

Chesapeake Stories

The Bay in Words and Pictures



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Photo: Madison Ruhl

Cover photo courtesy of Nolan Pinkney

Chesapeake Stories: The Bay in Words and Pictures is a student publication of the Department of Environmental Studies, Salisbury University

Worthy Destinations

Pocomoke City attractions foster knowledge of natural and cultural history

---Nicolas Johnson, Madison Ruhl



Delmarva Discovery Center Photo: Madison Ruhl

In post-COVID times, it's become clear that getting out and experiencing what this world has

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to offer is very important. There is more to life than just sitting at home and doing nothing with one's time.

Instead of spending another day off at home, you could spend that day exploring the natural and cultural history of your community, all without going far or spending a lot of money. You just have to know where to look.

One such spot would be the Delmarva Discovery Center, an interactive museum on Market Street in Pocomoke City. Here a non-profit organization shows appreciation for Delmarva's natural and cultural history and brings educational opportunities to current and new generations. With the star attraction of Mac and Tusk, two North American river otters who find themselves as small local celebrities, it's easy to assume it's all about the animal exhibits, but you'll find that it's way more than that.



Otters poster Photo: Madison Ruhl

Working closely with schools and other partnership programs, the Center seeks to spotlight not only the nature of the Eastern Shore but the culture as well. As explained by

the executive director of the museum, Christy Gordon, "We promote local artists and their books about the Eastern Shore; we're trying to promote the history of Delmarva and work with schools so our field trips meet their educational standards. As a non-profit, we want to work with everybody."



Terri Pardee, Christy Gordon, Taylor Griffith, Rachel Hayes Photo: Madison Ruhl

A result of working very closely with the Pocomoke Indian Nation, the Native American exhibit displays a culture that often is not given the chance to be represented properly. "We try through grant work and through partnerships to keep this positive relationship going, because there's a whole history that nobody knows that needs to be told," said Gordon on recent developments in the exhibit.

The Center is supported by grants, but still relies on a steady flow of visitors to keep going, which can be difficult depending on the season. "From May through September, we have people from all over that have never been here before, and it's all new to them," said Gordon. "The challenge is from October to May and trying to keep the locals coming back." One method for achieving this goal is hosting various community events. For example, last year the Center offered a "Shark

Worthy Destinations (continued)

Week” program, at which the Center displayed new arrivals--a young shark and a stingray.



Stingray Photo: Madison Ruhl

Not many local residents know that the Discovery Center has as many programs as it does, like a partnership with the library to host a story time with kids, or every Saturday's feeding show with the various animals housed in the center.

The Center is also active on various social media sites, such as Facebook and Instagram, and works hard to update its members and curious visitors on upcoming events and new exhibits.

On the topic of such events, Gordon says, “We have a big membership drive in the summer, and for a year, new members get to come to any and all events for free.”

Upcoming as of December 2023 is the yearly free event starring The Pocomoke Area Model Train Club featuring Santa's Train Wonderland. The former touch pool was recently reconfigured into an interactive sand pit called “The Sandsational Zone,” where each month an interactive exhibit is changed to a new theme.

The current theme is about sea turtles and the various species that have been seen visiting

Maryland beaches to lay their eggs, something astounding that not many locals know about, just like the Discovery Center itself.

Living on events and a flow of new and old visitors alike as they do, it should be no surprise that COVID was a massive hit to many of the non-profit organizations and museums across the nation, and the Discovery Center as well was not immune to the effects of quarantine. “Covid almost put us out of business; the only reason we survived was government loans and grants,” Gordon said. “Everyone else could shut their doors to cut costs, but we can't because we have live animals.”

With schools from all over no longer coming on field trips, losing such opportunities was a massive blow for the Discovery Center, and they, like other museums, had to do what they could to stay afloat. It took months to get the word out to teachers when the Discovery Center reopened.



Sea turtle exhibit Photo: Madison Ruhl

Community engagement is the lifeblood of this museum, whose exhibits are adapting to the various shifts the pandemic has caused in tourism. Gordon explained that although there

Worthy Destinations (continued)

was an initial boom in visitation after Covid restrictions were lifted, "Whatever is happening in the world, we feel it, and now with how people are struggling and how expensive everything is, things are starting to taper off."

The Delmarva Discovery Center is active in its efforts to overcome the challenges of being relatively small in comparison to tourist hotspots like Ocean City. Averaging just 10,000 visitors a year, the organization exists on a fine

line when it comes to what is feasible to keep their doors open.

But it is not just support from communities that these places can rely on, but businesses as well. "We try to work really hard as a team to support other businesses in Pocomoke City; businesses down there are pretty good about that," said Gordon--one more way that the Delmarva Discovery Center, though small and with a future that seems unclear at times, continues to serve its community.



Decoy carving exhibit Photo: Madison Ruhl

Worthy Destinations (continued)



Mar-Va Theater Photo: Madison Ruhl

Just up the road from the Discovery Center exists another culturally significant attraction, the historic Mar-Va Theater.

The Mar-Va Theater is a non-profit organization with a specialty in bringing theater to the community, with five-dollar movies and live performances.

The history behind the building itself is a rich one that is unknown to many on the Eastern Shore.

Built in 1927, the theater fell into disrepair in the early 90's, but with grant work and the dedication of its board of directors, an attempt was and is being made to restore the building to its original state.

"A lot of work has been done to it; the inside looks fantastic now with new carpet, chairs, and a new surround sound system," said Mark Thompson, the theater director of the Mar-Va theater and owner of Simply Sublime Massage and Bodywork just next door.



Theater interior Photo: Madison Ruhl

Worthy Destinations (continued)

Despite the degradation in the past, as of now the theater is growing and maintains its positive relationship with the community.



Theater box office Photo: Madison Ruhl

Being volunteer run, the theater gives community members the chance to give back to their fellow citizens. There is plenty opportunity for those in and outside of Pocomoke City to come and experience theater at a relatively cheap price along with getting a taste of the theatrical history that comes with the vintage building.



Historic items Photo: Madison Ruhl

As with other non-profits, the pandemic has left its mark and brought about its own issues in the future of the theater. "Covid hit us very hard," Thompson says. "We were lucky to have some extra grant work and donations to see us through. We even had one church that would rent us out on a weekly basis to keep us afloat, but it's very expensive to run this place-it takes about four thousand dollars a month, and that's just to not freeze the pipes."



