

OUR COAST

North Carolina Coastal Federation | NCCOAST.ORG | FALL 2018

COASTAL RECOVERY

Living Shorelines Stand Up to Hurricane Florence,
Coast Scattered with Dangerous Debris



North Carolina
Coastal Federation
Working Together for a Healthy Coast

**Oyster Initiative Elevates
North Carolina Restoration Efforts**

Perspective from the Northeast Eyewall of Hurricane Florence



Dear Friend of the Coast,

Hurricane Florence came a-calling on Sept. 14 when it hit Ocean, North Carolina where I live and work. My initial plan was to retreat from my waterfront home to our nearby sturdy brick office building when the storm was projected to hit us with Category 4 winds. When it calmed down to a strong Category 2 storm, I decided to ride it out at my

home. It's been there since 1957 and has withstood many storms.

My home is 18 feet above sea level and several hundred feet back from Bogue Sound so I felt pretty confident that we'd weather this storm okay.

Like many things these days, relying on what's happened in the past isn't a good prediction of what's going to happen in the future. This storm had its own unique personality that made it a lot different from Fran, Floyd, Matthew and other storms that have hit us in the past two decades. First of all, it moved from north to south—that is if you consider three miles per hour forward "movement." This gave us hurricane force winds out of a northeasterly direction for about 24 hours. Then, there was counter-clockwise movement of the wind as it gradually shifted direction to blow from the south.

Like much of the central and southeast coast, Ocean, North Carolina was exposed to the northeast quadrant of this storm for most of a day. As the storm churned south, we ended up being on the right, or more accurately the wrong, side of its northeast eyewall. This part of the storm had its most intense winds and they spawned frequent tornado activity.

As is very typical with a slow moving and powerful hurricane, the storm surge eventually flooded our area as the wind shifted to a more southerly direction. My yard was covered in a 10-foot storm surge that remained there for most of a day. The surging water wreaked havoc on many docks and bulkheads. The broken dock lumber and poles then became battering rams, knocking over massive live oak trees and anything else that stood in their way.

Heavy rainfall is typical with hurricanes. We had approximately 30 inches of rainfall over a period of a few days, which is more than half of the rainfall that typically falls in an entire year. This caused severe flooding even outside of floodplains. Groundwater rose to the surface and rain then pooled in any type of land depression. When it overflowed from these ponds, it ran downslope like raging streams and found its way into buildings that were not built high enough off the ground.

In the end, we at the Coastal Federation were fairly fortunate and suffered minor property damage compared to the losses of others.

With best regards,

A handwritten signature in black ink that reads 'Todd Miller'.

—Todd Miller, Executive Director

What lessons can we learn from this storm?

Wind speed of a hurricane does not tell you how dangerous it will be.

The storm's speed and direction of forward movement is just as important as your location relative to the eye of the storm. The worst damage often occurs on the right side of the eye.

Flooding can occur where it has never happened before.

Property elevation and drainage make a big difference in how your property will react to flooding. Any structure located in a flood plain is vulnerable. However, even on higher elevation properties, the

way stormwater collects and drains will determine how much damage it can cause.

Living shorelines work.

Early observations are that many bulkheads and seawalls have failed, while living shoreline erosion control methods worked quite well. Armoring the estuarine shoreline has resulted in very expensive structural failures of hardened structures.

No swimming until the water is safe for recreation.

The water quality impacts from the storm were severe. Precautionary advisories issued by public health officials encouraging people not to swim and stay out of the water didn't work. We need loud and clear warnings telling people to stay out of the

water until it's tested and determined to be safe.

Protect nature and it will protect you.

Environmental protection matters. Good environmental design that maintains the functionality of the natural landscape and protects natural hydrology makes land uses much more resilient to storm damage.

Design for extreme events.

Design your homes, docks and other land uses to handle extreme weather events. These terrible storms are no longer rare occurrences. Because of our warming climate, we will have longer, more persistent storms that are stronger and bring more flooding.

THE COASTAL FEDERATION'S HURRICANE FLORENCE RECOVERY PROPOSALS

Submitted to Gov. Roy Cooper on Sept. 26, 2018

Support approval of a new U.S. Army Corps of Engineers Living Shorelines General Permit (See page 7)

Gov. Cooper has been asked to request that the permit be immediately issued by the Corps. This permit will make living shorelines easier to use in Florence recovery efforts and explore strategies to immediately replace the state's existing living shorelines general permit with the Corps' permit.

