We the Water

A North Carolina Coast Paddling Initiative

DAY 1: Wednesday, September 14, 2022
Sunset Beach to Southport ~31 miles

Bird Island Coastal Reserve

In 1992 the owner of Bird Island wanted to build a bridge over Mad Inlet to Sunset Beach to provide access to the Island, sparking the formation of the citizen-based group, the Bird Island Preservation Society. In partnership with the NC Coastal Federation, Audubon NC, and the NC Land Trust, the Society worked to preserve the land; and in 2002 with funds from the NC Clean Water Management Trust Fun, Natural Heritage Trust Fund and the North Carolina Department of Transportation, the State purchased the island and deemed it part of the North Carolina Division of Coastal Management's Coastal Reserve Program.

Sunset Beach Living Shoreline

A project beginning in 2018 to restore around 0.2 acres of shoreline was completed in 2019 by 200 volunteers featuring a 100 ft sill made of oyster domes and a 60 ft sill made of oyster bags. The marsh area in the higher portion of the living shoreline was planted with *Spartina alterniflora* and *Spartina patens* to encourage further stabilization of the shoreline and growth of the marsh.

Stop at Holden Beach

Holden Beach

Smart coastal management decisions - on April 17th, 2018, the town of Holden Beach revoked its application for a terminal groin on the east end of its beach. Using hardened structures like terminal groins as a means of erosion control is costly, and states that have used these structures are now dealing with unintended erosion and degraded natural beaches and habitat. North Carolina's beaches and inlets are some of our coast's most valuable environmental and economic assets. Our ability to use the beaches and inlets is a basic public trust right that we all share. We continue to evaluate constructed terminal groins for adverse effects, as well as to oppose the construction and permitting of new terminal groins, especially in communities where residents and visitors have expressed strong opposition. Opposing a harmful erosion control method is not enough as rising sea levels encroach on North Carolina's beaches and as more people move to the coast. Therefore, we will help develop and promote long-term barrier island management strategies that make them more resilient to climate change and less hazardous places to invest. We will also continue to work with local governments to secure funding for dredging long-established navigational channels, as well as support the use of dredged sand where appropriate for beach nourishment projects.

Lockwood Folly watershed restoration project

The Lockwood Folly watershed is 150 square miles and includes the island communities of Oak Island and St. James, the traditional fishing village of Varnamtown and areas of Bolivia, Supply and parts of Boiling Spring

Lakes. In 2006, after noticing the decline in water quality in local shellfishing waters due to stormwater runoff pollution, the NC Coastal Federation partnered with Brunswick County, state agencies, and the EPA to prepare a study and restoration plan for the river. Projects completed include:

- **Oyster Habitat Restoration** - NCCF constructed 21 oyster reefs in a 3-acre project area using 12,000 bushels of oyster shells and marl in the Lockwood Folly River.
- **Waterway Park Living Shoreline** - 400 volunteers constructed a 200 ft living shoreline at Waterway Park on the ICW stacking over 5,000 oyster shell bags and planting marshgrasses landward.
- **Sunset Harbor Boat Ramp** - permeable pavement to soak up rain and redirect stormwater away from the river.
- **Numerous rain gardens** - Lakes of Lockwood (8 gardens), Habitat for Humanity, Arboretum Park, Winding River, River Run Plantation, Brunswick County Government Complex.

Oak Island

With the Oak Island Citizens' Environmental Advisory Committee and the town of Oak Island, the Federation completed a series of community projects to reduce the flow of polluted stormwater into the creeks and sounds around Oak Island. The projects include the construction of low-cost, relatively simple swales and vegetated landscapes, such as shallow earthen berms as well as modifying existing swales to make them slightly deeper or wider. Volunteer monitoring groups who document the effectiveness of the swales during storms build support for the implemented programs and engage the community. This project also provides educational resources for property owners seeking to include other low-cost measures, such as rain gardens into home landscaping to help maintain the creeks and sounds.

