

NCCOAST.ORG | Working Together for a Healthy Coast | FALL 2021

# OUR COAST

OYSTERS:  
NC'S COASTAL GEM

---

HOLIDAY GIVING GUIDE:  
SEE BACK COVER

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



# LETTER FROM THE DIRECTOR

## *Dear Friends of Our Coast,*

Thirty-four years ago, we sold clam chowder (with clams that we caught ourselves) at the first annual North Carolina Seafood Festival in Morehead City. The \$1,000 profit made was enough to pay a month's salary for a Coastal Federation employee back then.

This year we partnered with the festival to host a "Wine and Brine" celebration. We served N.C. clams and oysters. Nearly 300 people paid \$85 each to attend, and businesses like Dogwood Bank sponsored the event. It was a fun way to spotlight our accomplishments to protect and restore the coast, and to earn more funds for our work.

When the Coastal Federation was founded in 1982 life tended to be less complicated. My biggest management headache then was my yellow lab who barked when the phone rang. There was no need for formal employee policies, timesheets and work plans that are needed when you employ 30 people. Fortunately, the federation is still

blessed with a highly dedicated staff.

The Coastal Federation thrives because we're able to earn the trust and financial support of the communities where we live and work. There is no resting on our laurels. We don't preach about our mission, but instead produce real-world results.

The dividends earned from the funds that support our work are many, including more wetlands, reduced flooding, healthier estuaries, cleaner water, less marine debris, and additional miles of living shorelines.

The Coastal Federation makes our coast a better place to live, work, visit and play. As proud as we are about what we accomplish, we know we must continue to evolve and change with the world around us. One of our major supporters recently said, "you either grow or die." He encouraged us to remain bold and aggressive – and to reach for new heights in our work.

In the year ahead, we will greatly enhance our capacity to inform

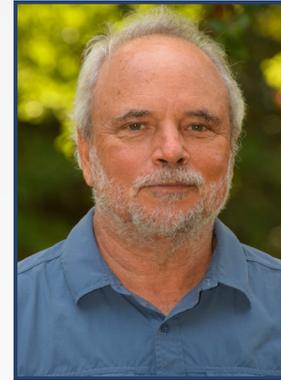


Photo: Mark Hibbs

and engage people in our work. Stay tuned for some exciting announcements as we celebrate our 40th anniversary in 2022.

The next year won't just be about celebrating the past, but also equipping the organization to tackle the big needs of our coast in the years ahead.

Learn more about the work we're already doing in this edition of *Our Coast*. Our active agenda is why I've never been bored during my 40-year tenure at the Coastal Federation.

Exciting opportunities are ahead for the Coastal Federation and our coast. Thank you for joining us on this journey.

*Todd Miller*



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

[nccf@nccoast.org](mailto:nccf@nccoast.org) • [www.nccoast.org](http://www.nccoast.org)

**Headquarters & Central Regional Office:** 3609 N.C. 24 (Ocean) Newport, NC 28570 | ph: 252-393-8185  
**Northeast Regional Office:** 637 Harbor Road P.O. Box 276 Wanchese, NC 27981 | ph: 252-473-1607  
**Southeast Regional Office:** 309 W. Salisbury St. Wrightsville Beach, NC 28480 | ph: 910-509-2838

PUBLISHED BY: North Carolina Coastal Federation  
EDITOR: Lauren Colonair  
DESIGN: Lauren Colonair

CONTRIBUTING WRITERS AND STAFF: Coastal Federation staff contributed to the content of this edition of *Our Coast*

CONTRIBUTING PHOTOGRAPHERS: Coastal Federation Staff, Marine Debris Crews, Lily Huffman

COVER PHOTO: Lily Huffman

# INSPIRING A BRIGHTER FUTURE FOR OUR COAST:

## THE CENTER FOR COASTAL PROTECTION AND RESTORATION

In 2020, the Coastal Federation launched a bold new plan to establish the Center for Coastal Protection and Restoration. Centrally located in Carteret County, this flagship education center will expand our ability to provide resources for a sustainable future for the coast, reaching over 3 million people by 2030. Nestled within a 77-acre property between Highway 24 and Bogue Sound, secured in partnership with Carteret County, the center will feature educational and recreational experiences while serving as the future headquarters of the Coastal Federation.

