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CURRENTS

Volume 8, No. 2 | Summer 2022

Summer off to a clean-water start

Dear friends,

Summer has barely begun, but Sound Rivers has been in full summer mode for the past month. In May, Washington Park residents in Beaufort County shared a video on social media of an alligator swimming in the Pamlico – a very rare sight on this stretch of the river. With little rain this spring, the Neuse and Pamlico rivers have become salty, and with that transition, all manner of in-



teresting ocean creatures have been observed – sea nettles, schools of cownose rays, dolphin and more. This is a great reminder of the wonder of our estuarine systems, where salt and fresh water mix, bringing with it an abundance of life. Inside this issue of Currents, you'll get a glimpse of all

the great work our Sound Rivers crew and volunteers are engaged in to protect this system.

Our fifth season of Swim Guide is in full swing, supported by our three

“With little rain this spring, the Neuse and Pamlico rivers have become salty, and with that transition, all manner of interesting ocean creatures have been observed – sea nettles, schools of cownose rays, dolphin and more. This is a great reminder of the wonder of our estuarine systems, where salt and fresh water mix, bringing with it an abundance of life.”

amazing interns – Megan, Maia and Maddie – and dozens of volunteers who sample our waterways weekly. Check out our website each Friday afternoon or sign up for our text alerts to get water-quality results at more

than 50 locations sent right to your phone, so you'll know where it's safe to recreate each weekend.

Our Riverkeepers and volunteers have also installed two Trash Trouts, in Washington and New Bern, with a third planned for Raleigh. These passive litter collection devices are part of a state-wide initiative to learn how trash and plastic impact our waterways.

Your support makes all of this important work happen. We are grateful for all who have donated so far this year to support our clean-water mission, and a special thanks goes out to our April Match donors – with your help, we raised more than \$65,000 to fund your Riverkeepers' work in the field, on the water and in the office. If you are able, please consider a gift of clean water today.

Get out there and enjoy your waterways this summer!

Best,

Heather Deck, Executive Director

POLLUTION SOLUTIONS

Jack's Creek watershed study in progress



(Left) Dr. Charley Humphrey observes the Jack's Creek watershed after taking water samples on a winter day.



Stormwater runoff into Jack's Creek in Washington is impairing the water quality, but there's a study underway to figure out how to clean it up.

"In eastern North Carolina, localized flooding during heavy rain events is becoming more and more common as our existing stormwater infrastructure cannot keep up with new development and stronger, wetter, more frequent storms," said Pamlico-Tar Riverkeeper Jill Howell. "In Washington, our restoration work on Jack's Creek — the waterway that the majority of downtown Washington drains to — aims to address this issue. We are excited for the possibilities with this restoration project and future ones that will address both the quantity and quality of stormwater."

"The ultimate goal is to have a good foundation of knowledge and recommendations to reduce stormwater runoff impacts and increase water quality in the Jack's Creek in the Pamlico River basin," said Sound Rivers Program Director Clay Barber.

Sound Rivers assembled a team of partners to take on the project — Mid-East Commission planner Jamie

Heath, Dr. Bill Hunt, Sarah Waickowski and Amber Ellis from N.C. State University, the City of Washington, East Carolina University's Dr. Charlie Humphrey and Guy Iverson (professor) and Kris Bass Engineering — and applied for, and received, a \$43,500 grant from the North Carolina Land and Water Fund grant (formerly the Clean Water Management Trust Fund), matched by another \$41,400 in funding from ??.

The Nine Minimum Element watershed restoration plan will identify creek stressors, causes of impairment and options to resolve these pollution issues. The Jack's Creek watershed drains most of downtown Washington, 2.38-square-miles of land, 92% of which is of which developed and 37% is impervious surfaces — roads, sidewalks and buildings. The creek is considered a "highly urbanized stream," and over the years, has been channelized and piped in many

locations along its flow path. Since there's also little opportunity for that water to be "cleaned,"

all of the pollutants and runoff volume generated by the urban uplands end up being pumped into the

Pamlico River through a managed pump station at East Third Street.

