

NCCOAST.ORG | *Working Together for a Healthy Coast* | FALL 2022

OUR COAST



North Carolina
Coastal Federation
Working Together for a Healthy Coast

BRINGING BACK THE OYSTER
HOLIDAY GIVING GUIDE:
SEE BACK COVER

LETTER FROM THE DIRECTOR

Dear Friends of Our Coast,

As goes Bogue Sound, so goes many of our nation's estuaries.

This tidal estuary in Carteret County provides ample warning signals and guidance about how to keep our coast vibrant and productive. The North Carolina Coastal Federation is focused on tackling these coastal challenges every day.

I've lived in the community of Ocean for more than six decades, and from my mainland shoreline, I watch, wade, swim, and taste Bogue Sound.

When my sisters and I were kids, we would swim in the sound most summer days. I loved using my swim mask to spy on fish, crabs, clams, oysters, and "blue-eyed" bay scallops in the lush seagrass beds. It was easy to catch a mess of crabs for dinner while wading in the sound's clear waters.

Family guests were often enlisted to catch their own seafood dinner – we called it "living off the land." Of course, food tastes much better when you catch it yourself.

One of my sisters recalls counting just 13 streetlights shining across the sound from Emerald Isle. It was the lights at night from big commercial tugs and barges in the Atlantic Intracoastal Waterway, and the dozens of working shrimp boats that fished back and forth, that were much brighter and more numerous back then.

The sound was renowned for its seafood, exceptional water quality, and vast seagrass beds. That's why the Federation's petition in 1989 to designate western Bogue Sound as an "Outstanding Resource Waters" was successful. It now has the most stringent government standard to protect water quality.

Unfortunately, that legal designation didn't work. Since 1990, the health of the sound

declined as more people discovered and enjoyed it.

Over the past several decades, most traditional commercial uses of sound for moving cargo and fishing have all but gone away.

Today along our mainland shoreline, the submerged seagrass beds are just a skeleton of what once existed. The clear water where I waded to catch crabs now looks like mud. Firm bottom sediments have turned to muck, and algae grows in the winter that resembles batts of house insulation as it decays and smothers salt marshes and seagrasses.

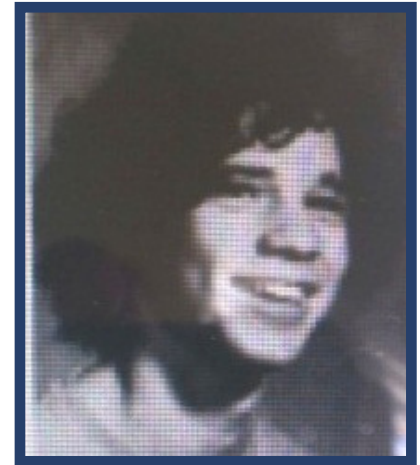
Polluted stormwater runoff has increased as forests and farms have disappeared to make room for houses. Bulkheads and docks along the shoreline now crowd out salt marshes.

Big boats traveling at high speeds along the waterway create waves the size of oceanfront breakers. These waves crash ashore and erode fringing salt marshes. This shoreline erosion adds to the water's unacceptable turbidity and mushy bottom sediments. The sound's water is now so turbid that sunlight can't reach seagrasses during periods of intense boat traffic.

Put simply, we are loving Bogue Sound to death.

Similar habitat and water quality degradation is being repeated elsewhere along the N.C. coast. Most tidal creeks in rapidly urbanization southeastern N.C. are now polluted with bacteria due to stormwater runoff, wetland losses, and land drainage. Albemarle Sound and the Chowan River, turn "green" many summers with toxic algae due to nonpoint runoff from upstream waters.

It's tempting to throw up our hands and give up. But our coast is too



important to do that. Our work at the Federation finds ways to improve upon these disturbing trends.

For Bogue Sound, we teamed up with the N.C. General Assembly, scientists as well as federal, state, and local government officials to fund and build miles of living shorelines to help cut down on the erosion that is so fundamentally degrading water quality, salt marshes, and seagrasses in the sound. We promote retrofits for stormwater management that will improve water quality, and all this should make the sound better for seagrass regrowth.

Likewise, a watershed plan to try to clean up the Newport River estuary is being developed. We are pursuing the acquisition of thousands of acres of ditched lands to restore hydrology and reduce billions of gallons of polluted runoff each year.

The Federation helps farmers and local governments to advance thousands of acres of wetland restoration projects and improve nutrient management practices throughout numerous coastal counties.

