

NCCOAST.ORG | *Working Together for a Healthy Coast* | WINTER 2021

# OUR COAST

A NEW PLAN FOR NC  
STORMWATER MANAGEMENT

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A LOOK AT OUR  
2021 GOALS



North Carolina  
Coastal Federation  
*Working Together for a Healthy Coast*



# LETTER FROM THE DIRECTOR

## *Dear Friends of Our Coast,*

How did reducing marine debris become a major focus of the North Carolina Coastal Federation?

It took me a while to fully embrace this goal. Other pressing coastal management needs kept taking priority, such as the need to protect and restore oysters and wetlands, reduce polluted runoff and promote shoreline protection methods that retain and expand vital fisheries habitats.

Then, a few years ago on a business trip to Texas, the long-term implications of ignoring marine debris became harshly apparent to me. As they say, everything is bigger in Texas. That certainly seemed true when it came to marine debris plaguing estuaries and shorelines. Spoiled by vast areas of nearly pristine coastal waters here in N.C., I was shocked by how thoroughly trashed many coastal shorelines and marshes were in Texas.

Rarely are trash problems so bad that they make you feel nauseous. At Rollover Pass on the Bolivar Peninsula, the piles of dirty diapers, food wrappers, fishing tackle and tons of other forms of human detritus were sickening. This area is now being turned into a park with the elimination of the artificial inlet that was causing additional serious environmental problems—and perhaps with more oversight as a park this hot spot of marine debris is now eliminated.

My attitude about the severity of our marine debris problems here in N.C. shifted significantly after Hurricane Florence hit our coast in 2018. Soon after

the storm was over, I took my boat out to view damage around Bogue Sound. I was shocked to see miles of shorelines carpeted with layers of nasty consumer trash and torn-up construction debris—much worse than anything I ever saw in Texas. I was spoiled no longer.

Since Florence, I listened more closely to our staff that has been sounding the alarm about marine debris for many years. We have worked hard with federal and state agencies, state lawmakers, paid contractors, crabbers and other organizations to devise a plan and fund projects to prevent and clean up marine debris. In the past two years, we have removed more than 400 tons of debris from estuarine shorelines and islands, and this year we are working with partners to remove most of the abandoned and derelict boats that litter our coastal waters. The visible piles of debris removed have been staggering.

While cleaning up debris along our coast will always be necessary, it's vital that we take steps to prevent and reduce debris before it gets overboard. Promoting better stewardship among all of us that use the coast is an important need. Developing more resilient construction standards for docks and other built infrastructure that is exposed to storm surges is also critical.

Most worrisome, however, is the staggering volume of marine debris that we can't even see. Scientists tell us that microplastics now account by volume for 85% of the trash in our marine and coastal waters worldwide. This invisible motherload of debris is being consumed by fish, wildlife and yes, humans. We

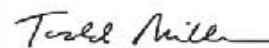


don't yet know the long-term health consequences of this pollution, but we do know that these plastics come from a huge number of sources including from each of us when we do our laundry.

The Coastal Federation is working to reduce debris, starting with the most visible problems and sources. We are exploring what more needs to be done at home, in our businesses and by government to reduce microplastics. We have a long way to go before this widespread and vexing problem is solved, but it's squarely on our agenda and a major focus of our work.

As you read this edition of *Our Coast*, you'll see that we have ambitious efforts underway to address major issues, including marine debris, that confront the health and well-being of our spectacular coast and the people who live, work and visit it. Learn more about what we do, and join us in our efforts any way that you are able.

—Todd Miller, Executive Director



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# WORKING TOGETHER FOR A HEALTHY COAST

In our proven approach for success, the Coastal Federation engages a wide diversity of people, communities, businesses, government agencies and academic institutions in our agenda to protect and restore the North Carolina coast. Thousands of people from all walks of life join us in “working together for a healthy coast.” These supporters inspire and enable us to carry out a forward-thinking agenda to make a lasting impact.

We create jobs to help safeguard the coastal environment, spending millions of dollars each year hiring contractors and firms to restore water quality, wetlands, oysters and estuarine shorelines. In addition, we hire fishers and marine contractors to remove marine debris and abandoned and derelict vessels. These projects combined with our policy, education and outreach efforts help support nature-based industries like tourism, shellfish mariculture, recreational and commercial fishing and sustained farming.

