and scale insects. These warblers typically forage on the top side of branches or

tree trunks but can sometimes be seen hawking insects.

Interestingly, bill length varies across the bird's breeding territory. Birds in the East, especially on the Eastern Shore, have the longest bills. In a smooth transition, bills shrink in length the farther west one goes. Ornithologists speculate that the big pinecones of the loblolly and other firs have gradually led to birds with longer bills.

That single yellow-throat in DC is now being joined by the rest of the warblers. This year, most will be largely out of my view, as we continue our physical distancing. The lone yellow-throated warbler will have to represent all of its cousins.

Rather than mourn the loss of prime birding time, I find that my memory of that delightful, handsome bird serves as a beacon of hope.

Largely unseen, the great migration of birds to their breeding habitat is already sweeping the nation. New generations will be born.

We will get through this tough time. And next year, I'll be excited as ever to catch the delightful treat of wood warblers brightening our days.

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





A young photographer, left, captures a moment (USFWS) Sights like this blue jay, above, taking a bath are right outside your window. (Courtesy of Randy Loftus)

## Get out! There's no need to distance yourself from nature

By KATHY RESHETILOFF

Spring has always been my favorite season and May is probably my favorite month. Trees are leafed out, creating curtains of bright green that not so long ago were gray and brown. Wildflowers are popping up everywhere: fields, forest and even yards. And birds are reminding us, every morning, that they are here and looking for a mate.

This is usually a time for outside excursions and weekend adventures on land and water, as well as gathering with friends and family for cookouts, festivals and camping trips. Getting out and interacting with others is not only enjoyable but helps to relieve stress and improve mental and physical health.

But this has, obviously, not been a typical spring. Restrictions on work, travel, entertainment and recreation have altered how we spend our time; how we enjoy ourselves. But these limitations have also motivated us to seek other ways to connect with nature and friends.

### Connect locally

These are the simplest ways to keep from climbing the walls and they don't take too much effort. Wildlife and nature are all around us all of the time in different doses, depending on your location. Start by exploring your yard,



neighborhood or park.

Less traffic and fewer people means fewer distractions. Take a couple of moments every day to simply look and listen as you walk, jog or bicycle.

You'll be surprised by the variety of birds you will hear. Also, take note of the variety of flowers and trees; marvel at the extraordinary diversity of bees, butterflies, moths and beetles.

If you have access to the water, consider yourself very lucky. Depending on the current recreational boating rules in your state, you may be able to paddle up quiet creeks, watch schools of fish chased by ospreys and herons, or go past shorelines and marshes used by birds for nesting and feeding, or as nursery areas for fish and other aquatic life.

### Integrate art

Whether on a deck or porch, or in a yard or park, use the outside influences

to generate creative juices. Keep a journal describing what you see, hear or how you feel. Try your hand at drawing, painting — even sidewalk chalking. Learn to play a musical instrument. If you are already musically inclined, play your music outdoors, write lyrics. At the very least, you can take a book outside and enjoy a good read.

### Use technology

I never would have thought I'd be extolling the virtues of connecting to our natural world online, but there are great opportunities out there. Web cameras are a fantastic way to get up close and personal with wildlife! Many zoos, aquariums and conservation organizations can connect you to local and exotic wildlife. The Chesapeake Conservancy and National Aquarium are just two examples of groups that support wildlife webcams.

If you want to get more involved, try joining a citizen science project. Many groups need help collecting real-time data. The Chesapeake Monitoring Cooperative works with organizations and individuals who collect water quality and benthic macroinvertebrate data. Visit [chesapeakemonitoringcoop.org/join/](http://chesapeakemonitoringcoop.org/join/) to start monitoring a local waterway.

If you love birding or would like to start, check out eBird ([ebird.org/home](http://ebird.org/home)) to learn about a biodiversity community science project. The information you provide helps to determine distribution, abundance and habitat use by different birds.

Want to get involved with a project that includes plants and animals? iNaturalist ([inaturalist.org](http://inaturalist.org)) can connect you with scientists and naturalists who can help you identify the plants and animals in your community. Record and share your observations to help researchers studying biodiversity.

Interested in climate change? Post

your weather observations at the ISeeChange website ([iseechange.org](http://iseechange.org)) to help scientists investigate bigger climate trends that affect us all.

Check the U.S. Fish and Wildlife Service's ongoing Stay-at-Home Science (<https://medium.com/usfishandwildlifeservicenortheast/stay-at-home-science-adad4dfbecfa>) series for activities you can enjoy this spring, ranging from identifying invader plants in your yard to monitoring and welcoming travel-weary birds.

Kathy Reshetiloff is with the U.S. Fish and Wildlife Services Chesapeake Bay Office in Annapolis.



Take up birding, like this visitor at Masonville Cove in Baltimore. Perhaps you will want to join eBird's biodiversity project. (USFWS)

Painted turtles bask in the sun at a small pond. Who knows what wildlife you will see during a relaxing nature walk? (USFWS)