Fund coastal debris cleanup

A great deal of storm debris from destroyed docks and other sources is scattered over North Carolina's coastal marshes and waterways. North Carolina should provide resources and make it a priority to remove this debris from less populated areas of our coast.

Inventory and remove destroyed docks and other navigation hazards

The N.C. Department of Environmental Quality (NCDEQ) should work with the Corps to seek Federal Emergency Management Agency funding to survey dock damage, notify property owners about the need for cleanup and remove debris, if necessary.



Warn the public about the health risks of swimming in North Carolina coastal waters

Gov. Cooper, Emergency Management officials and state public health officials should make public statements warning people to stay out of coastal waters impacted by hurricanes until they are tested and found to be safe for recreational uses. Following Florence, there was very little public education warning people to avoid polluted runoff in flood waters and the oceans and sounds.

Improve community-based coastal stormwater management

Many coastal communities experienced significant flooding because stormwater control infrastructure was not sufficient.

The NCDEQ should work with North Carolina Emergency Management and local governments to ensure that stormwater systems are sufficient to manage both the water quality and water quantity challenges posed by big storms.

Issue an executive order requiring all new state construction to be designed to withstand extreme events whenever practicable

The state should lead by example and ensure that all new state construction is built to withstand extreme events whenever practicable. Similar standards have already been approved by the U.S. Department of Defense. These standards should utilize living shorelines and low-impact development.



North Carolina
Coastal Federation
Working Together for a Healthy Coast

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BOARD MEMBER, BILL SMYTH, RESIGNS

Bill Smyth recently resigned from his position as a Coastal Federation board member and traded the coast for the mountains of Asheville, North Carolina. Bill is a retired Episcopal priest who graciously led the Coastal Federation's 2015 dedication of the Manns Harbor Marina, the first historic state recreational and commercial marina located in the Outer Banks.

"We ask your blessing on the Manns Harbor Marina and Access Area," read Bill during the dedication. "We give thanks for those whose vision and labor has restored this working waterfront. Send us out from this place renewed in gratitude for our inlets and sounds, creeks and rivers and strengthened to promote their health and preservation."

Bill is a committed coastal advocate and will be missed by his fellow board members and Coastal Federation staff.

Bill was very active with our marine debris removal programs and oyster restoration projects and served on the Northeast Advisory Committee.

Sam Bland off to new adventures

After nine years of working on coastal restoration and education projects and sharing his considerable knowledge with Coastal Federation staff and volunteers, Sam Bland is taking off for his next adventure.

Bland, former superintendent at Hammocks Beach State Park, has been an invaluable Coastal Federation supporter for 20 years, first as a volunteer and member of the Board of Directors, and for the last nine years, as a dedicated staff member. In 2009, he received a Pelican Award and the Order of the Long Leaf Pine award, the state's highest civilian honor.

"Whenever we had a question about coastal birds, wildlife or even folklore, Sam was our go-to guy for answers," said Todd Miller, executive director of the Coastal Federation. "We are going to miss having such easy access to his vast knowledge about our coast as well as his good sense of humor."

Bland grew up spending summers in Carteret County on the coast and his love of wildlife and natural places inspired his career to protect them. Bland has spread that passion by writing stories for *Coastal Review Online*, sharing his wildlife and nature photography and helping with the Coastal Federation's education programs.

"I feel that's one of the — maybe the most — important job of the Coastal Federation is the education programs that we bring to the public for them to understand what we're doing and why we're doing it," said Bland.

He also enjoyed seeing the totality of the restoration projects he worked on, particularly at Jones Island. The living shoreline projects there helped reduce erosion and the banks of the island have transformed from sheer drop-offs with bare sand to areas of marsh grass and protective shrubs on the upper slopes.

Bland will soon be embarking on a series of trips, seeing and photographing more wild places beyond the North Carolina coast such as the Galapagos Islands, Yellowstone National Park, Alaska and Africa.

Bland's photos can be viewed on Facebook at [Sam Bland Wildlife Photography](#) and on Instagram at [@samblandphotography](#).