Mark Thompson demonstrates a spotlight
Photo: Madison Ruhl

With grant work and donations, the theater was able to get back on its feet as a venue for an impressive number of group gatherings,



Control room Photo: Madison Ruhl

Worthy Destinations (continued)

events, and performances, from school plays to stand-up comedians. Community donations and engagement allow the Mar-Va to continue to provide an old-fashioned theatrical experience to Pocomoke City residents and visitors alike.



Mar-Va Theater stage Photo: Madison Ruhl

Watershed Warriors

Environmental professionals work with communities to improve the Bay's health

----LaMaree James, Stephanie Wallis



Chesapeake Bay watershed Graphic: www.usgs.gov

When we look out beyond the familiar shoreline to the Chesapeake Bay, it's tempting to believe we know it entirely. But there's a lot more than meets the eye, both historically and geographically.

Watershed Warriors (continued)

The Chesapeake Bay gets its name from the Algonquian term *Chesapiooc* (also spelled *Chesepiuk*, *Chesepiook*, or *Chesapoic*), although its precise meaning remains uncertain.

Diego Gutiérrez initially depicted the bay as Bahía de Santa María on his 1562 map, and the name *Chesapiooc Sinus* appeared for the first time on a 1590 map by John White. Captain John Smith, during his voyages in June 1608, labeled it the *Chesapeack Bay* on his 1612 map.

European settlers landed at St. Clements Island, Maryland, in 1634. The Chesapeake Bay witnessed pirate activity along its lower section, and during the Civil War in March 1862, the Confederate *Virginia* and the Union's *Monitor* clashed near Hampton Roads, Virginia. Numerous shipwrecks, resulting from natural forces, human error, or deliberate attacks, are scattered beneath the bay's depths.

Across generations, watermen have made their livelihoods by harvesting the Chesapeake's resources, while millions of people engage in recreational fishing, hunting, and boating annually, significantly contributing to Maryland's economy. The bay yields substantial annual seafood harvests, including millions of bushels of crabs, oysters, clams, and eels.

The Chesapeake Bay **watershed** encompasses the rivers, creeks, streams, smaller bays, and surrounding lands that drain into to the Bay. Approximately 51 billion gallons of fresh water enter the Bay daily, originating from 150 major rivers and over 100,000 tributaries.

Three primary tributaries account for 80% of its fresh water: the Susquehanna River, Potomac River, and James River. Extending over 524 miles from New York to Virginia, the watershed spans 64,000 square miles across six states: Maryland, Delaware, Pennsylvania, New York, Virginia, West Virginia, and the District of Columbia.

Maryland, Delaware, and Pennsylvania

collaborate on Bay-related initiatives through the Chesapeake Bay Commission, fostering interstate cooperation.

The Bay's condition remained consistent with a D+ grade from 2018 to 2020, as reported in a biennial study by the Chesapeake Bay Foundation. The results, reflecting a mix of outcomes from pollution control efforts, indicate that despite notable advancements, a significant amount of pollution continues to affect water quality, exacerbated by the impact of climate change, according to Hilary Harp Falk, the President of the Foundation.

Falk also highlighted the Bay's resilience and emphasized renewed commitment from Environmental Protection Agency administrators, governors, legislators, and environmental leaders.

The report revealed unchanged levels of toxic contaminants like PFAs and microplastics, as well as consistent levels of nitrogen and dissolved oxygen, the latter being linked to harmful algal blooms. While there was a slight improvement in phosphorus pollution, originating mainly from farm and stormwater runoff, water clarity decreased due to nutrient runoff, hindering sunlight necessary for habitat growth.

Our interviews with Elise Trelegan and Caroline DiGiovanni reveal a tale intricately entwined with the history, ecosystems, and continuing efforts to solve the Chesapeake Bay's diminishing health, as they explore the complex fabric of the bay and its ecological concerns.

Trelegan is the B-WET Program Coordinator at the NOAA Chesapeake Bay Office, where she oversees the Chesapeake region's Bay Watershed Education and Training (B-WET) program. B-WET is a \$2.7 million dollar environmental literacy grant program that supports hands-on watershed education for schools, non-profits, and universities. She earned her interdisciplinary B.A degree in

Watershed Warriors (continued)

Fisheries Conservation, Education, Collaborative Art and Photography at Hampshire College in 2012, then later earned her Master's degree in Center for Leadership in Global Sustainability in 2021 from Virginia Tech.



Elise Trelegan Photo courtesy of Elise Trelegan

Trelegan's passion lies in the educational side of the world, because she believes "that people only protect what they know and what they love." She continues, "I really think that it's important for young people to have a firm understanding of local natural resources. The impacts that humans have on those natural resources and what we can do to preserve and protect them."

Trelegan's day-to-day job at NOAA consists of two sections. The first is coordinating the grant program, B-WET, that provides funding to school districts and nonprofit partners to bring environmental literacy experiences to every single student in every grade in many school districts. "I work really closely with my grantees to make sure that they're embedding things into the curriculum and standards aligned, and all those sorts of things and using best practices for environmental education," she says.

The second part of her job is helping to

coordinate the Education Work Group for the Chesapeake Bay Program and bringing together policymakers, natural resource agencies and education boards of education together to work towards restoring and protecting the bay through the meaningful watershed educational experience.

For this section of work, Elise is in charge of her home state of Virginia, where she is currently working on "helping them to update their standards to make sure that [issues] like climate change and environmental education are really embedded in there."

Trelegan elaborates on the ecological significance of the Chesapeake Bay watershed and its critical role in supporting diverse ecosystems: "The Chesapeake Bay watershed is the largest estuary in the United States. It's more than 64,000 square miles. It's home to more than 18 million people. So in terms of the human side of things, it's huge, it's enormous.

"It's really important in terms of ecological productivity. The Chesapeake Bay is home to a number of nurseries for a lot of our different fish species, from striped bass to oysters, blue crabs. And those have not only a strong cultural significance for a lot of people here in the community, but [they are also] a big economic driver."

Sharing her perspective on how effective education and awareness has been for the health of the Bay, Trelegan says, "It's our goal to reach every single school district in the Chesapeake Bay watershed. That's more than six hundred school districts. That's six hundred grants that first have to have partners and school districts that are ready and willing and able to be able to implement these educational experiences for students.