For the past year, Humphrey and Iverson, have been sampling at two separate locations: near East Fifth Street and in the main stem of Jack's Creek, near the dog park at the corner of Brown and East Fourth streets, and analyzing the samples for E. coli, nitrogen, phosphorus and various physical/chemical parameters, such as pH, DO, temp, turbidity. Though pointing out that they have not previously been sampling at the frequency suggested by the EPA, Humphrey said the levels of E. coli at both locations have exceeded EPA thresholds both on the average day and after a rain, when the creek is flowing with stormwater runoff.

The study is aimed at developing a list of best management practices and future projects to prevent pollution from flowing straight into the river.

"Better managing stormwater is certainly important for the watershed, along with reducing wildlife and pet waste contributions," Humphrey said.

VOLUNTEER SPOTLIGHT

CARL CROZIER *Washington*



Carl Crozier wades into Duffyfield Canal in New Bern to help secure a Trash Trout.

It's a Wednesday morning in Washington or a Tuesday morning in New Bern, and Carl Crozier is wading through some murky waters — trash-filled, urban streams that are about to get an ongoing clean-up, courtesy of a Sound Rivers Trash Trout.

Crozier is one of several volunteers who've been on the ground and in the water, lending a hand with the most physical part of a two-year-long microplastics monitoring project: installing litter traps on strategic waterways to collect trash.

Though the main medium is different, the process aligns closely with his professional career.

Originally from Texas, Crozier studied biology at Baylor University, botany at Ohio State University and soil science at N.C. State University. In between, he was a U.S. Peace

Corps volunteer in Honduras; after, he did post-doctoral research at the Wetland Biogeochemistry Institute at Louisiana State University, before landing as a professor and soil science extension specialist with N.C. State Extension. Now in his third year of retirement, volunteering with Sound Rivers has become a natural extension of his work.

"I've worked a lot in the environment — I'm interested in the environment and how people interact with it. My work (in North Carolina) was mostly with the agricultural end of it," Crozier said. "One of the reasons I wanted to retire was I was still young enough to be able to still work on things I didn't quite have time to before. The one thing about being retired is you don't have as fixed of a schedule," he laughed.

Crozier came across Sound Rivers about the time he retired. Donations

led to volunteering, the latest foray of which has been the Trash Trout installation. It's a project he says provides visibility, not only to Sound Rivers but an environmental education in cause and effect.

"(The Trash Trout) makes an obvious connection — people think maybe they throw something away or there's just a little bit of trash on the side of the road, but here you can actually see how all that trash gets collected and moves in the watershed and all of a sudden you have a whole bunch of litter," Crozier said.

Crozier said he's pleased with both the volunteer opportunities he's had and the work Sound Rivers is doing.

"I'm very happy to see the organization working. Not every area has this active of an organization that's really trying to work on the waterways and get people involved and thinking about it," Crozier said.

SWIM GUIDE



Swim Guide returned for a fifth year on Memorial Day weekend, letting people know where it's safe to swim in local waterways, from the Raleigh-Durham area to the Pamlico Sound.

"It's a great program, and more and more people are taking advantage of it. They want to know that the water they're swimming in – kayaking, canoeing, paddle-boarding and all other forms of recreation – meets the recreational water-quality standards set by the state," said Clay Barber, Sound Rivers' program director.

This year, 54 popular recreational sites in the Neuse and Tar-Pamlico river basins are being sampled weekly by a team of Sound Rivers volunteers. Samples are tested for the presence of E. coli, which can cause an increased risk of gastrointestinal illness and skin infections in both humans and their pets. Sites are given a pass/fail designation based on federal and state water-quality standards.

"It's summer – we want people to be able to make informed decisions about getting out on the water and being able to enjoy that time, safely," Barber said.

Results are released to the public on Friday afternoons throughout the summer at soundrivers.org/swimguide, through local media and via text. To sign up for text alerts, text "SWIM" to 33222 to have results delivered weekly. For results in Spanish, text "NADAR" to 33222.