### KEY FEATURES

- An Education and Event Center
- Outdoor Meeting Space
- Outdoor Education Space
- Nature Trails
- Nature-Based Stormwater Demonstrations
- Living Shoreline and Sustainability Demonstrations
- Adjacent County Park with a Public Boat Ramp



### MAJOR MILESTONES

- Purchased the property in partnership with Carteret County in March 2020.
- Installed a living shoreline and nature trails on Coastal Federation and county properties in 2021.
- Developed conceptual plans for the Center.
- Launched a capital fundraising campaign, with over \$4 million raised.

Stay tuned for a ribbon-cutting for our nature trails and updates on other projects on site in 2022.

For more information, contact Sarah King at [sarahk@nccoast.org](mailto:sarahk@nccoast.org) or visit [nccoast.org/CoastalCenter](http://nccoast.org/CoastalCenter).

# WATER QUALITY

## COMMISSIONS EXPECTED TO ACT ON UPDATED COASTAL HABITAT PROTECTION PLAN



Bennet Mill Pond - Jared Lloyd

The 2021 Coastal Habitat Protection Plan (CHPP) and a set of stakeholder recommendations will go before the Marine Fisheries Commission, Coastal Resources Commission and Environmental Management Commission for a final vote in November.

Over a year in the making, the statewide plan offers key recommendations and actions to protect and restore coastal habitats critical to North Carolina's coastal fishery resources.

With algae blooms and stormwater runoff increasing, water quality is declining and negatively impacting coastal habitats such as seagrasses, marshes and oyster reefs. A major reason for these declines are landscape alterations like ditching, clearing, and paving. As a result, stormwater runoff is funneled into our estuaries after heavy rains. Scientists from the University of North Carolina Wilmington also point to increasing severe weather. Climate change is bringing more rain to North Carolina, which brings more pollutants into our estuaries, shocking our brackish and saltwater systems with freshwater.

The first CHPP was developed following passage of the 1997 Fisheries Reform Act. The act called for the development of a Coastal Habitat Protection Plan to identify threats and recommend management actions to protect and restore habitats critical to NC's coastal fishery resources. Past plans have made progress but more needs to be done with the increasing

intensity and frequency of rain events and landscape alterations.

The Coastal Federation worked with The Pew Charitable Trusts, state partners and a group of dedicated stakeholders to develop recommendations for an improved 2021 plan. The new draft focuses on ways to protect vital habitats using science, nature-based solutions, watershed planning, and stakeholder engagement. The draft plan update as well as the stakeholder recommendations bring to focus the importance of water quality as a lifeline to our coastal habitats and fisheries.

The plan must be approved by three state commissions before it can be implemented.



Marsh Stream: Buxton

## LIVING SHORELINES

### ENVIRO-FRIENDLY MATERIALS BEING TESTED FOR LIVING SHORELINE CONSTRUCTION



QuickReef™

There's no doubt the Coastal Federation has become the "go-to" organization for designing and installing living shorelines. Until now, the technology and materials used to build smaller scale residential projects were frequently limited to plastic mesh bags filled with recycled oyster shells. Now, a new patent-pending material developed by Restoration Systems, LLC, called QuickReef™ may help move us in an exciting, even more sustainable, direction for living shorelines in North Carolina.

QuickReef™, combines the aesthetics, functionality, and ecological benefits of an oyster shell bag and eliminates the use of plastic. It is made from a proprietary mixture of natural calcium carbonate materials, such as oyster shell and limestone marl, cemented together to form long bricks that stack along the shallow-water shorelines. The more sustainable QuickReef™ units resemble natural shorelines immediately upon installation, providing an ideal substrate for oyster recruitment.

The Coastal Federation and Restoration Systems are currently testing QuickReef™ at a living shoreline under construction at our future Center for Coastal Protection and Restoration on Bogue Sound in Carteret County. Several feet of living shoreline have already been constructed with the new product and the preliminary results are amazing.

"This is a big step for the Coastal Federation and is advancing the technology used to create living shorelines, making them even more environmentally sustainable," said Dr. Lexia Weaver, Coastal Scientist with the Coastal Federation.

In addition to the QuickReef™ units, the Coastal Federation is also testing biopolymer biodegradable mesh bags from BESE Ecosystem Restoration Products in the Netherlands and from Ketcham Supply in Massachusetts. The new products will be monitored monthly to determine their efficiency, resiliency, and ability to sustain new baby oysters.