"We use the district as our unit of change, because that's where curriculum is written and implemented and where almost every single young person matriculates through the public school system. [There have been] some upward trends related to preparedness for

Watershed Warriors(continued)

environmental literacy, but since Covid, we actually have had a lot of challenges. A lot of schools reverted back because there's so much learning loss. They're focusing more on reading, language, arts and math right now rather than science and social studies, where environmental literacy typically fits.

"And so, we're ... a little challenged right now. The schools were in crisis mode before the pandemic hit, and still they're feeling the effects, but we are moving forward."

Caroline DiGiovanni, a Watershed Restoration Educator affiliated with the University of Maryland Extension, traces her environmental journey back to a childhood immersed in the natural wonders of South Jersey. Her academic pursuits led her to Stocking University, where she earned a B.S. in Environmental Science.



Caroline DiGiovanni Photo courtesy of Caroline DiGiovanni

The trajectory of her career reflects a dynamic evolution: "Initially I started in environmental

education post-graduation, followed by a twelve-year break, then finally came back to working in watershed education and outreach."

In her current capacity, DiGiovanni serves as a link between the University of Maryland Extension and the communities of Calvert and St. Mary counties. Her collaboration with county governments involves the crucial task of furnishing them with stormwater data, contributing to the broader effort of environmental protection. "Since I technically work in two different counties, my daily tasks involve a diverse range of undertakings," she says.

Those undertakings include everything from runoff problems to coastline concerns. DiGiovanni demonstrates the many facets of extension work by actively participating in statewide teamwork beyond the direct responsibilities of her position.

Her commitment to the long-term survival of the area is demonstrated by the fact that she is about to introduce a long-term watershed stewardship academy, an innovative project that will empower locals via outreach and education. "I have a deep fascination with the Chesapeake Bay and its ecosystems, even though I am a recent resident," she says. "From the oysters to the watermen that help the ecosystem of Bay, it's all exciting things to learn about."

Her dedication includes promoting water accessibility as a fundamental human right and highlighting the interdependent relationship between clean water and ecosystems.

She fights against non-point-source pollution (runoff contaminated by things like animal feces and overfertilization) because she understands how it negatively affects people's daily lives.

The stories told by Trelegan and DiGiovanni come to a similar conclusion: the interactions

Watershed Warriors (continued)

between community involvement, environmental education, and proactive conservation activities are crucial; people should be given the tools they need to actively participate in the preservation of the Chesapeake Bay, starting with an understanding of its ecological significance. Their dedication highlights the Bay's resilience and the group resolve required to overcome its current problems.

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[Chesapeake Bay still in poor health, blue crabs suffering, says State of the Bay report - Maryland Matters](#)
[2022-state-of-the-bay-report.pdf \(cbf.org\)](#)

Prepared for Takeoff

Recent Environmental Studies grads launch careers and offer advice on the process

---Madelyn Ellis, LaMaree James



Dylan Laconich Photo courtesy of Dylan Laconich

Imagine you have triumphantly graduated from college with a hard-earned degree in **Environmental Studies**. The momentous occasion

Prepared for Takeoff (continued)

arrives as you hold your hard-earned diploma in hand, but in the wake of this achievement, a daunting uncertainty looms over you – a feeling of limitless possibilities and potential career paths.

Your successful academic achievement now contrasts with the expansive realm of the professional world, placing you at a crossroads of opportunities. You stand there, filled with anticipation, yet also puzzled about the journey that lies ahead. The good news is that careers are indeed out there.

Dylan Laconich and Nolan Pinkney both graduated from Salisbury University in 2022. Both majored in Environmental Studies, and both have already found jobs in their chosen field. They enjoy what they are doing in their careers and want to share their experiences with current students who will soon be looking for jobs.

Dylan Laconich does sustainability planning for the City of Salisbury. During his time at Salisbury University, Laconich studied urban planning and worked on environmental projects and research activism.

What sparked his interest in the environmental field was when he traveled to Argentina to visit family and noticed they were doing a good job of implementing green infrastructure.

"This one town was completely self-sufficient," he says. "They had natural glacier water that was running down through their town. The town conserved every single resource they had, whether it was natural or was a glass bottle. That's when I decided I wanted to do something with infrastructure."

At the time, he didn't yet know what field to go into, so he exposed himself to different infrastructures, cultures, and settings, which helped him get on the path of environmental work.

Laconich first got involved when he started

working at the Salisbury Green Team Sustainability Advisory Committee; he had heard about them through his time at the Environmental Students Association, an organization at Salisbury University that educates students about what they can do to improve the environment on and off campus.

On the Green Team, he networked and collaborated with people like team chair Elise Traligan. Laconich also got to know the city planning staff and built good connections working on several projects. "Through that experience, I was able to kind of get my foot in the door without even trying," he says. "If it hadn't been for that, I probably wouldn't be in the position I'm in now."

During his time as a student at Salisbury University, Laconich held many leadership roles in the Environmental Students Association and ended his career there as the president.

With ESA, Laconich did community outreach projects including planting wildflowers around the community, providing water for wild bees, and educating the residents of city on how to best cultivate the gardens in their backyards to be more bee friendly.

"We coordinated with different departments, especially the Sustainability Department, to get different projects off the ground. I think we just created a solid group of like-minded individuals who wanted to get out and get active," he says.

Now, as a Sustainability Specialist with the City of Salisbury, Laconich is an advisor to all the functions within the Department of Infrastructure and Development, and that sometimes involves construction, coordination, environmental education, and environmental programs that need oversight.

Laconich has recently been tasked with responsibility for making sure the ban on plastic bags is being followed in an effective and

Prepared for Takeoff (continued)

equitable manner. He had to let everyone in the business community know what was happening and make sure the transition was smooth.

Another project Laconich has worked on recently was to address different restoration projects in the watershed. They were able to solidify the plan and are now able to actively roll it out.

Laconich enjoys being able to do a lot of coordination with different organizations. "Recently we went to Pemberton Elementary School, and we did some environmental education for them and talking about plastic waste. We had a blast." he says.

Skills that students should develop to help them in an environmental career are leadership techniques, being able to work in a team and identifying plants and how to treat them, and being able to work with spatial data, according to Laconich.

"Don't be too discouraged [if it all seems difficult], because when you eventually do get that job you will probably be much more [appreciative of the process], he says. "Be patient, keep on learning and maintaining a humble attitude, and you'll probably go far."