## 2020 IN REVIEW

Working with our many partners and supporters, we were able to overcome challenges, and tested out new approaches that resulted in the following remarkable accomplishments this past year:

- Nearly 300 tons of marine debris were removed from our coastal waterways.
- The first ever N.C. Marine Debris Action Plan was completed and released.
- More than 1 mile of living shorelines was built in Carteret County, Oriental and at dozens of private residential waterfront properties.
- A public living shoreline training promoting their expanded use was organized and hosted.
- Rain gardens and porous parking stalls that will soak in 4.5 million gallons of rain a year were installed at the UNC Wilmington campus.
- 2,700 acres of coastal farmland—now holding back hundreds of millions of gallons of drainage—were restored.
- 3,600 bushels of oyster shell were recycled for use in future coastal restoration projects.
- Over an acre of oyster reef was built in the Northeast and Central coast.
- The fourth edition of The Oyster Restoration and Protection Plan for N.C. was completed.
- The public was engaged in a forum on managing health threats from emerging chemical contaminants in our surface waters.
- Federal officials were convinced to expand a moratorium on offshore oil and gas exploration and drilling to include waters off the N.C. coast.

## LOOKING AHEAD

Our coastal communities continue to face concerns like shoreline erosion, failing stormwater systems and marine debris scattered along our coast. In response, we will tackle these coastal issues head on in 2021 through advocacy, restoration and creative engagement of local and underserved communities. We believe that when people have a sound understanding of the coastal environment and its importance to our livelihoods, they become better advocates for its future.

As we look forward to a new year with new opportunities, we are pleased to share our ambitious set of goals for 2021 to advance our impact for a healthy coast. Our priorities will be realized through collaborative engagement, both virtual and in person. We will engage a coastal watershed approach to reduce flooding and restore water quality, remove chronic and damaging marine debris, build large and small-scale living shorelines, protect and grow oysters and embrace opportunities to influence sound coastal policy.

## **GOAL: EFFECTIVE COASTAL MANAGEMENT THAT PROTECTS AND RESTORES THE N.C. COAST**

Our Coastal Management Goal is deeply intertwined with, and supports, the work in all four of our other goals. The federation shares guidance and policy expertise to coastal communities, partners and people who share our vision for a thriving coast and a strong coastal economy. We prioritize coastal resilience in our work, recognizing that now is the critical time to prepare for the future. This means ensuring our natural defenses are sound, our waters are safe for fishing and swimming and we are free of emerging contaminants and other threats like offshore oil. This year, we will continue to unite communities, businesses, government agencies and academia to work for effective coastal management decisions.



## GOAL: CLEAN COASTAL WATERS AND REDUCED COASTAL FLOODING FOR A HEALTHY, MORE RESILIENT COAST

Photo: Anna Reh-Gingerich



We've all jumped out of the car and into a flooded parking lot. Some of us have had inches or feet of rain seep into our homes.

Reducing the volume of stormwater runoff is key for both minimizing flooding and restoring the health of coastal waters. That is why working for nature-based stormwater strategies that allow rain to soak into the ground will always be a priority for the Coastal Federation. Simply put, nature-based stormwater strategies work with the landscape and soil to capture and soak in rain where it falls, mimicking how the land naturally absorbs rain. These strategies should be considered for all land use activities to reduce flooding and protect surface water quality. In 2021, we will join state leadership, local governments and businesses who are embracing nature-based stormwater strategies to reduce flooding, improve water quality and help balance economic development with natural resource management.

### Key Actions for 2021

1. Utilize the recently completed Nature-based Stormwater Strategies Action Plan to maximize the benefits and cost-savings provided by reducing the volume of stormwater runoff.
2. Work with community partners to develop a watershed restoration plan for Stump Sound to protect water quality and ensure its continued use for aquaculture and recreation.
3. Continue to implement the Lake Mattamuskeet Watershed Restoration Plan to reduce flooding and protect water quality at this national, state and local natural heritage treasure in Hyde County.
4. Collaborate with the towns of Pine Knoll Shores, Swansboro and Beaufort to reduce polluted runoff using nature-based stormwater strategies.
5. Restore 2,000 acres of wetlands and marsh at priority sites along the Northeast and Central coast to reduce billions of gallons of stormwater runoff.