LESLIE VEGAS JOINS THE COASTAL FEDERATION STAFF

Leslie Vegas joined the Coastal Federation's northeast staff in August. As a coastal specialist, she works to engage partners in our oyster restoration and living shoreline efforts along the Outer Banks. She graduated from the University of Maryland in 2013 with a Bachelor of Science degree in Marine and Coastal Science and Policy. Before joining the

Coastal Federation, she worked at the North Carolina Aquarium on Roanoke Island for four years in animal husbandry, sea turtle rehabilitation and education. She also manages a small, independent marine debris initiative, working with local businesses and visitors to minimize the usage of single use plastics on the Outer Banks.



THANK YOU TO OUR VOLUNTEERS!

From marsh grass plantings to coastal cleanups to oyster bagging events, we would not be able to reach our goals without the hard work of volunteers like you. We always look forward to spending time with our volunteers who never fail to remind us why the work we do is so important. Thank you for being so passionate and dedicating your time to help us keep the North Carolina coast healthy and beautiful for everyone.



Visit nccoast.org/events to learn more about upcoming events and volunteer opportunities.

2018 AMERICORPS MEMBERS →

We would also like to thank our 2018 AmeriCorps Members, Kristin Gibson, Reilly Kelly and Kate Conery. Our AmeriCorps Members collectively served over 5,000 hours at our three offices. Their partnership allows us to share our mission with others and develop future leaders in conservation.



HURRICANE FLORENCE RECOVERY EFFORTS

The Coastal Federation would like to extend a heartfelt thank you to the many volunteers, agencies and organizations who helped with Hurricane Florence relief. Recovering from this horrendous storm will continue for many months to come, but communities coming together is what makes recovery possible. Thank you for your kindness and tireless efforts for our coast and state.



GOAL UPDATES

The Coastal Federation focuses on five key goals to prioritize our work and effectively keep our coast healthy and beautiful. We collaborate with communities; local, state and federal agencies; academia and others to get the job done. With dedicated partners, we improve coastal water quality, create natural and productive estuarine shorelines, promote oyster restoration and mariculture, ensure effective coastal management practices and reduce marine debris along our coast. Our end result – a strong coastal economy that supports local fisheries, coastal habitats and tourism. Our work does not come without challenges, especially in the aftermath of Hurricane Florence. Here is an update on our most recent efforts.

GOAL

Coastal water quality that supports fishing, swimming and a vibrant coastal economy.

Floodwater pumping confirms need for watershed restoration plan

Following Hurricane Florence, several Bogue Banks beach towns were forced to pump the floodwaters plaguing their communities in order to clear streets and improve septic tank function. Officials in Pine Knoll Shores had to pump stormwater into their golf course ponds and into the canal that flows to the ocean.



Before the storm dumped 30 inches of rain on some parts of the coast, Pine Knoll Shores, the Coastal Federation and the Eastern Carolina Council had teamed up with the University of North Carolina Wilmington's Environmental Science Department to begin the preparation of a watershed restoration plan to deal with polluted stormwater runoff. This timely effort was underway

before Hurricane Florence and when complete, the plan will include a series of strategies to help the town head off some of their stormwater issues.

The plan will focus primarily on water quality issues in the town but as it centers on reducing the volume of runoff, it will in turn address minor flooding issues as well.

Project partners have identified town waters that do not meet their designated use as shellfish growing areas and are impaired by bacteria. As the natural hydrology of the area has been altered by roads, buildings and parking lots, there has been an increase in stormwater runoff that carries pollutants straight to surface waters.

The partners are currently working together to develop a plan that will include goals and management strategies for reducing the volume of stormwater runoff and attempt to replicate the original water quality conditions. Having a plan in place will better position the town for grant funding to install stormwater reduction projects.

New Swansboro parking lot installed

While most parking lots are designed to get the rain off-site as quickly as possible, the Town of Swansboro and the Coastal Federation partnered to install a parking lot between the Town Hall and the public safety building that actually lets stormwater soak into the ground.



This is the first of several projects planned to help implement the town's watershed restoration plan with funding from the Environmental Protection Agency Section 319 grant program. The restoration plan, which was approved in 2017, sets a framework for reducing runoff targeting the Halls Creek, Ward/Hawkins Creek, Foster Creek, Hammocks and Historic Creek watersheds.