Nolan Pinkney, from Fort Washington, MD, (cover photo), has a minor in Biology to go along with his Environmental Studies degree. He currently works at the Environmental Protection Agency (EPA) headquarters in Washington, DC.

Pinkney has always been interested in working to protect protecting human health and the environment. "That is the model for the EPA, and so to be able to do what I did at Salisbury and transition directly over to EPA, that was something I was interested in, and that's how it came into fruition," he explains.

In 2019, Pinkney was an intern at the EPA through the pathway program, which is

designed for students to intern while in school; once they graduate, they transition into the government and become federal employees.

Pinkney is part of the Federal Advisory Management and Oversight division, with 21 Federal advisory committees that support human health and the environment. Some examples are the Children's Health and The Good Neighbor Environmental Board, which helps people in New Mexico, California, and Texas access clean drinking water.

Pinkney helps regulate the committees and ensure they are doing what they need to do and following the law. One of the things Pinkney most enjoys about his job is knowing he is positively impacting others.

One area that he wants to improve on at work is getting more involved with the colleges. "I would [like] to be able to represent Salisbury and get more young people into the government," he says. He wants the opportunity to mentor students on how to get internships and good-paying jobs with benefits.

Some skills that he believes would help students in their careers are being able to listen to instructions, being able to adapt, and paying attention to detail.

"Just volunteering and being a voice to always do something are very big in the workforce," he says. For example, in his current job Pinkney's manager gave him a project that was not his originally, and he had to type up a report about the office's ethics for their new office. "I had to print this stuff out and go through all these people to get it put in our office, and it had to be a certain way on the poster. It was very detail specific," he explains.

He had to reach out to other people to find the information he was looking for and assist him with this project.

Pinkney recommends finding a mentor,

Prepared for Takeoff (continued)

making as many friendships as possible, and making those connections with people worldwide: "For example, say I know LaMaree, and I'm a deputy director in the Environmental Protection Agency. Well because I know what she has done, and I know her work ethic, what she's interested in, and what she's about, I can bring her in and will be able to help others."

Having a teacher as a mentor can help students figure out what kind of career they want and the next steps. Professors Shane Hall and Tammy Ransom really helped Pinkney; they sat him down, and they were able to figure out what he had to do to graduate and find a career after college.

"They gave me advice--I asked a ton of questions, and those were the mentors that I needed to help me get to the next level and get out of Salisbury," he says.

Soaking up as much information as possible from mentors will help students learn and thrive in their careers. The mentors were in the student's position at one point, and they knew the struggles and were willing to help.

Creating those relationships is super important, as well as having others who know you can help your career in the future.

Another of Pinkney's goals is to climb the rankings at work as quickly as possible so he can branch off and do more things like giving back to the people who gave back to him, including those at Salisbury University.

"Salisbury was influential when it came to helping me get through school and doing the Environmental Studies field, and to be able to give back to the school, it would be a joy to do," he says.

But as he found out, rising through the ranks is not always easy. When he first asked his manager about a possible promotion, she did not feel like he was ready for it. Pinkney

decided to work extremely hard this past year to prove that he is capable and can overcome big obstacles. The effort paid off, and he was able to earn his promotion.

"Stay positive," he advises. "Stay optimistic."

One-Two Punch

Climate change and lesser-known pollutants threaten Bay waters and lives

---Madison Ruhl, Madelyn Ellis



Time running out for the Bay? Photo: Madison Ruhl

You're admiring the beautiful scenery of the Chesapeake Bay, happily enjoying the view and your life. Meanwhile, the Bay in front of you is

One-Two Punch (continued)

fighting for *its* life every day. While much attention has already been given to the most obvious threats to the Bay's water quality, such as agricultural runoff and improper handling of wastewater, there are other serious threats as well, including air pollution and climate change.

Air pollution is the contamination of the air from household chemicals, vehicles, and power plants, which can seriously affect the health and well-being of humans, animals, plants and the Chesapeake Bay.

One form of air pollution is from sulfur dioxide, which occurs when vehicles burn fuel that has high sulfur content. Sulfur dioxide pollution is extremely harmful to all forms of life. When humans are exposed to it, it can be life-threatening, causing burning sensations and difficulty breathing.

Whenever plants are exposed to it, it causes a significant change in the plants' development by making them decrease in growth. Sulfur dioxide pollution affects water when acid rain occurs, which causes the acidity in water to increase. This leads to devastating effects on aquatic life.

Some forms of aquatic life can tolerate acidic waters, while others cannot. At a pH level of 5, most fish eggs will not be able to hatch and survive. At even lower pH levels, even healthy adult fish can die.

Another form of air pollution is nitrogen oxide that gets into the air when fuel is burned. This can be found in the air of places that have fuel-burning vehicles and power plants.

Nitrogen oxide pollution affects humans significantly. For example, low levels of nitrogen oxide in the air causes humans' eyes, throats, noses, and lungs to be irritated. High levels of nitrogen oxide can also cause actual damage to the respiratory tract and increase one's vulnerability to respiratory infections and asthma. The same thing goes for animals.

For plants, nitrogen oxide pollution can cause leaves to die or be injured, and it can reduce new growth. Nitrogen oxide pollution, like sulfur dioxide, also affects water when acid rain occurs, which leads to declines in fish populations.

Mercury pollution occurs when coal, oil, or wood are burned. It also occurs when mercury is used by industrial plants or factories. All that mercury ends up in our waterways, where small aquatic organisms consume it. When fish eat those organisms, the mercury affects their nervous systems and leads to neurological and behavioral abnormalities, which impacts their ability to reproduce and feed.

This process goes up the food chain, and the mercury eventually gets into the fish and other wildlife that humans consume.



Mallard ducks Photo: Madison Ruhl

Mercury poisoning can be fatal for young children, as it will attack their nervous system while it's still developing. Mercury can also be harmful to reproductive health. In pregnant women, mercury can accumulate in the developing fetus which can cause developmental issues.

Mercury affects plants as well; it interferes

One-Two Punch (continued)

with the plant's physiology which stunts growth and disrupts photosynthesis. When mercury enters the water, it most likely stays there for a very long time. It settles to the bottom, where small organisms consume it, and then the cycle repeats.