## GOAL: A COAST THAT IS FREE OF MARINE DEBRIS



Marine debris can come from major storms, lost fishing gear, abandoned vessels or trash that gets left behind while people are enjoying our beautiful coast. This

debris comes in all sizes from boats to microplastics, and all are dangerous to both wildlife and people. The Coastal Federation has a vision of a coast that is free of marine debris. We're working diligently on a variety of fronts to clean up our coast and prevent new debris from entering the environment. We are continuing the implementation of the N.C. Marine Debris Action Plan that was released last year. We are collaborating with state and local partners to remove several unsightly vessels that have been abandoned and displaced from hurricanes. Microplastics are tiny but their potential to damage our environment is huge. So this year we're taking a closer look to encourage important research on microplastics and organize an informational forum to connect scientific experts with local policy-makers.

### Key Actions for 2021

1. Lead implementation of the N.C. Marine Debris Action Plan including presenting our debris removal and prevention impacts at February Marine Debris Symposium.
2. Lead the seventh year of the Lost Fishing Gear Recovery Project to remove lost crab pots from coastal sounds.
3. Work with fishers and contractors to remove large-scale marine debris from coastal waters.
4. Collaborate with the N.C. Division of Coastal Management and N.C. Wildlife Resources Commission to remove about 80 abandoned and derelict vessels.
5. Host a public forum on microplastics, and team up with university scientists to better understand and document their sources, concentrations and health implications.
6. Work with stakeholders to develop construction and maintenance standards for docks and piers to minimize marine debris from future storms.
7. Develop and share case studies and best management practices for large scale marine debris cleanup and vessel removal.

## GOAL: LIVING SHORELINES THAT REDUCE SOUNDSIDE EROSION AND PROVIDE COASTAL HABITAT



With increases in shoreline erosion rates expected from rising sea levels and more frequent and intense storms, shoreline protection is now more important than ever. The last few decades have

shown that hardened structures like bulkheads are not as effective as living shorelines, and they significantly reduce valuable habitat. Living shorelines offer a more resilient and eco-friendly solution. By reinforcing our shorelines with natural buffers using salt marsh and oyster reefs, we are able to reduce soundside erosion while preserving the natural beauty and productivity of our estuaries. In 2021, we commit to making living shorelines the go-to approach for managing soundside erosion. We will be installing several large and small-scale living shorelines that continue to showcase the incredible value of living shorelines.

### Key Actions for 2021

1. Complete a 1,250-foot living shoreline at Carteret Community College.
2. Plant marsh grass to complete the construction of a 1,700-foot living shoreline at Atlantic's White Point and a 2,600-foot shoreline at Oriental's Whittaker Pointe.
3. Construct a 460-foot living shoreline in the town of Pine Knoll Shores, a 225-foot living shoreline at Morris Landing Clean Water Preserve in Onslow County and four living shoreline demonstration projects in Topsail Beach.
4. Design 4,850 feet of living shorelines at Cherry Point, along NC Hwy 24 in Cedar Point and Swansboro, at a future Carteret County boat ramp and the Coastal Federation's Center for Coastal Restoration and Protection in Ocean.
5. Initiate five acres of oyster, living shoreline and salt marsh restoration and 13 acres of tidal marsh restoration at Carolina Beach State Park.
6. Build over 3,000 feet of living shorelines on private properties.
7. Educate marine contractors, engineers, consultants and regulators through technical trainings to encourage the use of living shorelines.
8. Advocate for the protection of oyster shell bag living shorelines that grow harvestable oysters.

## GOAL: ABUNDANT OYSTERS THAT SUPPORT THE COASTAL ENVIRONMENT AND ECONOMY



The eastern oyster is an ecological and economic treasure for the state. Both wild-caught and farm-raised oysters are valued as important coastal seafood fare, as well as for the

habitat they provide for commercially and recreationally important fish, and their ability to filter water. Guided by the North Carolina Oyster Blueprint, we will continue to work with local, state and federal partners, ensuring oysters support vibrant fisheries and habitat, good water quality and a strong coastal economy. We commit to safeguard two of the state's most important and critically threatened shellfishing waters, build new oyster habitat, continue to support the growing oyster aquaculture industry, ensure cultch planting efforts support our wild caught fishery, expand shell recycling efforts for use in building new reefs, and engage the public and legislators in these efforts.