"This project pairs a major capital improvement project with the town's dedication to improving water quality in the White Oak River," said Bree Charron, coastal specialist with the Coastal Federation. "We're excited to help the town showcase how development, like the much needed parking in Swansboro, can be accomplished without increasing stormwater loads to nearby waters. We do this by giving it the space to infiltrate."

The parking lot fared well during Hurricane Florence despite the inundation of 34 inches of rain in the coastal community.

➔ [Learn more about stormwater runoff reduction projects: nccoast.org/stormwater](https://nccoast.org/stormwater)

GOAL

Natural and productive estuarine shorelines.

Living shorelines weather Hurricane Florence and other storms

Hurricane Florence crushed docks along the coast, scattering their remains like toothpicks along the shore. The soil behind many bulkheads was scoured out and many of these hard structures failed. Living shorelines, on the other hand, continue to hold up to storms time and time again. Like with Hurricanes Irene and Matthew, the Coastal Federation's living shoreline projects weathered the furious waves and winds of Florence, outperforming more traditional shoreline management techniques like bulkheads.

In 2011, following Hurricane Irene, Dr. Rachel Gittman, then with the UNC Institute of Marine Sciences in Morehead City, conducted an assessment of the damage to different types of stabilized shorelines. "What we found was that bulkheads by far had the most damage," she said.

Following this year's storm, Coastal Federation Coastal Scientist, Dr. Lexia Weaver, and staff did a similar survey of their living shoreline projects. What they learned was right in line with Gittman's review seven years before; living shorelines outperform hardened shorelines in storms. While the results are preliminary and have not been completed yet coastwide, it is clear that allowing wind and waves to roll across a more natural landscape works better than having intense wave energy, that has nowhere to go, crash into and move over the structure, causing scouring and tearing out the marsh as the waves go back out.

One of the Coastal Federation's living shoreline projects was built next to a bulkhead at Camp Albemarle in Carteret County. Photos of both structures were



Above: Bulkhead after Hurricane Florence; Left: Living shoreline after Hurricane Florence

taken at the same time several days after Hurricane Florence. The bulkhead experienced severe scouring and some structural damage while the living shoreline was untouched.

Living shorelines have proven to be a longer-term, less-expensive option that reduces erosion while maintaining or restoring the shoreline's natural marsh, which is why the Coastal Federation recommends using this method.

Coastal Federation urges U.S. Army Corps of Engineers to adopt Living Shoreline Permit

In late September, the Coastal Federation asked the U.S. Army Corps of Engineers to adopt a new general permit for living shorelines to help waterfront property owners recover from Hurricane Florence.

"Living shorelines are an effective and more natural erosion control strategy that use plants and small structures to help stabilize estuarine shorelines," said Todd Miller, executive director of the Coastal Federation. "Many people with eroded shorelines and destroyed bulkheads would benefit from the issuance of this permit."

Earlier in September, before Hurricane Florence was even formed, the Wilmington District of the U.S. Army Corps of Engineers began soliciting public comments regarding a general permit for living shorelines. The Coastal Federation urged the Corps to immediately adopt the permit in order to help waterfront property owners address erosion issues caused by Hurricane Florence. The permit provides a more streamlined regulatory process for installing living shorelines.

➔ [Learn more: nccoast.org/livingshorelines](https://nccoast.org/livingshorelines)

The National Living Shorelines Workshop

The third annual National Living Shorelines Technology Transfer Workshop will be held in the fall of 2019 in North Carolina. The event will be co-hosted by the Coastal Federation and Restore America's Estuaries. Look for more in our winter 2019 issue of *Our Coast*.

GOAL

Oysters that thrive and support vibrant fisheries and habitat, good water quality and a strong coastal economy.

North Carolina launches state Shellfish Initiative

In August, North Carolina became the first state in the Southeast and the sixth in the nation to sign on to the National Oceanic and Atmospheric Administration's (NOAA) National Shellfish Initiative.



Our state is on its way to becoming the 'Napa Valley of Oysters,' a term coined by author, Rowan Jacobsen. By joining this effort, North Carolina acknowledges the importance of shellfish to its economy, cultural heritage and environmental health.