BESE Bag

# MARINE DEBRIS

## ABANDONED BOATS ADD TO REMOVAL GOAL



As the Coastal Federation's marine debris removal work expands, northeast staff have worked tirelessly this fall to oversee the removal of derelict and abandoned boats in their region. The project began by targeting a few vessels in the waterways around Kitty Hawk Woods and expanded to other areas of the Albemarle-Pamlico estuary. The contracted crew, Moran Environmental Recovery, removed 20 abandoned boats, adding to the removal of 47 vessels in the central and southeast coast. Northeast vessel removal was funded through the National Oceanic and Atmospheric Administration.

Our efforts have led to the discovery of even more vessels littering our coastal waterways that need to be removed and calls for heightened attention to the importance of debris prevention along with removal. Learn more about the NC Marine Debris Action Plan: [nccoast.org/NCAActionPlan](http://nccoast.org/NCAActionPlan).

## BEST MANAGEMENT PRACTICES

After Hurricane Florence, treated lumber, floats, polystyrene and other debris were deposited in public trust waters, wetlands and islands along the coast. Aerial and visual observations showed significant and extensive damage to waterfront structures, particularly residential docks. While working to remove 1,914,000 pounds of marine debris coastwide, crews noted that 85% of the debris they were collecting was from these structures. This removal effort, along with completion of a study of existing regulations, building codes, practices, and technical

assistance, highlighted the pressing need for a comprehensive and targeted education and outreach campaign to reverse the trend of post-storm damage, loss and debris creation. The Coastal Federation, together with resource expert stakeholders, developed a set of best management practices for prevention, removal, and disposal of hurricane marine debris. These are contained within the project team's report, "Recommendations for Improved Marine Construction to reduce damage, losses, and marine debris resulting from storms in North Carolina", which can be found at [nccoast.org/marinedebris](http://nccoast.org/marinedebris).



# OYSTERS

## CEDAR ISLAND OYSTER SANCTUARY



Building Cedar Island Sanctuary - DMF

What's better than oysters? More oysters. That's why we're giving them a boost in Pamlico Sound, where natural oyster reefs were in decline. Oysters depend on each other to survive and thrive. They build intricate systems of living and dead shell reefs on which baby oysters, or spat, can attach and grow. The Coastal Federation partnered with the N.C. Division of Marine Fisheries and Stevens Towing to construct five new acres of oyster reef as part of the Senator Jean Preston Oyster Sanctuary Network.

With funding from the N.C. General Assembly and National Oceanic and Atmospheric Administration (NOAA) we used barges and heavy equipment to strategically place 18,000 tons of marl and crushed concrete in the Pamlico Sound to replicate the hard surface of natural oyster reefs and provide an anchor for spat. In time, the rock structures will be covered by new oysters that will reproduce and grow, mimicking the natural reefs that have been lost due to historic overharvest, habitat destruction, and disease.

This new five acre reef, known as the Cedar Island Oyster Sanctuary, adds to 380 acres of existing oyster sanctuary. We are pleased to report that this restoration partnership will continue in 2022 with funding secured from NOAA to support the construction of five more acres. A third round of funding is anticipated for 2023 which will complete this 15-acre reef. Once complete, the site will support at least 15 million oysters and filter up to

750 million gallons of water daily, or 1,000 Olympic-size swimming pools every day.

## SAVE THOSE SHELLS

Rather than tossing oyster shells in the trash, which is banned in North Carolina landfills, help spread the word about the importance of oyster shell recycling. The Coastal Federation has ramped up our recycling efforts to help get shell back in the sounds through the Recycling for Reefs Program which offers recycling sites up and down the coast. Recycled shells are used to build living shorelines and create oyster habitat. Go to [nccoast.org/shellrecycling](http://nccoast.org/shellrecycling).



Photo: Chris Hannant

# Oysters:

## North Carolina's Coastal Gems

by Leslie Vegas

Whether you enjoy the tasty culinary flair of oysters or not, the benefits of these shellfish such as filtering water and making habitat for other fish are why we love them! Our work is guided by the *North Carolina Oyster Blueprint: An Action Plan for Restoration and Protection* and the North Carolina Oyster Steering Committee. This ensures the benefits of oysters will endure by providing the leadership our state needs to protect and restore them. The results of the *Blueprint* are thanks to the collaboration between a diverse network of stakeholders that represent watermen, oyster growers, seafood dealers, scientists, government agencies, and oyster lovers.