### Key Actions for 2021

1. Lead the Oyster Steering Committee and engage workgroups to implement the Oyster Blueprint.
2. Incorporate Blueprint recommendations and actions into the Oyster Fishery Management Plan and the Coastal Habitat Protection Plan, and link this shellfish initiative to state and federal oyster initiatives.
3. Construct at least five acres of new oyster habitat.
4. Grow shellfish farming to a \$100 million statewide industry by 2030 with a goal of \$6.2-7 Million in 2021
5. Facilitate a stakeholder group to conduct a cultch-planting study for N.C. by working with the N.C. Division of Marine Fisheries.
6. Collect at least 3,000 bushels of recycled oyster shells, and expand the recycling program coastwide.
7. Grow the Restaurant to Reef oyster shell recycling program.



# The STORMWATER SOLUTION:

## An Action Plan for Nature-based Stormwater Strategies

by Lily Huffman

### *A Plan for the Future*

In mid-December, while many other companies and organizations were winding down for the year, the North Carolina Coastal Federation, The Pew Charitable Trusts, N.C. Department of Environmental Quality and the Governor's Office met to press forward with an innovative plan for managing stormwater runoff. This meeting was the next step of a project that has been ongoing for more than a year. It was a culmination of hours of Zoom workgroup meetings and endless writing and edits.

At this meeting, the Coastal Federation briefed attendees on the nearly complete "Action Plan for Nature-based Stormwater Strategies," a plan that, when implemented, will change how North Carolina approaches stormwater management, from the mountains to the sea.

### *Old Problem, Different Approach*

In 2018, Governor Cooper issued Executive Order 80, which called for the development of a Climate Risk & Resilience Plan for North Carolina. This executive order also placed emphasis on the use of nature-based strategies to increase community resilience to climate change across the state.

One of the major threats of climate change in North Carolina is flooding. More frequent, intense storms that drop large volumes of rain will cause not only flooding, but also an increase in polluted stormwater runoff entering our waterways.

Traditionally, large volumes of rain have been dealt with by funneling it off the land as quickly as possible. Nature-

based stormwater strategies (NBSS), however, mimic or restore the natural movement of water through the land. These strategies not only allow, but actually encourage the rain to soak into the ground as it would in an unaltered landscape. In addition to helping mitigate flooding, this approach also catches pollutants that would otherwise end up in creeks, rivers and sounds.

Nature-based approaches to stormwater management are not new to the Coastal Federation. If you are familiar with our "Smart Yards" publication, wetland restoration and stormwater reduction projects, they aren't new to you, either. We have promoted NBSS since 1985 when we first started advocating for coastal stormwater rules.

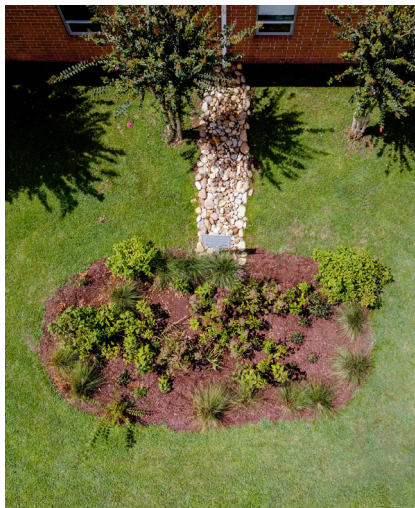


Photo: Rain Garden at Swansboro Town Hall

Better known nature-based stormwater strategies include practices like planting rain gardens, disconnecting impervious areas from hard or paved surfaces, installing pervious paving and collecting rainwater in cisterns. Although these approaches are relatively small-scale, the Coastal Federation is also working on nature-based solutions on much larger scales, including the restoration of more than 5,000 acres of wetlands at North River east of Beaufort. All of these approaches, whether large

or small, on urban or more rural landscapes work with and enhance the natural capacity of the land to slow down, spread out and soak in the rain.

### *Experts on a Mission*

The Coastal Federation's partnership with Pew first began after the passage of EO 80. A conference was held to outline what the State should include in its resilience plan. At the event, Lauren Kolodij, Coastal Federation deputy director, facilitated a panel about stormwater management options. After the conference, Pew contacted the Coastal Federation with interest in collaborating to fill the need for a strategy to incorporate NBSS to reduce flooding and protect water quality. With the partnership of The Pew Charitable Trusts, we began to develop a statewide stormwater action plan.