This year's Swim Guide program is sponsored by the Water-Quality Fund in memory of Gene Pate, Grady-White Boats, Cummins, Edward Jones - Rod Cantrell, Cypress Landing, UNC Lenoir Health Care, the Albemarle-Pamlico National Estuary Program, Greenville (evening) Rotary Club, UNC Pavel Molchanov Scholars, ECU SECU Public Fellows Internship Foundation, City of Greenville, Lake Royale Property Owners Association, Melinda Vann and David Silberstein, and Wendy and Tim Wilson.



Adopt a Swim Guide site!

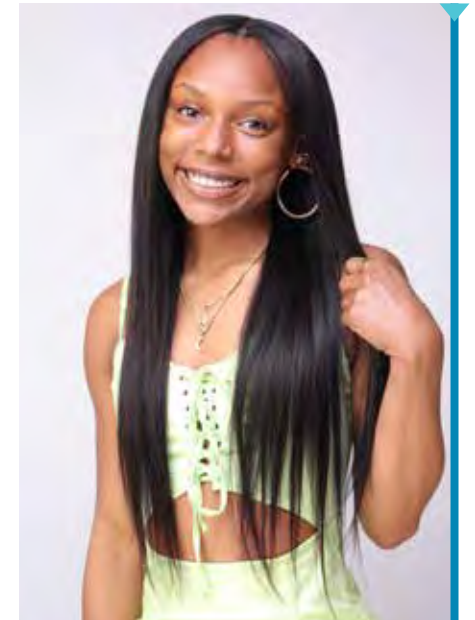
Pick your favorite recreational spot from our list and help keep it safe this summer with your \$25 gift for testing at your site! Use the QR code or visit soundrivers.org/donate.



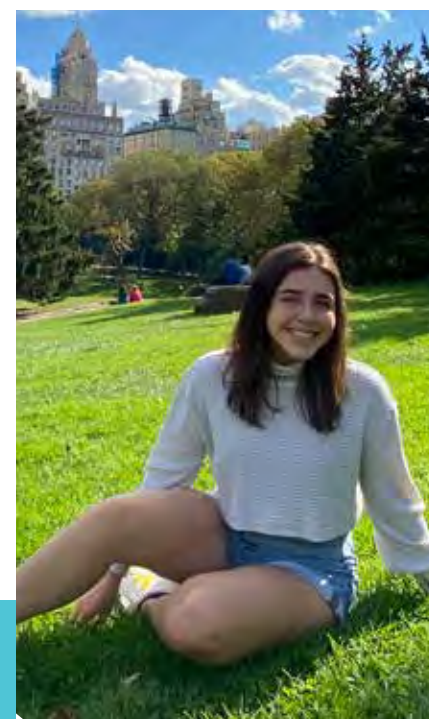
MEET OUR SWIM GUIDE TEAM



MADELYN GARRISON is Sound Rivers' Tar-Pamlico water-quality intern for 2022. Maddie is a junior at East Carolina University, where she is majoring in biology. She refers to herself as an "Army brat," and is originally from Fort Stewart, Georgia. Maddie says she applied for the job of intern with Sound Rivers because it would be "a great opportunity for me to get some experience working in environmental science, while also being able to give back to the community." Maddie can be reached at madelyn@soundrivers.org.



MEGAN LONG is working out of the New Bern office this summer. Megan is a senior at East Carolina University, majoring in public health, with a concentration in community health. Born and raised in Greenville (home of ECU), Megan sought out an internship with Sound Rivers in order to see a different side of public health – environmental health. "I thought this would be a great opportunity to learn and grow as a public health student," Megan said. Megan can be reached at megan@soundrivers.org.



MAIA SCHWEIKERT is in our Raleigh office. Maia is from the small, Western North Carolina town of Elkin, which is where her love for the environment first blossomed. She loves the outdoors and is an avid hiker, swimmer and climber. Maia is focusing on environmental studies, and social and economic justice at the University of North Carolina-Chapel Hill. She hopes to pursue her passion for environmental justice by working in environmental advocacy or law in the future. For now, Maia says she's excited to help protect our watershed and all of the people who rely on these waterways. Maia can be reached at maia@soundrivers.org.