(Cont. on Next Page)



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Working Together for a Healthy Coast

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One of our innovative approaches is to promote the use of nature-based strategies that not only reduce flooding and make coastal communities more resilient but also have concurrent benefits for water quality. We are currently helping the N.C. Department of Environmental Quality launch a public-private partnership to advance water quality measures that reduce nutrient pollution in coastal waters.

The Federation has led a statewide oyster restoration partnership in 2003. In addition, our marine debris cleanups performed by commercial fishers have removed hundreds of tons of chemically

treated wood (considered toxic waste by the U.S. EPA) that ended up in our marshes and waterways from hurricane-destroyed waterfront docks. Most of this debris was simply abandoned by the folks once the dock debris floated away from their waterfront lots.

The focus of the Federation's work for the past 40 years is to promote land use practices that won't cause lasting harm to the health and productivity of our coastal waterways. Some of these same practices will also help restore our coast as well.

This work fully consumes our time. I'd love to work ourselves out of a job, but the

challenges we face with ever-increasing land use pressures aren't ebbing anytime soon.

Thank you for helping us. No other organization in North Carolina does the work of the Federation. We're uniquely focused on promoting resilient and environmentally compatible land uses that maintain healthy and productive coastal ecosystems.

Todd Miller

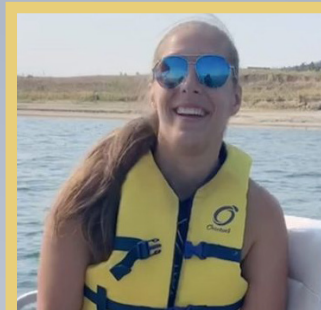
COASTAL HAPPENINGS

The Coastal Federation is excited to share that our staff is continuing to grow, over the last few months several new faces have joined our team.



James Lewis is taking on the new position of Technology Director. James has been working for the last two decades as an IT consultant for multiple companies spanning several industries including retail, law, manufacturing, and various human services. James serves on the Governor's Advisory Commission for the

North Carolina Museum of Natural Sciences. He is a graduate of Carteret Community College and is a Morehead City native who grew up in the marshes between Bell's and Eastman's creek on the Intracoastal Waterway.



Claire Rapp joined the Federation as our Salt Marsh Campaign Coordinator. Working in collaboration with experts from a variety of different agencies, Claire is helping to coordinate a salt marsh protection action plan for North Carolina. This plan will be in conjunction with a larger regional effort by the South Atlantic Salt Marsh Initiative to protect salt marshes all along the South Atlantic coast. Claire

has a Master of Science degree in Coastal and Ocean Policy from UNC Wilmington, where her research investigated the use of adaptive co-management and stakeholder engagement for more effective conservation of marine resources in marine protected areas. She has a Bachelor of Science degree in Biology from Bucknell University.



Eliza Wilczek joined the Federation as the Submerged Aquatic Vegetation (SAV) Campaign Coordinator. Her work is focused on advancing SAV and water quality recommendations from the N.C. Coastal Habitat Protection Plan. Before joining the Federation, Eliza conducted research on marine

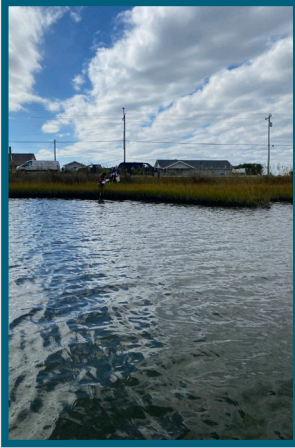
microplastics in Florida and parasite expansion in Cape Cod. She holds a Master's of Environmental Management with a concentration in Coastal Environmental Management from Duke University and a Bachelor of Arts in International Affairs from Bentley University. In her spare time, you can find Eliza paddling or swimming in the water.



John Tivnan joined the Federation in September as the new Data Manager. Before that John worked as a federal contractor with both fixed wing aircraft (AV-8B Harrier) as a technical writer for Cherry Point and tilt rotor aircraft (AH-1W Cobra and UH-1N Huey Helicopters) as a fixed-wings at Corpus Christi, Texas Naval Base, Marine Corp Base Camp Pendleton, and Marine Corp Base Futenma, Okinawa

helping build and maintain their Integrated Maintenance Concept database. John finished off his federal employment in 2021 managing his father's demolition business onboard Cherry Point Marine Corp Air Station. When not at work you can find John spending time with family or outside, fishing, camping, boating, or playing disc golf.