### *An Eventful Past*

North Carolina is having an oysters "moment" but the state's love for oysters isn't new. Oysters have been harvested here since people arrived. Indigenous folks feasted on oysters and the shellfish became a staple in early colonial culture. However, wild oyster populations are not unlimited. After the Civil War, the monetary value and demand for oysters rose leading to the construction of shucking houses. This unregulated enthusiasm led to the North Carolina Oyster War of 1891. Oystermen from Maryland and Virginia traveled to North Carolina to harvest after depleting their own populations. Before, harvesting had always been a small production that used tongs on small reefs in shallow water. The new oystermen, however, brought with them the ability to dredge oysters from deeper waters, a practice that would impact oyster management for years to come.

Though no casualties were reported during these wars, boats from Virginia were armed. Oyster pirates would

resort to violence to obtain this valuable shellfish. At their best, Virginia harvesters removed 7,000 bushels of oysters weekly.

The Oyster War was not typical, but it did prompt our General Assembly to protect the state's oysters. Legislation limited sales to in-state markets and placed a ban on dredging. This ban ended within five years, but harvest remained restricted to state residents. Following this, the state's highest harvest was 806,363 bushels, or 5.8 million pounds, in 1902.

### *Declining Stock*

The value of oysters in the water wasn't yet recognized, but their value as food was. After the Oyster War, wild oyster harvest increased exponentially. Simultaneously, hurricanes were decimating populations each time they seemed to bounce back. Polluted waters from drainage and development added even more stress.



Approximately 80 percent of North Carolina's oysters were lost in the 20th century. Oyster landings were the lowest in the late 1990s. Only 44,613 bushels were harvested in 1997. Several regulations, including size minimums and harvest limits, were put into place.

Protecting this precious, but environmentally vulnerable, resource can't be done through harvest regulations alone. How do we protect what's left and increase populations? Why should we try?

### *More Than a Tasty Treat*

Even if you don't appreciate the unique taste of our bivalve friends, they still provide you with benefits!

A single oyster is capable of filtering up to 50 gallons, or a small bathtub, of water per day. When multiplied by thousands, or even millions, it's truly astounding how important oysters are in providing naturally filtered clean water for swimming, fishing, and productive estuaries that sustain fisheries.

When it comes to other organisms, clean water isn't the only thing oysters provide. Oysters grow in reef form creating three-dimensional structures with lots of surface area, nooks, and crannies for other animals, like blue crab, shrimp, flounder, snapper, and sheepshead to use. These reefs provide safety from predators, a space to reproduce, and a buffet for larger animals making them a critical piece of the estuarine system. American estuaries provide habitat for 75% of America's commercial fish catch and between 80-90% of America's recreational fishing catch. Half of the juvenile fish habitat, from Maine to Florida, is represented by the N.C. estuary system.

Last but not least, oyster reefs are a natural barrier that protects coastal land from erosion. Oyster reefs allow high energy waves to break along their shells, instead of on soft, vulnerable land. Oysters are critical to the overall resiliency of North Carolina's coastal shoreline.

This is not an exhaustive list of all the wonderful things that oysters do for us; it's only the beginning. However, these are the key benefits that have informed the federation's work to support and protect present and future oyster populations.

## *Accomplishments and Solutions for the Future*



The first edition of the *North Carolina Oyster Blueprint* was developed in 2003, and is currently in its fourth edition. The leadership provided by the Coastal Federation and fellow collaborators generated a list of successes to make any oyster lover proud.

Some major accomplishments that have occurred as a result of the Coastal Federation's involvement in the Blueprint over the past five years include the following:

**Gained national recognition for North Carolina's oyster work** when the state joined NOAA's National Shellfish Initiative in 2018 becoming the sixth in the country and first in the southeast. This program demonstrates North Carolina's dedication to grow and balance aquaculture and wild oyster restoration efforts. Furthermore, it demonstrates NOAA's commitment to provide federal assistance in managing and promoting these efforts.

**Documented that habitat restoration efforts are economic drivers.** Three studies conducted by Research Triangle Institute International in collaboration with state and non-profit partners clearly demonstrated that oyster restoration and growing are good for both the economy and environment. Every dollar invested yields \$4.05 in benefits. And every million dollars invested yields 21 jobs.