Rising temperatures caused by climate change and the resulting higher water levels can affect the Chesapeake Bay region tremendously.

Over the past thirty years, the average water temperature in the Chesapeake Bay has increased by 1-degree Celsius (1.8 degrees Fahrenheit). And the Chesapeake Bay can expect an additional 1.3 to 5.2 feet in sea level rise over the next century.

These and future changes threaten coastal communities, aquatic life, and our ability to restore an already stressed system," according to a fisheries report from the National Oceanic and Atmospheric Administration (<https://www.fisheries.noaa.gov/topic/chesapeake-bay/climate-change>).

Changes in the water temperature affect aquatic creatures and can change their behaviors and migration patterns. Warmer temperatures affect oxygen levels, because warm water does not hold a lot of dissolved oxygen. Some aquatic species can adapt to these changes, but others cannot. They are either forced to adapt to their new environment or experience habitat loss.



Ring-billed gulls Photo: Madison Ruhl

These changes in habitat conditions impact

the availability of food and shelter for certain species.

And there is little doubt that the problems caused by rising temperatures occur Bay-wide: "According to a study by the University of Maryland Center for Environmental Science (UMCES), warming water temperatures have been recorded in more than 92 percent of the Bay's waters. And a study by USGS found an overall increase of 1.98 degrees F in air temperatures and 2.52 degrees instream temperatures in the Chesapeake Bay region from 1960 to 2010. Warmer waters are also less able to hold oxygen. A drop in dissolved oxygen means a rise in the dead zones that suffocate marine life"

(<https://www.chesapeakebay.net/issues/threats-to-the-bay/climate-change>).



Kristin Reilly Photo courtesy of Kristin Reilly

Two professionals working to combat these serious threats are Kristin Reilly and Vicki Blazer.

Reilly is the director of the Choose Clean Water Coalition in Annapolis, Maryland. In 2016 she started working there as senior communications manager. In 2019 she became director of the Coalition. Reilly explains her job as director is ensuring her staff implements their strategic plan and achieves their goals. Reilly is also the lead for fundraising efforts, and partner relationship

One-Two Punch (continued)

building, and the spokesperson for the organization.

Before working for the Coalition, Reilly started her career at the EPA Chesapeake Bay Program as an Environmental Staffer, then worked for the Chesapeake Bay Trust as a communications and development manager, and then for Oceana in Washington, DC, in social media management.

Reilly has been passionate about the environment since she was young and has always been drawn to clean water. "I spent a lot of time outside playing as a child, so I think that might have had something to do with it.

Being from Maryland, I think I am drawn to the Chesapeake Bay specifically," she says. She wanted to pair her interests and passions with work and is now able to do something she loves every day. "My favorite moments with the Coalition are when all our members can come together," she says. "We host two in-person events a year--our Chesapeake Bay Day in Capitol Hill, and our annual Choose Clean Water Conference."

Reilly believes that air pollution plays a big role in our water quality and that improving our management practices, enforcement, and oversight on sources of air pollution will help improve our local waterways and Chesapeake Bay.

As evidence for the effects of rising water temperatures, Reilly points to "the increase in the amount of shrimp that are now making their way to the mouth and lower Bay in Virginia. There is now a shrimp fishery in Virginia, which is not something they had until about 3 years ago" Reilly explains.

She is also concerned about larger and stronger weather events happening in the watershed, as well as more flooding and increased water levels. The increased rainfall

and flooding is causing more stormwater runoff coming from urban, suburban, and agricultural lands. The extra runoff leads to increased pollution flowing into our local rivers, streams, and the Bay.

"These events are much larger than they have been historically, which means many of the projects and on-the-ground restoration work being done were not designed to withstand this type of event," Reilly says. This means they require more maintenance and effective updating.

She believes that to help stop air pollution, people should increase their use of public transportation, bikes, and carpooling, and test that their cars' emission controls are up to date.

Vicki Blazer is a Fish Pathologist at the National Fish Health Research Laboratory. Blazer got her degree from Southampton College of Long Island University and did a double major in Marine Sciences and Biology. She did an internship at the National Marine Fisheries Service Laboratory in Milford, CT with Dr. Richard Robohm, a fish immunologist.



Vicki Blazer Photo courtesy of Vicki Blazer

Blazer has always wanted to be in research

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and first started working with fish during her internship. She found it interesting and looked for graduate projects that involved fish immunology and fish diseases. Her dissertation research was with cultured fishes and the effects of nutrition deficiencies on immune responses on trout.

"I did get involved with some environmental research and development of biomarkers while at the University of Georgia," she says. "I continued to pursue both types of research but began to find the environmental side more interesting."

Pollution affects fish in many ways, including physiology, immunology, reproduction, and behavior. Pollution also affects the fish on a population level through survival, genetic changes, and developmental issues.

We still use PFAS, pharmaceuticals, and pesticides that cause effects such as endocrine disruption, reproductive issues which then lead to population declines and immunosuppression, Blazer explains. Rising temperatures increase the risk: "Cold-

blooded organisms that have a narrow temperature range and may be close to their upper temperature range and upper thermal limit will be most affected. "

According to Blazer, one of the most important things people can do is to be educated about how they are impacting the water quality and ecosystem. We can teach people how to change their habits to help make the ecosystem better. "We just have to make them understand how tied their health is to the ecosystem," she says.

Positive change can happen when people take action. Blazer points to the decreased incidence of liver tumors in fish in the Great Lakes and Puget Sound due to the reduction of certain legacy contaminants such as PAH's and PCB's.

Coordinated efforts need to be made to spread awareness about these issues. "It is difficult to pinpoint one 'cause' and so more difficult to manage," Blazer says. " I think there will always be new and concerning threats to aquatic life as well as to human health."



Chesapeake Bay at North Beach, MD Photo: Madison Ruhl

Getting to the Water

Recreational water access on the Shore
is easier than expected

----Stephanie Wallis, Nicolas Johnson



Beach at Terrapin Nature Park, Queen Anne's County Photo courtesy of Seasonal Park Ranger Grayson Smith

The story you set out to get isn't always the story you come away with. This is exactly what happened to us when we wanted to report on

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public water access on the Eastern Shore. One of the co-authors (Stephanie) grew up just outside of Annapolis, Maryland, and her summer job is working at a paddleboard shop in one of the local parks that has a public launch.