LIVING SHORELINES



Over the past several years, interest in living shorelines has exploded and with the help of over \$18 million in major state appropriations and several other large state and federal grants, the Federation is working to consult on and build hundreds of living shoreline projects up and down the coast. The growth is exciting and has certainly kept staff in all three of our offices extremely busy.

Right now, the full \$2 million in state appropriations for living shoreline cost-share assistance is completely spoken for, and the Federation along with partners like Native Shorelines and Sandbar Oyster Company, are working to design and build up to 31,060 feet, or about 5.9 miles, of living shorelines on 194 properties.

An additional \$6.5 million of state appropriations was awarded to the Federation to help fund several major living shoreline projects

at Black Duck Island, Fort Macon State Park, Hammocks Beach State Park, and the N.C. Aquarium at Pine Knoll Shores.

Work is also underway to build a living shoreline around Sugarloaf Island in Morehead City. The Federation has partnered with the Town and the Florida-based aquatic restoration firm Sea & Shoreline to help stabilize and restore the shoreline of the small barrier island that sits in front of downtown Morehead City to protect it from storms.

Living shorelines are such an environmentally friendly and beneficial option for shoreline stabilization. Our coastal educators have done a fantastic job spreading this message and have been hosting school groups up and down the coast taking them out to explore our living shoreline projects like the ones at Jockey's Ridge State Park and Hammocks Beach State Park.



MARINE DEBRIS



It's been four years since Hurricane Florence devastated the state leaving a trail of destruction and devastation in its path. In 2019 the Coastal Federation began working with contracted crews and teams of volunteers to clean up the coastlines and waterways.

Even though the storm hit four years ago, contracted crews are still working with us to remove debris from Florence and are now even

finding new debris in areas that have already been cleaned. This tireless work has been supported by appropriations from the NC General Assembly and a grant from the National Fish and Wildlife Foundation-NOAA Hurricane Marine Debris Response Fund. To date, more than 2.5 million pounds have been pulled out of the water and picked up from around the coast.

That number is an impressive feat but it speaks to a larger problem we face living on the coast and the need for new prevention practices. Marine debris can have horrific impacts on ecosystems and the many animals that depend on coastal habitats to thrive. It can also affect our coastal economy by negatively impacting recreational and commercial fishing and tourism.

The Federation is working with coastal communities to improve standards for building docks and piers. The need for stronger rules became clear when most of the debris found by our clean-up crews was actually treated lumber from docks and piers. The Federation is working with local governments to build support for better construction practices to reduce the amount of treated lumber littering our coast following the next storm. NOAA has a handy tip sheet for reducing potential marine debris from your property. In addition, the NC Marine Debris Action Plan and the Federation's Resilient Docks and Piers Report include many strategies for reducing marine debris website, <https://www.nccoast.org/protect-the-coast/marine-debris/>.

This year contractors have also helped us continue to remove abandoned and derelict vessels from our coastal waters. Since the Federation began removing these boats in 2021 with our many partner organizations more than 100 vessels have been safely pulled from the coast.



COASTAL MANAGEMENT



In February, yet another beachfront home in Rodanthe plunged into the ocean, falling victim to the natural forces of barrier islands. The home left a trail of debris miles down the coast. The debris cleanup cost

the public many thousands of dollars and the smaller, torn-apart debris floated away in the ocean or was buried on the beach. The Federation recognized a real shortcoming in existing rules when houses are abandoned to fall into the ocean and become massive amounts of marine debris for tax payers to clean up. Permits issued by the Division of Coastal Management or local governments must include a condition that a house will be moved within two years after becoming imminently threatened but the rule is hard to enforce. To begin working toward a solution, this summer the Federation gathered county, state, and federal partners to find collaborative and long-term solutions in an effort to prevent these events from happening again.

Our goal is two-fold:

Work for stronger septic tank rules so they can't be repaired and relocated on the public trust beach so as to allow houses to remain in use even as the ocean surges under them. The Coastal Resources Commission, the rule making body for the Coastal Area Management Act, will decide if it wants to advance such new regulation during its upcoming meeting in November. The Federation is also looking at advocating a new law that would hold property owners financially responsible for removing debris if they allow their house to fall in the ocean. We are currently examining what other coastal states do and will use this information to explore other incentives for homeowners to relocate their houses to less vulnerable sites and to discourage public spending for cleaning up environmental damage done by property owners.