The Initiative aims to accomplish four goals: create jobs, protect water quality, protect shellfish health and ensure sustainable management. The Initiative will support both the restoration of wild oysters and the smart growth of the shellfish aquaculture industry. By joining this Initiative, North Carolina will be more competitive for federal funding and will be able to leverage existing partnerships better.

Having national attention on North Carolina's oyster industry is more important than ever since Hurricane Florence severely damaged existing oyster

grower's operations. The industry that was making such headway to become a leading coastal industry was dealt a powerful blow by the storm.

"Our partnership brings national attention to the state of North Carolina," said Michael Regan, secretary of the N.C. Department of Environmental Quality.

Regan spoke at the Shellfish Initiative press event on Aug. 2 along with Will Best, special projects coordinator at the N.C. Department of Commerce; Sen. Norm Sanderson; Dr. Ken Riley, marine ecologist at NOAA; Todd Miller, executive director of the Coastal Federation; Steve Murphey, director of the N.C. Division of Marine Fisheries; Dr. Susan White, executive director of N.C. Sea Grant; Dr. Chuck Weirich of N.C. Sea Grant; Dave Cerino from Carteret Community College; and Ryan Bethea, owner of Oysters Carolina. Erin Fleckenstein, coastal scientist with the Coastal Federation, made introductions and organized the event.

➔ [Learn more: nccoast.org/oysters](http://nccoast.org/oysters)

Swan Island receives funding for final year of construction

The NOAA Community-based Restoration Program awarded \$950,000 to the Coastal Federation and partners for continued work on the Swan Island Oyster Sanctuary, part of the Sen. Jean Preston Oyster Sanctuary Network. The North Carolina General Assembly appropriated matching funds for the project through the North

Carolina Division of Marine Fisheries' sanctuary and cultch planting budget.

Located near the mouth of the Neuse River, the Swan Island Sanctuary will provide habitat and attract native oyster larvae. Although harvest of oysters in sanctuaries is prohibited, their eggs flow to surrounding waters and help increase wild oyster populations in nearby waters.

At the end of June 2018, project partners and a private contractor, Stevens Towing Company, Inc., completed the second phase of the Swan Island Sanctuary by adding 10 additional acres of oyster reef.

The third and final phase of construction will take place in 2019, completing the 40-acre sanctuary that provides habitat for commercially and recreationally important fish and filters 2 billion gallons of water daily. This project employed 56 people from North Carolina during its first and second phases.

The Swan Island project is part of the Coastal Federation's 50 Million Oyster Initiative which aims to have 50 million oysters in North Carolina waters by 2020.



50 Million Oyster Initiative

A single oyster can filter up to 50 gallons of water per day. If you multiple that by 50 million that equals 2.5 billion gallons of clean water each day. The Coastal Federation's 50 Million Oyster Initiative plans to restore 50 million oysters to North Carolina waters by 2020. Projects like the Swan Island Oyster Sanctuary are helping us meet this goal. So far, the Coastal Federation has restored 29 acres of oyster reef through this initiative.

➔ [Learn more: nccoast.org/50-million-oyster](http://nccoast.org/50-million-oyster)

GenX still making headlines

In August, the Environmental Protection Agency (EPA) hosted a community meeting in Fayetteville to discuss the proliferation of man-made industrial chemicals in our state waterways, including GenX.



Photo by Alan Cradick

GenX was first reported in June 2017 by Wilmington's *StarNews* and has since raised concerns across North Carolina. The article reported that GenX has been contaminating the drinking water of the Cape Fear Public Utility Authority and the Cape Fear River for nearly 40 years. Since the initial report, GenX and other emerging compounds have been discovered in the environment near a chemical manufacturing plant called Chemours. Chemours produces these compounds to manufacture Teflon.

The EPA meeting included presentations from federal, state and local agencies, followed by a five-hour listening session, allowing community members to speak up and share how GenX has affected them.

Kerri Allen, coastal advocate, represented the Coastal Federation on the "Community Panel," which included a joint presentation given by the Cape Fear Riverkeeper, Kemp Burdette, with Cape Fear River Watch. Alongside them were representatives from the Sierra Club, the North Carolina Conservation Network and the Southern Environmental Law Center.