DAY 2: Thursday, September 15, 2022
Southport to Wrightsville Beach ~32 miles

Lower Cape Fear River Blueprint

The Lower Cape Fear River provides critical coastal and riverine habitat, storm and flood protection and commercial and recreational fishery resources. It is also a popular recreational destination, an economic driver for the southeastern region of North Carolina and embodies a rich historic and cultural heritage. The river also serves as an important source of drinking water for many coastal communities, including the City of Wilmington. The Lower Cape Fear River Blueprint is a collaborative planning effort, led by the North Carolina Coastal Federation, to protect, manage and restore the important estuarine and riverine natural resources of the lower Cape Fear River that empowers communities and partners to improve the river and surrounding watershed's overall health and water quality. The blueprint has four goals:

- Goal 1: Protect and restore water quality.
- Goal 2: Have resilient living shorelines that protect water quality and natural estuarine function and provide thriving habitat for fish and wildlife.
- Goal 3: Have oyster habitats thrive and support vibrant fisheries, good water quality and resilient estuarine shorelines.
- Goal 4: Protect and preserve native coastal wetland populations that are free of invasive species *Phragmites australis*.

Zeke's Island National Estuarine Research Reserve

Zeke's Island is located in the Cape Fear River basin and was one of the three original National Estuarine Research Reserve components dedicated by the National Oceanic Atmospheric Administration and the Division

of Coastal Management in 1985. This site is also a Dedicated Nature Preserve. Zeke's Island has a variety of habitats, including tidal flats, salt marshes, shrub thicket, maritime forest, sand dunes, ocean beach, and the hard surface of the rocks. Beach amaranth has been found on the site's foredune areas. Fish, shrimp, crabs, clams, and oysters use the estuary as a nursery ground. Both the Atlantic loggerhead and green sea turtles, federally protected threatened species, occasionally nest on the site's open beaches. The expanse of intertidal flats in the Zeke's Island vicinity is the single most important shorebird habitat in southeastern North Carolina. Dunlin, black-bellied plovers, short-billed dowitchers, white ibis, and great blue herons, as well as black ducks, mallards, and pintails, have been recorded there.

Stop/event at Carolina Beach State Park

Carolina Beach State Park Living Shoreline
In 2016, construction of a 610 foot living shoreline at Carolina Beach State Park was completed. This living shoreline was constructed by creating an oyster bag sill with regular breaks for fish passage. This site was also planted landward with *Spartina Alterniflora* and *Spartina Patens* marsh grasses. The project began in 2015 and was completed in 2016, and restored approximately 0.3 acres of shoreline. In 2022, restoration efforts are funded for the Kerr-McGee Natural Resource Damage Assessment program which targets the Lower Cape Fear River. New goals include a living shoreline for breakwaters aiding saltmarsh protection near the park's marina, and a 14-acre subtidal oyster reef patch. An additional 13.5 acres of wetland restoration will thwart invasive species and reestablish tidal flow for salt marsh habitat.

Masonboro Island National Estuarine Research Reserve
Masonboro Island is the largest undisturbed barrier island along the southern part of the North Carolina coast and is located approximately five miles southeast of Wilmington and was designated as a National Estuarine Research Reserve in 1991. A majority of the island is covered with marsh and tidal flats and the remaining portions are composed of beach uplands and dredge material islands.

Masonboro Inlet
Improvements for the inlet were authorized in 1949 and in 1965 construction of the 3600 ft north jetty on the apparent updrift side of the inlet began. A few years later, the south jetty was constructed to stabilize the erosion caused by the north jetty when the entrance channel began to migrate toward the structure and cut through the deposition basin in the following years, jeopardizing the structural integrity of both the concrete sheet pile weir and the rock rubble portion of the jetty.

Navassa: An Environmental Justice Community
According to the EPA, environmental justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin or income with respect to the development, implementation and enforcement of environmental laws, regulations and policies. The Federation has this goal for all communities and persons in the coastal area. It will be achieved when everyone enjoys the same degree of protection from environmental and health hazards and equal access to the decision-making process to have a healthy environment in which to live, learn and work.

An example of environmental *in*justice can be found in the Town of Navassa. This historically black community has been the site of industrial negligence on regional scales with numerous brownfield and superfund sites. One such site is that of the Kerr-McGee Chemical Corporation, which was used for creosote-based wood

treating from 1936 to 1974. The surface soil, subsurface soil, marsh sediment, and groundwater are contaminated by creosote-related chemicals. In 2010, contamination in groundwater, soils, and sediments led the EPA to add the site to the National Priorities List of federal Superfund sites. Cleanup and remediation are underway, but environmental *in*justice remains a pervasive issue within Navassa and elsewhere in our state.