WATER QUALITY



This year Federation staff have been hard at work on numerous projects surrounding our goal of improving water quality and reducing flooding along the coast. Some of the most

recent projects include a brand-new rain garden on the front lawn of Leutze Hall at UNCW. That space was transformed into a rain garden that now soaks in 14,000 gallons of rain for every 3.4 inches that fall. Coastal Stormwater Services, Inc. worked with the Federation and UNCW, and Heal Our Waterways to design and build the garden.

In the Town of Pine Knoll Shores in Carteret County, the town and the Federation with the help of Coastal Stormwater Services, Inc. and M&W Land Improvement Inc. installed permeable pavers at a cul-de-sac on Acorn Court, a street with chronic flooding in the town. The new pavers will help soak in almost 100,000 gallons of rain for every 3.4 inches that fall to reduce polluted runoff and flooding.

In Swansboro in Onslow County, a stormwater outfall at the end of Walnut Street was redirected to an engineered sand filter instead of discharging into Hawkins Creek. The site now treats runoff from an almost 10-acre watershed before reaching the creek. The Federation worked with Coastal Stormwater Services, Inc. and M&W Land Improvement Inc. to design and install this system as well.

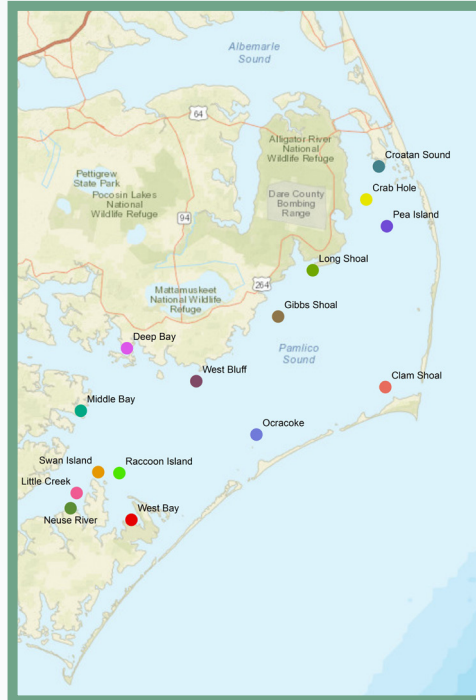
Work also continues along the northeast coast to implement actions in the Lake Mattamuskeet Watershed Restoration Plan. In September, a public meeting hosted by the Federation and Hyde County was held in Swan Quarter to inform the public on how far the groups have gotten in the implementation phase of the Plan. Alyson Flynn, Coastal Advocate for the Federation, kicked off the meeting by providing an overview of the progression of work that has been completed over the past nine months and highlighted goals targeted for 2023. Alessa Brasswell, an engineer with Geosyntec then presented key hydrological modeling results and updates, followed by Wendy Stanton, a wildlife biologist with the USFWS, who provided an update on carp removal efforts within the lake. Finally, Tom Roberts with the UNC School of Government's Environmental Finance Center spoke to two specific financing mechanisms; an endowment and a trust, for creatively financing the operation and maintenance costs of selected active water management alternatives in the watershed.

Bringing Back the Oyster

The health and productivity of oysters in our estuaries are one of our best gauges for how well the North Carolina Coastal Federation has accomplished its mission over the past 40 years. It seems that there's nothing these unassuming bivalves can't do as they sustain our coastal ecosystem, way of life, and economy. We recognized decades ago that oyster populations had declined dramatically along our coast, and in 2003 we focused on rebuilding oyster stocks to reap the full benefits of the mighty oyster.

It was on Valentine's Day in 2003 that we assembled about 60 people that were engaged in oyster fishing, research, management, and restoration. Out of that meeting grew our first edition of the N.C. Oyster Restoration Blueprint. This strategic plan, now updated and in its fourth edition, has enabled the Federation to work with many partners to enhance wild oyster populations, greatly expand the oyster shellfish farming industry, improve water quality in shellfish growing waters, and to expand the positive economic impact of oysters on the coastal economy.

To further wild oyster populations, the Federation began to partner with the N.C. Division of Marine Fisheries in 2009 to construct oyster sanctuary reefs in Pamlico Sound. This work has been generously supported by the North Carolina General Assembly as well as the NOAA with matching federal dollars for more than a decade. The constructed reefs are strategically placed in the sound with the most recent one being built this year near Cedar Island. These new reefs increase the state's wild oyster population by supplementing the amount of baby oyster spat that is available in the sound. The sanctuary reefs



revitalize the underwater ecosystem by increasing and protecting the population of reproductive oysters. These adult oysters spawn and help colonize nearby wild oyster reefs.