**Advances in the shellfish aquaculture industry,** in the past five years, grew lease application ten fold and industry value five fold. This industry provides economic development opportunities along the coast and is, obviously, growing rapidly. Growing shellfish can be done in many ways with varying degrees of intensive culture. Private leases ensure consistent product for customers, while providing increased filtration and habitat in the sound, and unique tourism opportunities along the coast.

**Restored new oyster habitat for both environmental benefits and harvest opportunities.** The state, Coastal Federation and partners have built hundreds of acres of oyster reef since the first Blueprint. This includes 380 acres of oyster sanctuary in Pamlico Sound and over 500 acres of harvestable (cultch reefs) throughout coastal waters. Sanctuaries serve as an insurance policy for wild oyster populations. They are strategically placed to provide reliable oyster larvae to reseed the wild population and cultch planted areas. Recent research indicates that as a restoration strategy, oyster sanctuaries support more oysters and larger oysters than other reef types. They contribute nearly 20% of the oyster population in Pamlico Sound but occupy only six percent of oyster reefs. Sanctuaries are closed to harvest but open to hook-and-line fishing.



**Fostered the protection and restoration of water quality.** Through developing more than a dozen coastal watershed restoration plans and implementing water quality improvement projects which includes restoring nearly 8,000 acres of wetland, the protection and restoration of shellfishing waters continues to be a priority.

Former Secretary of the N.C. Department of Environmental Quality, and current EPA Administrator Michael Regan says, in support of the North Carolina Oyster Blueprint, "I have witnessed first hand both the environmental and economic benefits oysters have on our coastal communities."

## *What can YOU Do?*

Recycle your oyster shells! Shell recycling is the voluntary collection of shell by restaurants, shucking houses and the public that allows the shell to be used in future oyster reef building activities.



The Coastal Federation's Recycle for Reefs program provides an organized way to collect the shells giving both restaurants and private consumers a chance to return their shells to the water. Oyster shells are a valuable resource in building new oyster reefs. In order to successfully reproduce, oysters need a hard substrate to attach. When oysters are harvested and their shells aren't returned to the water, they struggle to find a place to grow. With the contribution of your shells, you can provide a secure home for future generations of oysters.

If you like what's happening with oysters, write emails or letters of thanks to your elected representatives in the North Carolina General Assembly. They have supported this work with new laws and continued funding. Give them a big "thanks" for their support for oysters.



# North Carolina Coastal Federation

Working Together for a Healthy Coast

3609 N.C. 24 (Ocean)  
Newport, NC 28570

ADDRESS SERVICE REQUESTED

Non-Profit Org.  
**US Postage  
PAID**  
Permit No. 12  
Newport, NC



[www.nccoast.org](http://www.nccoast.org)

© 2021 North Carolina Coastal Federation ♻️ Printed with soy inks on 100% PCW recycled paper at Barefoot Press, Raleigh, NC. Please recycle this newsletter.

## Holiday Giving Guide

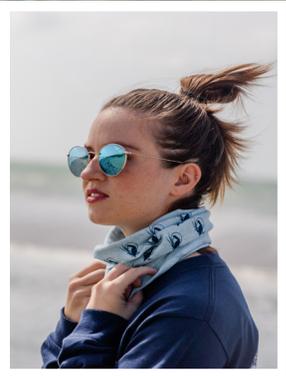
Gifts with purpose for everyone on your list  
*Order by December 12*



### Gift Membership

When you give a gift membership, you can introduce a friend to coastal conservation and send something meaningful to unwrap.

[nccoast.org/giftmember2021](http://nccoast.org/giftmember2021)



### Become a Sustaining Member

Sustaining members create impacts that ripple throughout our organization. As a thank you for upgrading your membership to a sustaining level you will receive a complimentary pack of native Black Eyed Susan seed bombs in a muslin pouch.

[nccoast.org/sustainer](http://nccoast.org/sustainer)



### Adopt an Oyster

Give oysters a bright future in North Carolina waters! This Coastal Federation oyster knife is perfect for the seafood lover in your life.

[nccoast.org/myoyster](http://nccoast.org/myoyster)



### Support the coast while you shop!

1. Sign into Amazon at [smile.amazon.com](http://smile.amazon.com) on your browser or mobile app
2. Add the North Carolina Coastal Federation as your charity
3. Shop and Support the coast



### Don't forget:

You can also support the coast this holiday season with charitable gifts from an IRA or gift of stock!  
Please contact Sarah King at [sarahk@nccoast.org](mailto:sarahk@nccoast.org) for updated instructions.