Wrightsville Beach - stormwater retrofits/low-impact development measures

In 2017, the Federation received the regional Rain Catcher Award from Environmental Protection Agency Region 4 for various innovative stormwater runoff infiltration projects in Wrightsville Beach. The team received this award for eight projects under the Bradley and Hewletts Creek Watershed Restoration Plan. These projects redirect runoff from hard surfaces and allow runoff to filter into the ground, providing successful demonstrations of options to prevent polluted stormwater runoff for new and redevelopment scenarios.

Hewletts and Bradley Creeks Watershed Restoration

Water quality in the Hewletts and Bradley Creeks Watershed has significantly declined due to stormwater runoff caused by increased urbanization and pervious pavement. Instead of soaking into the ground and being taken up by vegetation, a much larger amount of rain now quickly runs over the urban landscape and into the creeks. This stormwater runoff picks up bacteria and transports them to the creeks, causing shellfish closures and swimming advisories. The Federation, City of Wilmington, Town of Wrightsville Beach and project partners developed a watershed restoration plan in 2007 that focuses on reducing the amount of stormwater runoff transporting bacteria and pollutants into the creeks. Partners recognize that restoring water quality in these creeks will be a long-term, multi-decade effort. Recent projects:

- UNCW Suites Services Loop Rain Garden
- The Workshop Wrightsville Beach - Working with the Federation, the Town of Wrightsville Beach and adjacent businesses completed a water quality project in March 2020, replacing a compacted dirt/turf community gathering area with 1,200 square feet of pervious pavers
- UNCW Parking Lot Retrofits
- New Hanover County Arboretum Innovation Infiltration - designed a system to capture stormwater runoff from the Arboretum's rooftops, paved areas, and parking lots rather than straight into Bradley Creek.
- UNCW Rain Gardens
- Wrightsville Beach Animal Hospital Rain Garden

Stop/event at WSUP or Coastal Federation

Blockade Runner

In 2017, the Blockade Runner Resort on Wrightsville Beach completed construction on a stormwater retrofit project that is designed to reduce and redirect polluted runoff from the nearby recreational waters as part of the Bradley and Hewletts Creeks Watershed Restoration Plan. The project disconnected the two stormwater outfall pipes that drained runoff from the 2-acre resort site into Banks Channel. The outfall pipes were redirected into a series of pipes underneath the soundside lawn of the resort. This new system allows polluted runoff to infiltrate the sandy soils below. A 2,100-gallon cistern was also installed and will collect rainwater to use for irrigation, reducing the resort's municipal water use by around 25 percent.

Walk the Loop for Clean Water

The 1-mile walking tour around seven of Wrightsville Beach's stormwater reduction projects. The Federation teamed up with the Town of Wrightsville Beach and other partners to build a number of projects around the John Nesbitt Loop that can reduce the amount of polluted stormwater runoff that reaches nearby creeks and sounds.

The walking tour begins at the North Carolina Coastal Federation Fred and Alice Stanback Coastal Education Center, the street-side swales and small earthen dams slow down polluted stormwater so it can soak into the ground and not reach nearby swimming and fishing waters of Lee's Cut. A rain garden collects and absorbs stormwater that previously flowed into street drains and straight through pipes and into the adjacent estuary. This area is planted with native plants and turf that soak up rainwater and prevent polluted runoff. The addition of two curb cuts and a raised drain allow runoff to be directed from Causeway Drive into the grassy median where it can soak slowly into the ground and pollutants are filtered out by soil bacteria. This prevents polluted road runoff from reaching the storm drains and the nearby waters of Motts Channel. Reversed stormwater inlets divert polluted roadway runoff to soak into the grassed area between Causeway Drive and the Arboretum instead of flowing through pipes into Motts Channel. Wrightsville beach Public Safety Building installed five 3,000-gallon cisterns to capture and reuse stormwater from the roof. Additionally, the overflow from these cisterns fills a 10,000-gallon cistern located across the street near the baseball fields. Together, this water is reused to water landscaping and public ballfields and wash fire and police department vehicles and equipment. The Wrightsville Beach Recreation Area parking lot removed two 40' x 40' asphalt areas around each parking lot drain, replaced by sections of pervious pavement. These small areas can now absorb nearly all of the polluted runoff from the parking lot during an average rain event. This approach protects the nearby creeks and streams from this pollution, and costs much less than repaving the entire parking lot.