TRASH TROUT

Litter traps good for waterways – and research

Trash Trout installations on two waterways in the Neuse and Tar-Pamlico watersheds are sweeping trash up and aiding research into how the breakdown of plastics impacts waterways and aquatic life.

On May 4, Sound Rivers' staff and a crew of volunteers anchored the first litter trap to the banks of Jack's Creek, just east of Market Street in Washington, followed by the installation of a second Trash Trout on Duffyfield Canal, a tributary of Jack Smith Creek and the Neuse River, in New Bern on May 31.

The purpose is twofold: to prevent trash from flowing downstream to the Pamlico River and to gather data for "Improving Human and Ecosystem Health through Microplastic Reduction," a research study about how plastic pollution affects the environment. Through

a \$188,000 state grant to Waterkeepers Carolina, 14 Riverkeepers across North Carolina are participating in the two-year-long study,

"The traps are a way to, one, clean up some trash, and, two, we'll be able to look and see what kind of trash is in our waterways, what is the actual makeup of the litter and what of that is plastic."

— Jill Howell
Pamlico-Tar Riverkeeper

including Sound Rivers' Pamlico-Tar Riverkeeper Jill Howell and Neuse Riverkeeper Samantha Krop. "A lot of this project is about information or research-gathering,

We know there's a ton of plastic pollution in the environment – we see it all the time, in terms of trash in the river, macroplastics like plastic bottles and bags. This will help us understand how macroplastics break down over time and how they settle into the water and the soil," Howell said. "They don't go away. They break down into smaller and smaller pieces, but they don't go away."

Measuring less than five millimeters long, microplastics are tiny plastic pieces that can be harmful to waterways and aquatic life. As macroplastics break down into microplastics, they become an environmental and public health issue. Since they are so small, microplastics are not picked up by water filtration systems and are often eaten by fish, birds and other

See **TRASH TROUT**
Continued on Page 8



JACK'S CREEK, WASHINGTON



11 plastic bags 7 food wrappers



129 plastic fragments

40 plastic bottles 10 lids/caps

6 medicine vials 3 straws 12 cigar filters

113 Styrofoam pieces 501 cigarette butts

6 Styrofoam fragments, 4 miscellaneous

3 beer bottles 2 pieces of packing material

1 metal fragment 19 aluminum cans



NUMBERS REPRESENT THE TOTALS OF THE FIRST TRASH AUDIT AT JACK'S CREEK. (Clockwise from top left) Upper Neuse Riverkeeper Sam Krop talks Trash Trout logistics with volunteer Roger Montgomery; Spencer Roten with Asheville Greenworks, the creator of the Trash Trout, gets assistance from volunteer Carl Crozier; (left to right) Pamlico-Tar Riverkeeper Jill Howell, Neuse Riverkeeper Samantha Krop, volunteer Christina Marshen (kneeling), Lumber Riverkeeper Jefferson Currie III, volunteers Jeffrey Barker, Carl Crozier, Roy Carlton, Mill Kram, and Sound Rivers Program Director Clay Barber celebrate the installation of the first Trash Trout; Sound Rivers board member Betsy Hester keeps track of trash totals during the first Washington Trash Trout clean out.



TRASH TROUT
Continued from page 6

aquatic animals, negatively impacting the health of wildlife and, in turn, humans.

“If fish ingest microplastics, and we eat the fish, that means we’re at risk, too,” Howell said.

Partnering with University of North Carolina-Wilmington’s Plastic Ocean Project and Duke Law and Policy Clinic, Waterkeepers Carolina, a coalition of North Carolina’s Riverkeepers, launched the study last year, with microplastics pollution sampling in 30 urban and rural waterways. Collecting macroplastics via Trash Trout in the sampled locations will help researchers better understand the sources of the microplastics found.

“The traps are a way to, one, clean up some trash, and, two, we’ll be able to look and see what kind of trash is in our waterways, what is the actual makeup of the litter and what of that is plastic,” Howell said.

With the help of City of Washington and City of New Bern staff, Sound Rivers identified the best locations to install the Trash Trouts. The devices are built to withstand the rigors of flash rain events, allowing water to flow through the trap unimpeded, at the same time capturing larger pieces of trash floating downstream. The collected refuse is then manually removed and “audited,” or sorted. The first cleanout of the Washington trap yielded nearly 900 pieces of trash.