The oysters within the sanctuaries also filter or clean the water and build new habitats for important fish like drum, grouper, and shrimp.

With the completion of the 2022 construction work at Cedar Island, the Federation and Division have now built over 110 acres of sanctuary in the past 13 years, with funds in hand to complete another five acres in 2023. With the addition of other Division oyster sanctuaries and the pending grant request

to ramp up reef construction efforts over the next few years, we are attempting to reach the Blueprint's goal of completing 500 acres of oyster sanctuary in Pamlico Sound by 2025.

Oyster farming provides many benefits including water filtration, habitat creation, and economic development, while also decreasing harvest demand on our wild oyster populations. The strategic plan to grow the industry was an action recommended in the oyster blueprint. Completed in 2019, this strategy seeks to put all the right elements in place (i.e., good water quality, responsible management of public trust uses, education, low-interest loans, crop insurance, and marketing) to grow the industry from an economic impact of less than \$1 million around 2015 to \$100 million value by 2030.

Although wild oysters are important to the health of our coast and the ultimate success of N.C.'s oyster aquaculture industry, the growers themselves need support. Breaking into the industry and maintaining successful leases is a difficult task. The nature of the job means that even storing a day's harvest can be difficult. To overcome logistical roadblocks, the Federation is seeking to build



a centralized aquaculture hub in Carteret County as a pilot project. This first shellfishing farming hub on the coast will provide growers with easier access to their leases, storage space for their equipment and harvest, mechanical refrigeration, as well as a collaboration space. Chris Matteo oyster grower and president of the N.C. Shellfish Growers Association says space like this would be a game changer for many oyster farmers. “In summer you have five hours from the point at which an oyster leaves the water to get your harvest into mechanical refrigeration, and that’s the first oyster you pull so every other subsequent oyster is still under that time window. Many growers have a hard time filling large orders because there is only so much work you can do on your



of NC oysters. That is the job of the N.C. Oyster Trail, a combined effort between the Federation, North Carolina Sea Grant, and in partnership with the N. C. Shellfish Growers Association. The Trail includes various tourism experiences centered around North Carolina oysters. It features restaurants, shellfish farm tours, seafood markets, educational experiences, and festivals with oysters as the common theme. The trail helps raise public awareness about shellfish

materials on the bottom of their farm. Oyster spat or baby oysters, will naturally accumulate and grow on this material creating new reefs and increasing wild oyster populations. After at least a year, growers will have the option to collect these oysters to supplement their harvest or continue to allow them to grow. The

Federation is working closely with NRCS to connect local growers to this program in order to use the current funding. This year is the first, for this program and Federation’s Coastal Scientist Erin Fleckenstein says there are already participants. Next year she expects enrollment to expand significantly. “Right now, we’re trying to spread the word, and let people know this program exists and that there is an opportunity for them to take part in restoring this important habitat, and that there are cost-share funds available to help offset the expense of doing this.”



Oysters will continue to be a critical part of our work at the Federation. Thriving oysters are good for our coastal environment, communities, and economy, and we are passionate about keeping them that way. As we expand our current programs and cultivate new ones, with the help of our partners, please follow along to find out what great things are next for oysters in NC.

boat and there’s only so much you can do inside of that five-hour time.” Thanks to a \$200,000 grant from the Golden LEAF Foundation and land use approval from Carteret County, the hub’s construction may start as early as summer 2023. Currently, the hub is expected to support at least ten growers with the intention of expanding in the future.

aquaculture and the value of a thriving oyster population highlighting their economic, environmental, and social benefits.

Arguably, the most important element in supporting oyster aquaculture and wild oyster restoration efforts is drawing people into the experience

Most recently, working with the Natural Resource Conservation Service (NRCS), through funding from the U.S. Department of Agriculture, the Federation launched a program that assists growers in implementing conservation practices on their farms. Once their application to the coast-share program is accepted, growers receive funds to purchase and spread loose shells, or other approved



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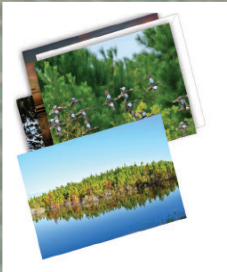
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