The EPA is expected to release a plan later this year to address these chemicals.

➔ [Learn more: nccoast.org/genx](https://nccoast.org/genx)

The Coastal Federation opposes the offshore Well Control Rule change

The Coastal Federation signed on to a comment letter written by the Southern Environmental Law Center opposing proposed federal rule changes that would remove the requirement for blowout prevention devices on offshore oil wells. More stringent rules were put into place after the Deepwater Horizon spill, the biggest oil spill in U.S. history.

The existing rules require the use of blowout preventers at well-heads that are capable of stopping an oil spill in emergencies. Since the adoption of this rule, the number of offshore drilling incidents resulting in significant oil spills has dropped to zero.

Earlier this year, the Trump administration announced its plan to weaken these rules in order to cut costs for the oil industry.

These proposed changes would also lift the requirement to have a third party inspector be certified by the Bureau of Safety and Environmental Enforcement. These changes will decrease the overall safety precautions and impact various drilling techniques.

The Coastal Federation opposes the proposed rule changes. The lack of effective inspections and poorly designed equipment were major factors that resulted in the massive Deepwater Horizon spill. The existing safeguards remain a wise investment to protect our coastal habitats and fisheries and should not be watered down.

➔ [Learn more: nccoast.org/oil](https://nccoast.org/oil)

If you are interested in reading the signed comment letter written by the Southern Environmental Law Center, visit nccoast.org/whats-new



Photo by Mike Lento

Offshore drilling plans to be announced soon

At the beginning of the year, the White House announced the draft 2019-2024 National Outer Continental Shelf Oil and Gas Leasing Program from the Bureau of Ocean Energy Management (BOEM). The proposed plan is for oil and gas development around the United States Outer Continental Shelf, including the North Carolina coast.

This proposed plan could open nearly all U.S. coastal waters to offshore drilling to within a few miles of the coast. In March, the Coastal Federation gathered more than 500 people and attended the BOEM public information meeting on the draft plan in Raleigh. The public gathered to make signs and hold a rally that was hosted by the Don't Drill N.C. Coalition. Several organization spoke about the dangers of offshore drilling and its potential impact on the North Carolina coast.

Offshore drilling puts the coastal environment and economy at risk. In the event of an oil spill, coastal tourism and commercial fishing would be severely affected.

BOEM is currently drafting their revised plan that should be available for public comment by the end of the year. BOEM's proposed plan and the draft Programmatic Environmental Impact Statement will be completed at the end of 2018.

➔ [Learn more: nccoast.org/oil](https://nccoast.org/oil)

North Carolina Marine Debris Action Plan

Marine debris from discarded cigarettes and plastic bags and bottles to larger debris like wood and tires litters our beaches and coastal marshes. Hurricane Florence intensified the problem by scattering storm debris like furniture, personal belongings and docks along our coast. As the problem of marine debris has escalated, so has the need for a comprehensive plan to address it so that it can be prevented as much as possible.

The Coastal Federation, N.C. Sea Grant, Keep Onslow Beautiful and the N.C. Coastal Reserve are finalizing a draft North Carolina Marine Debris Action Plan. The partners will unveil the plan during the sixth annual North Carolina Marine Debris Symposium in early 2019.

The North Carolina Marine Debris Action Plan will include strategies for preventing debris, debris removal, education and outreach. It will focus on managing traditional marine debris and abandoned and derelict vessels and fishing gear.

Plan partners recently released *The State of Marine Debris in North Carolina: An Assessment of Prevention and Removal Efforts*. This assessment describes the problem and current management of marine debris in North Carolina. The draft plan is based on findings from the assessment.

Don't burn pressure-treated wood

From Ocracoke to Brunswick County, Hurricane Florence littered our coast with huge piles of pressure-treated lumber and poles from destroyed docks, walkways and bulkheads. This debris is everywhere along our ocean and estuarine shorelines and in some places it is piled several feet high. Some waterfront property owners are tempted to burn the wood in place rather than moving this very heavy and tangled



mess to the curb. Be warned, burning this wood is illegal in North Carolina because of the dangers the ash and smoke pose to your health as well as the coastal environment. Instead, it must be taken to an approved construction debris disposal site.