“It’s useful to know what kind of trash is ending up in our waterways, so we know how to prevent it from getting in there in the first place,” Howell said.

Sound Rivers will be installing a third Trash Trout in the Walnut Creek watershed in Raleigh.

We are seeking volunteers to help with the project: those who can regularly check the Trout to see if it’s in need of a clean-out; those willing to wade into the water to pull trash out of the traps; and people to sort the resulting trash. For more information about how to volunteer, email info@soundrivers.org.



(From top) Pamlico-Tar Riverkeeper Jill Howell (left) and Neuse Riverkeeper Samantha Krop secure the Trash Trout to the bank of Duffyfield Canal in New Bern. Volunteers Carl Crozier (left) and Christina Marshen wade into the canal to anchor the floating boom to the New Bern Trash Trout; the crew at the New Bern installation included (left to right) Mike Sagaser, Christina Marshen, Carl Crozier, Pamlico-Tar Riverkeeper Jill Howell, Sound Rivers Program Director Clay Barber; Neuse Riverkeeper Sam Krop; and Sound Rivers water-quality intern Maia Schweikert.



An industrial hog facility and inundated hog waste lagoon located in the Neuse watershed is pictured in the aftermath of Hurricane Matthew in 2016.

Army Corps releases Neuse flooding recommendations draft

The U.S. Army Corps of Engineers recently released a draft of the Neuse River Basin Flood Risk Management plan, a study recommending federal actions to reduce risk and damages caused by flooding along the Neuse River and its tributaries.

The Risk Management plan was prompted by recurring flooding in the Neuse River basin – particularly during Hurricane Matthew (2016) and Hurricane Florence (2018) – causing considerable economic damage to homes, businesses, industry and public infrastructure. Flooding in the Neuse River basin is projected to cause \$43 million in damages per year over the next 50 years, according to the study.

The Corps considered three options: take no action; elevate and/or floodproof at-risk structures; or introduce a buyout program of at-risk structures. The draft recommendation focuses on elevation

and floodproofing. While the recommendation is environmentally sound, Neuse Riverkeeper Samantha Krop says buying out properties and returning previously occupied land to its natural state would do more to mitigating flooding in the long-term.

“In general, we support the Army Corps’ focus on non-structural methods for reducing flood risk and floodproofing homes, though we suggest that the limited federal flood-prevention funding would be better spent on measures most effective for more of the watershed, and along a further timeline into the future,” she said. “We would have liked to see the Corps present a recommendation that incorporates such solutions as moving structures out of the floodplain and restoring nature-based flood mitigation systems that allow the landscape to absorb, filter and release water into surface waters.”

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We’d like to say “Thank you!”

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You exceeded our \$30,000 goal tremendously, making this the most successful April Match campaign we’ve ever had.

The total impact?

\$65,130!

Thanks to you, the fight continues for clean water, to make all your waterways

fishable
drinkable
swimmable



RIVERKEEPER REPORTS

In the
NEUSE watershed



In May, Neuse Riverkeeper Sam Krop captured this photo showing mounds of composting carcasses at an industrial poultry facility hit by avian flu.

Avian flu points to need for transparency

In March and early April, a deadly outbreak of avian flu rapidly spread among wild birds and within North Carolina's massive poultry industry.

Keeping track of the facilities affected by the virus was challenging – current state law appears to intentionally shield the poultry industry from public scrutiny, even during a crisis where an infection of even a few birds at a facility requires tens of thousands to be destroyed.

While the virus was coursing through the state, it was not clear where avian flu infections were occurring nor how the birds were culled, what was being done with their remains or what environmental threat was being posed where. Finding that information took time and effort.

With others tracked affected facilities, Neuse Riverkeeper Samantha Krop undertook weekly aerial surveillance of nine facilities in

Johnston and Wayne counties that euthanized nearly half a million birds whose carcasses were then composted. The effort to determine whether waterways are being

“While avian flu seems to be on its way out of North Carolina, waterkeepers continue to monitor impacted facilities in the Neuse watershed and are conducting water sampling to determine whether waterways are being impacted by ongoing disposal of poultry compost.”
– Samantha Krop
Neuse Riverkeeper

impacted by this disposal method, continues months later.