The biggest complaint heard there in Anne Arundel County is that water access is a huge problem--the majority of waterfront land in the county is private property or big marinas, so there's just not a lot of space for launching little boats like skiffs, kayaks, canoes, and paddleboards.

When we got the assignment to write this story, we thought the situation would be the same on the Eastern Shore, but to our surprise that wasn't really the case. Of course, there are problems in every region, but at least in the counties we investigated, public water access isn't one of them.

The focus was on the Eastern Shore, but we wanted to take a look at two counties in particular--Wicomico, where Salisbury University is located, and Queen Anne's, which is right over the Bay Bridge from the aforementioned Anne Arundel. The two perspectives we set out to get were from the county governments and from a community member who is also a student actively taking his boat out on the water locally.

James Wood is the Public Landings Supervisor for Queen Anne's County Department of Parks and Recreation.

According to Wood, Queen Anne's County has provided a variety of water access opportunities for people pursuing their recreational interests. Some of these include 18 public lands, more specifically ten landings with boat ramps, and two fishing piers that have a \$2.50/hour cash entrance fee; they also honor DNR Golden age passes available for people who are 62 or older for a one-time fee of ten dollars.

The Matapeake Fishing Pier is open 24 hours a day and the Romancoke pier is open 6 AM to 9PM. There are also several landings without boat ramps that include bulkheads and beach areas that allow for launching paddle watercrafts. The county operates three marinas with 172 slips, rented annually to both recreational and commercial boaters. There is a preference given to commercial watermen at the Queen Anne's County Watermen Boat Basin at Kent Narrows with 145 slips.



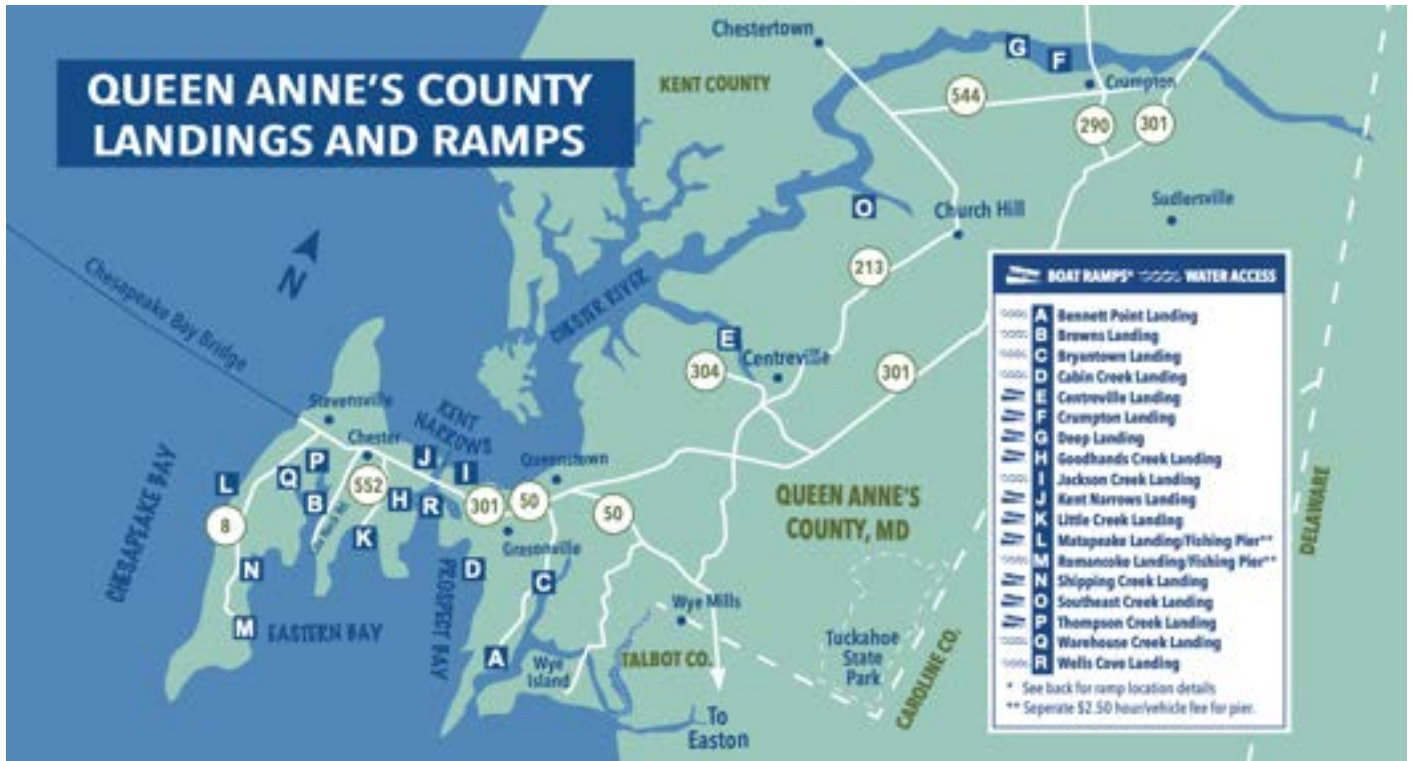
James Wood at right in blue

Photo courtesy of <https://qac.org/1658/Nature-Programs>.

Wood added that the county rents docking rights to headboats who take people on fishing day trips and also rents to a tour boat operator. The county allows free fishing at Wells Cove, Kent Narrows western bulkhead under Route 50/301 bridge, and the Visitor Center Bulkhead.

The several parks that include water access include Matapeake Beach, the County's only official bathing beach that meets the requirements of providing a shower, nearby restrooms, and water quality testing. There even is an adjacent dog beach so the family's furry friends can be included. At this beach there are scenic water views of the Chesapeake Bay and Chesapeake Bay Bridges, and hand carried watercrafts are allowed even though

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Queen Anne's County water access points Graphics courtesy of James Wood

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they have to be carried up and down a hill to get to the water. Wood said the beach is also a popular site for an annual Chesapeake Light Craft event that features the company's kayaks.

Terrapin Nature Park has a long shoreline with a designated fishing area, and hand carried crafts are allowed, but access requires a walk of ½ miles.

Conquest Preserve is also a popular site for the annual CLC event, and there is a beach area protected by a living shoreline project. The recreational division owns about 26 kayaks and an enclosed trailer and has offered several kayak outings.