Incineration of treated wood does not destroy the arsenic and other chemicals it contains. Although wood with chromated-copper-arsenate (CCA) was banned from retail markets in 2003, many of our coastal constructions still contain these harmful chemicals. The *Journal of the American Medical Association* reported on a family that burned CCA in a wood stove for winter heating. Their hair fell out, all family members suffered severe, recurring nosebleeds, extreme fatigue and debilitating headaches. The parents complained about "blacking out" for periods of several hours, followed by long periods of extreme disorientation. Both children suffered frequent seizures. The symptoms were finally traced to breathing minute amounts of arsenic laden dust. (JAMA, 1984).

Burning treated lumber also introduces these chemicals directly into the coastal environment, creating hazards for fish and wildlife.

Upon hearing about plans by some property owners to burn this wood, the

Coastal Federation issued a press release warning of the hazards. The Coastal Federation also contacted the N.C. Division of Air Quality to request that it amplify its warnings about the public health and environmental hazards of burning pressure-treated lumber.

Microplastics and you

One of the Coastal Federation's Stanback Coastal Policy Interns, B Stevens, researched microplastics over the summer. Stevens is a graduate student at Duke University. The focus of Stevens' work was to discover the primary sources of microplastics and determine where they eventually end up. The results may surprise you.

According to Stevens' report, microplastics are small plastic particles that are less than 5 millimeters in diameter and can easily make their way through water filtration systems like your washing machine at home. When thinking of microplastics, consumers commonly think about microbeads which are found in face washes and toothpaste. Although these microbeads are banned, there are many other sources of microplastic pollution such as plastic-based paints, microfibers found in most clothing, car tires and even cleaning products. Consumers release about 2.4 milligrams of microplastics a day into the environment. In turn, there are about 10 microplastic particles consumed in every liter of water, both bottled and from the tap.

Microplastics and chemicals associated with them can negatively impact marine life, water quality and human health.

While it is difficult to remove microplastics from drinking water sources, there are some at home solutions that are both efficient and affordable for consumers. Solutions range from faucet filters to washing machine accessories and filters that help remove microplastics from synthetic clothing.

➔ [Learn more about ways to remove microplastics from your home: nccoast.org/marinedebris.](https://nccoast.org/marinedebris)

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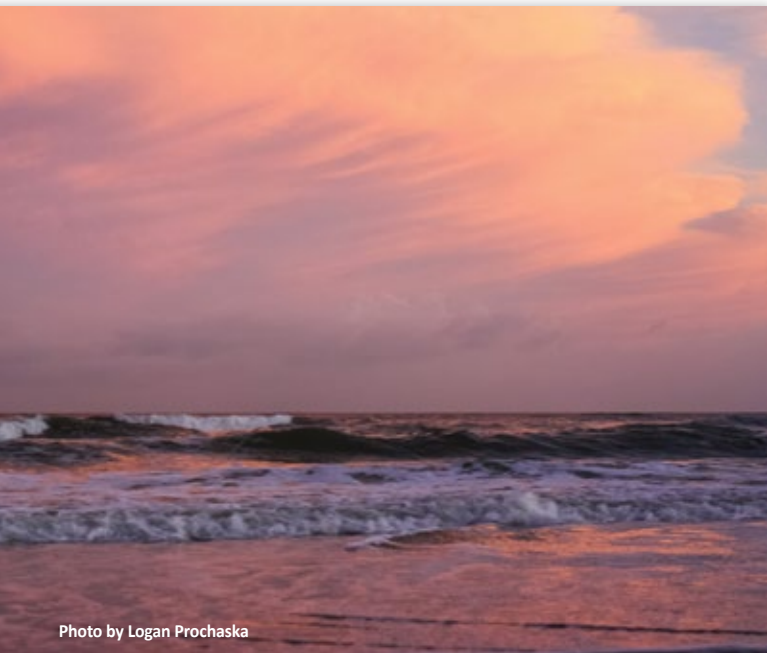


Photo by Logan Prochaska

Hop on board — it's all hands on deck to protect the coast.

To join or renew your annual membership, visit nccoast.org/membership.

You can also renew by mailing a check to 3609 N.C. 24 (Ocean), Newport, NC 28570.

Your membership helps keep our coastal waters clean and safe for boating, fishing and swimming.

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