Coastal Federation Southeast Regional Office
The Federation's Fred and Alice Stanback Coastal Education Center and southeast offices are housed in an historic 1948 beach cottage that was donated to the Federation and opened to the public on May 3rd, 2014. The center's grounds serve as a "Living Classroom" including a rain garden with native plants that capture stormwater so it soaks into the ground, permeable pavement for parking areas and walkways that let the rain soak in instead of running off, and cisterns and rain barrels that collect rain as a free source of water for later use. The office is a location used for oyster shell recycling utilized to build oyster reefs for living shorelines. Every Tuesday in June and July, the Southeast office hosts Touch Tank Tuesdays, an educational event to showcase the native creatures inhabiting the region's local estuaries.

Evening event at Wilmington establishment

DAY 3: Friday, September 16, 2022
Wrightsville Beach to New River Inlet (~32 miles)

Rich Inlet / Figure Eight Terminal Groin
Rich Inlet is one of the last naturally functioning inlets in North Carolina, and it serves as a place of recreation for many and as habitat for various shorebirds, sea turtles, fish and dolphins. But in 2011, the North Carolina General Assembly passed a law that allowed six terminal groins to be built along the North Carolina coast; shortly after, the Figure Eight Island Homeowners' Association applied for a permit and the inlet and surrounding beach were put at risk.

In 2011, Federation staff launched the Save Rich Inlet campaign to educate residents about why a terminal groin was unnecessary for the area. Furthermore, terminal groins can cause unintended erosion down the beach from its location.

In November 2016, Figure Eight homeowners rejected the proposed terminal groin. The project would have cost an initial $7.3 million for construction, and taxpayers would have paid anywhere from $23.5 million to upwards of $50 million over a 30-year period for maintenance and beach fill. The Figure Eight Island homeowners' rejection of the proposal is a win for recreational access and habitat in the area and the result of a hard-fought campaign by the Federation and partners.

Lea-Hutaff/Audubon Reserve

Located north of Wilmington, between Figure Eight Island and Topsail Island, Lea-Hutaff Island is a 5,641-acre undeveloped barrier island and marsh system that has remained undisturbed by development, dredged sand and off-road vehicles. During the spring and summer, loggerhead sea turtles and hundreds of terns and skimmers nest here, and thousands of shorebirds stop off to rest during their long migrations. This narrow strip of sand has been designated as one of 96 Important Bird Areas in North Carolina. More than 4,000 acres of tidal marsh and creeks serve as primary nursery areas for fish, shrimp and crabs, and support thousands of birds throughout the year. Currently, Audubon North Carolina has a cooperative agreement to protect and manage Hutaff Island, and Audubon staff posts and patrols tern and skimmer colonies on both islands throughout the year.

Topsail Island: model ordinance for marine debris reduction & marine debris removal efforts

In an island-wide initiative to cut down on plastic waste, Topsail Beach is leading the charge and becoming the first municipality in North Carolina to adopt an ordinance that would prohibit unencapsulated polystyrene from being used in repairs and new construction of docks. Since 2019, Coastal Federation-led crews have removed more than **2 million pounds of marine debris** including abandoned boats, storm-damaged docks and homes, fishing gear, poorly managed construction sites, plastics in wastewater and stormwater discharges, and litter from coastal estuaries up and down the North Carolina coast. About 75-80% of that is from docks, piers, gazebos and other waterfront structures. Three- to four-man crews continue to pick up on average 2 tons of debris each day.

Topsail Beach Living shoreline

The Town of Topsail Beach is partnering with the North Carolina Coastal Federation to install four living shoreline demonstration projects along Banks Channel to reduce sound side erosion and maintain valuable fisheries habitat. These shorelines employ various methods to showcase what options are available to nearby property owners.

Stop/event at Soundside Park, Surf City

Ocean City

Topsail Island had been used during World War II as a firing range over the ocean for the soldiers who were stationed at Camp Davis located in Holly Ridge. The only access then to the island was a floating pontoon bridge across the Island Waterway on what is now NC Highway 50 and NC Highway 210. Dr. Samuel Gray, a Black physician in Wilmington along with his friends, the Chestnuts, each bought a tract of land on the island and named it Ocean City. Ocean City was the first community to allow African Americans to purchase beach

property in North Carolina; the first homeowners were Mr. and Mrs. Wade H Chestnut of Wilmington in 1949, followed by Mr. and Mrs. Stephen Rogers of Fayetteville and Mr. and Mrs. Henry Mallette, Sr of Wilmington in 1950. Since 2009, on Ocean City's 60th anniversary, an annual Jazz festival has been held in July to promote and celebrate the history of the Ocean City Community. Kenneth Chestnut is a long-time Federation Board member and an integral part of our coastal community.