When discussing some of the challenges that come with the county parks recreation system, Wood said that parking can often be a limitation. "Especially during COVID-19, the parks ran into capacity issues for the facilities, and availability was hard to come by," he said.

Abandoned and derelict boats left on mooring poles, county landings, and marinas are a problem, along with delinquent slip renters and squatters at the marinas. Enforcement of permit regulations can also be difficult.

Wood described some of the successes and said, "Significant funding for capital improvements for boat ramps and dredging projects is available via the MD Waterway Improvement Program, which is funded by the MD boat registration fees. Providing access to the water is a positive endeavor. Generally, users appreciate the sites and enjoy getting out on the water. Also, [we are] collaborating with other organizations like the DNR and having water trails and water trail signage."

There is also "Hannah's Marine Awareness," a boat safety program in honor of a young woman who died in 2020 in a boating accident. To expand water access inclusivity the county put together "Heroes on the Water," a kayak fishing program for wounded warriors.

With paddleboarding, kayaking, and canoeing being affordable and popular recreational activities, we wanted to know the current inventory and locations of public landings and marinas and how they supported these activities. We learned that suitability varies from site to site and depends on the current configuration of those sites, type of watercraft, and preference of the user.

Wood Noted that "there are plenty of opportunities to improve and expand on [this access]." Sites with positive attributes include Jackson Creek Landing, which has a nice sandy beach, and requires a landing permit.

Warehouse Creek is a small location with a wooden walkway to provide for kayak launching. The walkway is due to be replaced and the design is to be determined.

Crumpton Landing has a sandy beach area next to a boat ramp and is a nice location for paddlers who prefer this surface for launching.

Southeast Creek Landing has a boat ramp that is silted in and due to be dredged; this site still allows water access for paddlers.

Some sites have bulkheads, so they may be less convenient for some users; however, they do provide a water access point. Wood said the County hopes to add a floating dock and gangway at these sites where it is feasible to improve water access for more users.

Wood also mentioned the south part of the district and how it has many more opportunities for water access compared to the northern and mid county locations. Are there plans to create more public water access points for paddling boarding, kayaking, and canoeing in these parts of the county? The short answer is yes depending on when, and where, and if it's feasible.

The existing parks in the northern and mid-county areas already include Crumpton and

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Deep Landing which are currently grant-funded projects with designs for enhanced launching options for paddlers. The Town of Centreville has two launch areas, Mill Stream Park and Centreville Wharf (which has a floating kayak launch, due to be replaced), and The Town of Queenstown has a kayak launch.

The Chesapeake Bay Environmental Center, a nonprofit near Grasonville, also has a launch area and offers kayak rentals. The town of Millington has some water access points, and several years ago, the county hoped to add a site on the upper Chester, but the property acquisition did not occur. The owner elected to sell the property on the open market, rather than pursue a purchase through a state program to acquire flood prone properties.

Wood said, "Some scenarios to improve

meeting the needs of the public include enhanced outreach about the existing sites and programs, enhancing the existing sites to improve the facilities to launch various paddle watercraft, for example adding a floating dock with a kayak launch, and acquiring new sites and include features that compliment paddle watercraft. It will also be important to partner with other jurisdictions (towns, neighboring counties, state parks, etc.) and organizations (ex. CBEC, the Sultana Project, Echo Hill Outdoor School, Wye) to improve water access opportunities," as well as promoting the existing Water Trail maps and collaborating with MD-DNR on other water trails.

Wood added, "One of the goals is to have paddleboard, kayaks, and canoe friendly features at all the public landings in the county."



Sunset, Matapeake Beach Photo courtesy of Seasonal Park Ranger Grayson Smith

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For the second part of this article, We wanted to determine if public water access was a problem in the Lower Shore counties of Wicomico, Dorchester, and Somerset, especially for a student, what kinds of water recreation activities are available in this area, and whether or not they are easily accessible for everyone like community members and students to use.

Again, while we were expecting that water access would be a problem and that there aren't many public launches nearby, that turned out not to be the case.

Johnny Seymour is a student at Salisbury University and frequently takes his boat out on the local waterways throughout the area. He has explicit knowledge about the Eastern Shore and water access problems that an experienced boater may run into.



Leaving St. Martin's River boat launch
Photo courtesy of Johnny Seymour

Where Seymour wants to go and what activity

he wants to pursue--fishing or hunting--determines how far he is willing to go to a public launch point, with his starting point being at Salisbury University. He says there are public accesses "really close, kinda close, and far away."

If his purpose is purely to go out on the boat, then public water access ramps are really close. Within a 30-minute drive from the university there are more access points (10 or so) than someone unfamiliar with the area might think.

One of the biggest things Seymour has noted is that you will either spend more time driving to a specific location or you can spend more time out on the water depending on where you go. From Salisbury to the mouth of the Wicomico River, for example, there are five boat ramps, but the best fishing spots are at the mouth.

Option one is putting your boat in at Salisbury and taking the long trip to the Bay. Option two is driving down to the mouth of the river and launching there, and then you are five minutes away from where you want to fish. So, it depends on the willingness of the individual boater and what they are looking for.

Some of the troubles Seymour has encountered while trying to launch his boat include crowds, especially during opening days of specific seasons. The conditions of the ramps themselves are sometimes questionable: if they are a little bit short or super low to the ground, high tide makes it harder to launch and retrieve the boats. There is also a difference in quality--some are really nice with paved launches and docks, while others are dirt and gravel with no dock.

The quality of the access points also relates to how close or far away they are from a populated city center and in the amount of use the ramp gets. On Deal Island specifically the public launches that are used mainly for hunters and fishers are the low-quality ramps. There are no docks and sand all over the

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ramps. In contrast, the Deal Commercial Harbor where the crab and oyster boaters go has really nice ramps that are concrete and with docks.