“While avian flu seems to be on its way out of North Carolina, waterkeepers continue to monitor impacted facilities in the Neuse watershed

and are conducting water sampling to determine whether waterways are being impacted by ongoing disposal of poultry compost,” Sam said.

Avian flu points to why North Carolina needs stronger regulations governing the poultry industry, allowing access to basic information, such as where poultry operations are located, who is accountable for them, details about outbreaks and ensuring disposal methods for deceased birds will not pose a threat to waterways through stormwater runoff.

Two bills introduced in the General Assembly – the Poultry Transparency Bill and Poultry Study Bill – would take those first steps to not only disclose the count and locations of industrial poultry facilities in North Carolina, but study their potential environmental and health impacts to prevent further harm and undo some of the environmental damage already done by the poultry industry.

In the
TAR-PAMLICO watershed

Riverkeepers speak up for rivers, communities at NCDEQ hearing

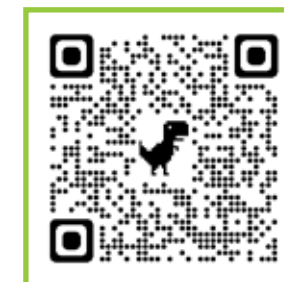
Pamlico-Tar Riverkeeper Jill Howell and Neuse Riverkeeper Samantha Krop traveled to two North Carolina Department of Environmental this spring to speak out about biogas at public hearings. DEQ is currently trying to figure out what goes into a permit for swine industry facilities installing biogas technology. Sound Rivers and other environmental partners made sure DEQ knows it's a bad idea to place new technology on top of the outdated, and environmentally harmful, old technology of the lagoon and sprayfield system – and more oversight from DEQ is needed.

“Though there are currently no hog operations with biogas digesters in our river basins, given the concentration of CAFOs (concentrated animal feeding operations) in the Tar-Pamlico and Neuse river watersheds, we anticipate that will soon change,” Jill said. “Our concern remains centered on the investment in a technology that not only fails to address existing waste management issues that result in pollution on the operations, but also creates new ones.”

Jill said the public meetings held by DEQ were unsurprising: industry representatives and contract growers spoke to how biogas generation would be great for the environment and for the economy, and community members and environmental advocates highlighted the failure of the current swine general permit to prevent pollution and harm, and urged DEQ to make this permit more protective.

“We are preparing for the issuance of the final permit in July, and will work with our partners to determine where we go from here,” Jill said.

Read Jill's
comments to
DEQ and learn
more about
biogas by
watching our
short PSA at
[soundrivers.org!](http://soundrivers.org/)



**LONG
OVERDUE:**
NC moves toward
better water-quality
standard

North Carolina is finally making headway in changing the way recreational waters are tested for fecal bacteria contamination.

This spring, the North Carolina Environmental Management Commission met with a measure of success after pressing the North Carolina Division of Water Resources to make a plan to adopt a statewide E. coli standard by the end of 2023. Riverkeepers have been pushing for the move since last year's Triennial Review by the North Carolina Department of Environmental Quality, for which states are required to update standards used to determine if surface and ground waters are healthy, and to protect public health.

“Based on the May EMC meeting, DWR will be moving forward on a study to prepare for the transition from fecal coliform to E. coli. Though it is frustrating that ultimately the standard needs to wait on this study, it is a move in the right direction, and we're hopeful that the agency is on the right track to implement this standard,” said Pamlico-Tar Riverkeeper Jill Howell.

North Carolina is one of only four U.S. states that have not updated the testing standard from fecal coliform to E. coli, which the EPA began recommending in 1986. The standards are both used to gauge the safety of waterways used for swimming, diving and other activities, but fecal coliform testing standards are considered less accurate.

“North Carolina has been long past due to implement an E. coli standard for recreational waters – it has been recommended for adoption by EPA for more than 30 years, and we are one of only a handful of states that has failed to do so,” Jill said.

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