Permuda National Estuarine Research Reserve

Permuda Island is a small, narrow island situated in Stump Sound, landward of Topsail Island. Permuda Island contains 63 acres of upland and is approximately 1.5 miles long. The estuarine waters of Stump Sound protect the island from high-energy ocean wave dynamics. The island is composed primarily of Holocene and Pleistocene sands with minor amounts of silts and clay and archaeological evidence indicates the earliest occupation occurred as early as 300 B.C. Fishes, shrimp, crabs, clams, and oysters utilize the Stump Sound estuary as a nursery ground.

Morris Landing Clean Water Preserve

The 52-acre Morris Landing Clean Water Preserve contains coastal shrub scrub and forest habitat, salt marsh and tidal creek areas and has over 3,000 feet of shoreline along Stump Sound. The preserve is located in the heart of the very productive shellfish growing areas of Stump Sound, and is an excellent site to stage oyster restoration and shellfish enhancement activities. Since 2005, the Federation has partnered with other groups to complete several shoreline restoration projects. Most recently, the fifth phase of the project — constructing a 310-foot living shoreline using oyster sills and marsh grass — was completed in July 2016.

Stop/event at Morris Landing Clean Water Preserve

Stump Sound Watershed Protection Plan

One of the most loved resources provided by Stump Sound are the oysters grown within its waters. The inlets and creeks that feed Stump Sound have created the optimal mix of fresh and salt water for the famed "Stump Sound" oysters. The quality of the water has also created an area that provides wonderful opportunities for fishing and prime nursery habitat for local aquatic species. Due to all of this, the N.C. Department of Environmental Quality designated the sound as an *Outstanding Resource Water*, a designation that protects the historic uses of the area.

Unfortunately, the quality of the water has declined recently due to nearby land uses which have created a source of polluted runoff. With the help of a $75,000 Grant awarded by the N.C. Land and Water Fund and support from the local community and other entities, along with government organizations and the Federation, a 2-year watershed management plan is being developed for the sound and its immediate watersheds. These watersheds drain into the intercoastal waterways and Stump Sound and are located north of Surf City, NC, in Onslow and Pender counties.

The funds for this project will be used to complete the following 10 specific goals:

1. Identify sources of pollution and other sources of impairment in order to control and reduce their impacts
2. Identify the amount of reduction needed for pollutants and stormwater volume in order to meet the expected management measures

3. Describe the management measures that will be needed based off of the above identifications and identify the critical areas where these measures should be implemented
4. Estimate and identify sources of technical and financial assistance, as well needed involvement from authorities that will be required for plan implementation
5. Implement an information and education component in order to enhance the public's understanding of the project and encourage public participation
6. Create a schedule for implementing the management measures that the plan identifies
7. Outline milestones in order to determine if management measures and control actions are being implemented
8. Create criteria for determining if substantial progress is being made in improving water quality over time
9. Design a monitoring component that will evaluate the effectiveness of the efforts and compare results to established criteria, over time
10. Continue to manage the project and report findings and progress to the NCLWF

NC Oyster Trail

Administered by the Federation and NC Sea Grant, in partnership with the NC Shellfish Growers Association, the NC Oyster Trail's mission is to provide educational experiences that help to sustain and grow NC oysters resulting in economic, environmental, and social benefits to the state's seafood industry and coastal communities. The trail includes tours of oyster farms to learn how oysters are grown, markets and restaurants that sell ocean-friendly oysters, and locations where oyster shells can be dropped off and recycled.

New River Inlet Terminal Groin Proposal

Following the lifting of the 30-year ban on hardened structures in 2011 which allowed the construction of 4 "test" terminal groins, legislators passed an additional bill in 2015 allowing two more terminal groin projects to apply for the required permits. One such project is being planned by the Town of North Topsail Beach, who is considering proposals for a terminal groin to be built adjacent to New River Inlet. Like many beach towns in North Carolina, the Town of North Topsail Beach has been struggling with erosion at the north end of the island for decades. The town's channel-realignment project completed in early 2013 failed to curb erosion at the north end and a massive sandbag revetment is permitted through 2022 for much of the north end of the island.