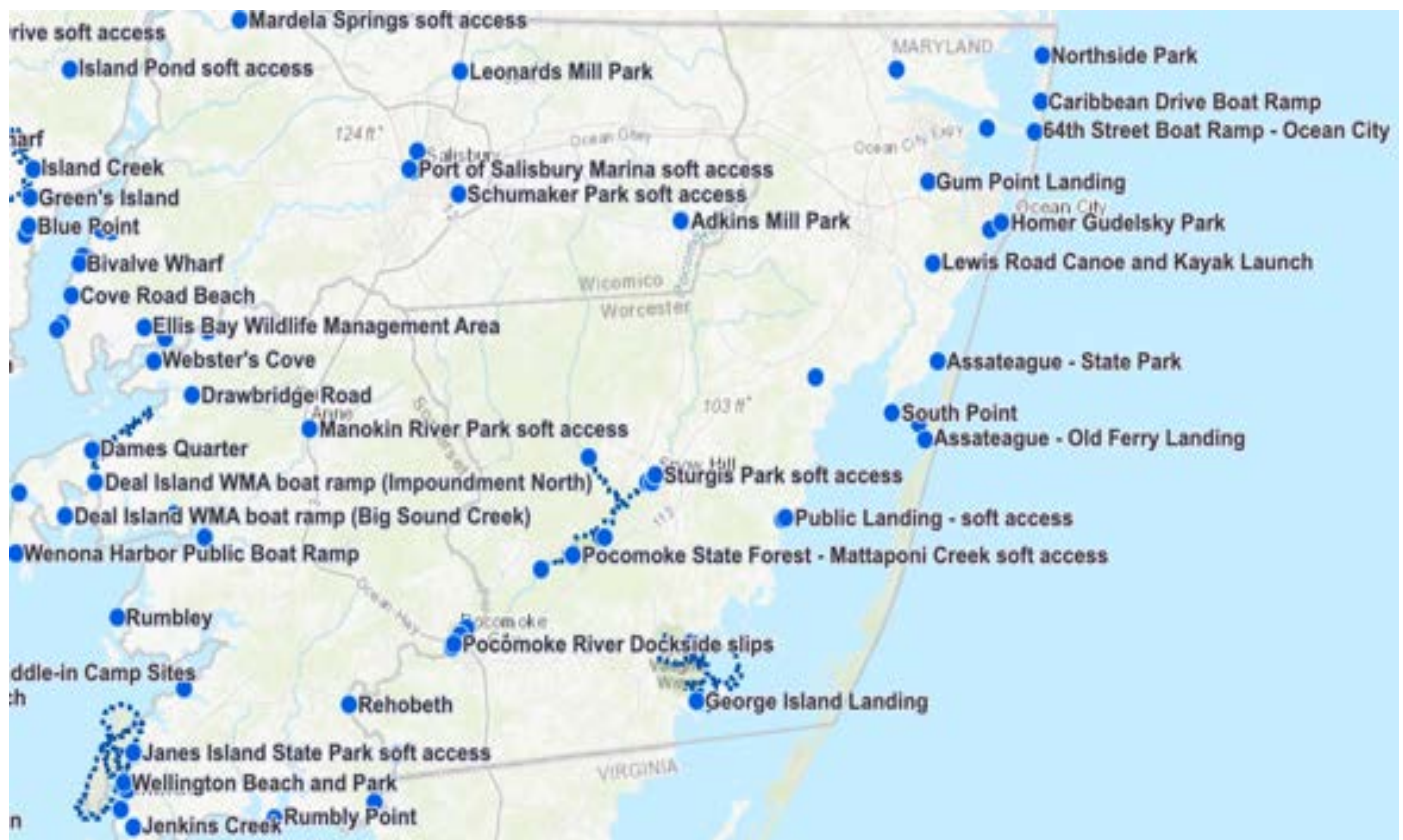
The design use of the marina or boat ramp greatly affects the quality of its ramp, which is interesting because everyday citizens are not commercial oyster and crabber boaters and they get stuck with the lowest quality recreational launch points.

Seymour also goes into detail on launching and how hard it is to launch a boat when the ramp quality is low. If a ramp has a lot of algae, leaves and other junk from the river, it leaves a layer of film, which makes extracting the boat difficult as the wheels won't get enough traction to get out. This can be dangerous because if there is a loss of traction you can

easily slide back into the water.

This is the same problem with sand that starts to wash up on the ramps--you can lose your traction on the way out. If a ramp gets fully coated with sand it may become a safety hazard for people with power boats to use and may only be suitable for kayaks. With a heavy fiberglass boat, you'd need at least good compact gravel or concrete to maintain safety of the boater.

When it comes to who is in charge of maintaining these public launches, most of them fall under the jurisdiction of the Maryland Department of Natural Resources (DNR). There are a few exceptions like the launches in Salisbury, which are owned by the Port of Salisbury.



Lower Shore water access points Graphic courtesy of <https://dnr.maryland.gov/boating/Pages/water-access/boatramps.aspx>

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When it comes to cleaning and maintenance of the DNR ramps, Seymour hasn't personally seen anyone from the organization cleaning up; however, there is a ramp on the Wicomico River that is currently under construction for renovation. Just like with any government organization, progress can be slow. While Seymour is sure that some things have been taken care of when they need to be, here hasn't been a significant change in ramp conditions that he has noticed as a frequent boater on these waterways.



Drawbridge Road launch, Dorchester County
Photo courtesy of Johnny Seymour

When it comes to permit costs and money, Seymour says Maryland is good with having free-to-use public launches that don't require permit purchases. The public launches that Seymour goes to the most include the Port of Salisbury Marina, Deal Island Boat Ramp, Manokin Boat Ramp, Little Boat Harbor, Draw Bridge Road, Dames Quarter, and Rumbley to name a few.

For Seymour personally, his boat is very easy to trailer, so he doesn't mind those longer distances, and it isn't much of an obstacle for him--the most he would go would be an hour. Seymour also said there is not a scarcity of recreational public water access in Wicomico County and the surrounding areas on the Eastern Shore.

Additional Student Boater Issues

When it comes to owning a boat and being a student, Johnny Seymour explains that it is expensive. The number one expense is cost of ownership and maintenance. Since Seymour was able to get a discount on his boat and can spend more money on gas, he can afford to go to those further launch sites if he chooses to do so.

It's hard being a student and trying to balance water time and class time. Class schedules can be difficult if they overlap with desired boat times, which are in the morning. Waiting until the afternoon may have effects like worse weather conditions and/or poorer fishing.

There is also an issue with storing the boat. Normally, unless someone owns property on the water with a dock, it will cost money to have it in a slip or marina, or at a self-storage place that has an extra lot where boats could go. Seymour is fortunate to have a smaller boat, which he can store at a friend's house locally in Fruitland at no cost.

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Pocomoke River Photo: Madison Ruhl