The first step in the process was to identify and assemble a group of experts in fields related to stormwater management to lend their perspective and expertise to developing the plan. These experts were then split into four working groups representing four major land use categories that contribute to stormwater runoff: working lands, roadways, new developments and stormwater retrofits.

Tracy Davis, owner and president of ATS Environmental Solutions, PLLC and retired DEQ Division Director over the Stormwater Program said that in the past, "The challenge has been changing the mindset of developers and designers to make NBSS the norm and not the exception. The Coastal Federation's and the Pew Charitable Trust's recognition of this challenge, and initiative to pull together experienced stormwater management professionals...has been timely and extremely productive."

However, fears of lack of developer buy in might soon be a thing of the past. New Development Work Group member, Burrows Smith of River Bluffs Development Corps. said, "I certainly hope that other developers and their land planners look at this process in a positive manner. I think we have done a great job making positive suggestions, that could lead to more diverse developing, rather than more regulations...If so, I know from practical experiences, this NBSS initiative will pay great environmental dividends." Through the course of four meetings, each work group was tasked with talking through the benefits, barriers and opportunities for using and promoting NBSS.

The first of these meetings took place in March of 2020. These meetings, already ambitious, were further challenged by the outbreak of COVID-19. But refusing to be derailed, project partners put their heads together to come up with a plan to hold virtual meetings, which although it may seem run-of-the-mill nearly a year later, at the time felt very new.

Despite fears that the lack of face-to-face interaction would prevent the connections that build ownership of a project like this, the meetings went very well. Kolodij said, "Our intent, of course, was to meet four times with each work group in person, which always helps strengthen partnerships and provides more interactive engagement in the meeting process. Having said that...it worked well and work group members

were committed to the process from day one."

Perhaps the fact that the endeavor had received the blessing of then N.C. DEQ Secretary Michael Regan was a sign that this project was on the right path, despite the unforeseen obstacle of COVID-19. In his opening remarks to the work groups, Regan said, "What we know is that we have to act now. We cannot do the same old things and expect a different result. We have the opportunity to address flood risk and water quality and to make our communities safer. And that's good for the people of North Carolina and for our economy. What you are doing today is critical to our state's success."

Doing things differently is at the heart of this endeavor. Not only is the "Action Plan for Nature-Based Stormwater Strategies" advocating for a different approach to stormwater management in the state, it is also different in its conception. This process, although far from over, has been intentionally collaborative from the start. It considers the benefits and challenges from as many perspectives as possible to create a plan that is practicable for as many people as possible. And that is why everyone involved in the plan is hopeful that it will succeed in making a difference in the state.

"We always need to evaluate the effectiveness and affordability of nature-based stormwater strategies each time we develop land, seek to

reduce flooding problems plaguing existing communities, build and maintain highways, as well as manage and sustain working forests and farms," said Todd Miller, executive director of the Coastal Federation. "This will ensure that best methods to reduce flooding and protect water quality are always selected, and that will provide economic and environmental rewards that will move nature-based strategies into the mainstream of practice."

## From Paper to Practice

Today, the Action Plan has been written and it is time to transition it from words on a page to a reality in practice. Now legislators, state departments and divisions will be briefed on key strategies of the plan to springboard its implementation.

So, the meetings will continue, and the conversations around changing stormwater management practices at a state and local levels with them. It might take small steps at first, but with the perseverance of this project team and their collaborators, we will soon be running toward a more resilient future.



Photo: Aerial image of North River Wetlands Preserve

## Cross-Cutting Recommendations

- 1) State and local governments need to lead by example by encouraging the use of nature-based stormwater strategies and implementing them widely.
- 2) Increase education, outreach and professional training for nature-based stormwater and watershed management strategies.
- 3) Create a Nature-Based Stormwater Steering Committee to ensure continued stakeholder engagement and leadership in support of long-term, meaningful progress.
- 4) The four work groups' central recommendation calls for statewide effective watershed management that focuses on protecting, restoring or mimicking natural hydrology to concurrently reduce flooding and improve water quality.

*"The Action Plan is a comprehensive guide for state officials, local governments, and other stakeholders to advance the use of nature-based flood solutions. From working lands to neighborhoods and main street, applying these recommendations can make North Carolina more resilient and flood-ready."*

-Yaron Miller, Officer at The Pew Charitable Trusts' Flood-Prepared Communities Project



## North Carolina Coastal Federation

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