What's at stake:

- **Damage and erosion:** a terminal groin may result in damage and erosion of adjacent islands and estuaries further down-drift from the groin.
- **Critical habitat:** the proposed hardened structure along this natural beach and inlet system threatens to destroy critical habitat for fish, birds, and sea turtles.
- **Public access and recreation:** a terminal groin at New River Inlet would eliminate treasured public beach areas used by thousands of people every year for fishing, boating, and swimming.

Evening event at N.Sea Oyster Company (Surf City)

DAY 4: Saturday, September 17,2022
New River Inlet to Bogue Sound (~26 miles)

Bear Island

In the 1700s, Bear Island served as a hideout for the Neuse and Coree Indians during the Tuscaroan Wars. Later, the island was a haven for pirates, and then for Spanish privateers. It was a military station during the Civil War and World War II. Dr. William Sharpe, a New York neurosurgeon, bought the island in the early 1900s. The land ultimately was given to the state of North Carolina as a park, opened to the public in 1964.

Hammocks Beach State Park

Hammocks Beach State Park includes Bear Island—a 4-mile-long, undeveloped barrier island accessible by the park's passenger ferry or private ferry, or by paddling a canoe or kayak. A wide beach between massive dunes and the ocean is interrupted only by primitive campsites and a modest concession/picnic complex. The park's mainland gateway offers a full-service visitor center and is the launch site for ferry service, canoes or kayaks. Rent or bring your own kayaks, canoes or paddleboards to explore paddling trails leading to marshes, Bear Island or Huggins Island, which is graced with unspoiled maritime forest. Interpretive programs and extensive exhibits teach about park ecology and wildlife including endangered sea turtles and nesting shorebirds.

The Federation has partnered with Hammocks Beach State Park for many years and worked with Park staff to implement several nature-based solutions on Park property, including stormwater projects and living shorelines. The Federation and state park work together on educational programs and coordinate Coastal Discovery field trips with student and community groups. There is a large living shoreline project beginning at the Park this summer, and there was a planting in May and hopes to do some oyster reef construction events throughout the summer and into next fall.

The Federation has also helped to secure Huggins Island, which is part of Hammocks Beach State Park. In addition, the Federation has living shorelines all around Jones Island and were part of securing funding for the island and donating it to the Park (there is still a small portion that is privately owned).

Town of Swansboro

The Federation teamed up with the Town of Swansboro to develop a watershed restoration plan which lays out a framework for reducing stormwater runoff that flows into Foster, Halls, Hammocks, Historic and Ward/Hawkins Creeks ultimately reaching the White Oak. The Town of Swansboro Board of Commissioners unanimously approved the plan in March 2017. The plan targets the reduction of 13.3 million gallons of polluted runoff with strategies that promote stormwater infiltration to allow water to slowly soak into the ground instead of flowing into coastal waters.

Stop/event at Hammocks Beach State Park

Town of Cedar Point - White Oak Watershed Restoration Plan

The White Oak River is 48-miles-long and runs through Jones, Onslow and Carteret counties. The river includes saltwater marshes and hardwood swamps that are home to a variety of fish and wildlife. It is used for fishing, swimming, kayaking and boating and has cultural and historical significance. The White Oak River Restoration Plan promotes simple solutions to infiltrate rain and reduce polluted runoff flowing into Dubling Creek, Boathouse Creek, Hills Bay and the waters north of the N.C. 24 bridges in Cedar Point, on the Carteret County side of the river.

In 2006, the Federation teamed up with the Town of Cedar Point, the N.C. Department of Transportation, the N.C. Division of Energy, Mineral and Land Resources and community members to prepare a study and restoration plan for a portion of the river. The study found that polluted stormwater runoff from parking lots, driveways, rooftops and other hard surfaces is the primary cause of water quality impairment in the river. About two-thirds of the lower White Oak River is now permanently closed to shellfishing or closes temporarily after a moderate rain.

Town of Cape Carteret

Cape Carteret has several ongoing stormwater reduction projects including Church Ponds project, White Oak Elementary School rain garden, and several living shorelines along private properties.

Pine Knoll Shores

Watershed restoration plan to implement techniques to reduce stormwater runoff and reduce permanent shellfish closures in Bogue Sound

NC Aquarium at Pine Knoll Shores

In 2017, staff and volunteers with the North Carolina Aquarium at Pine Knoll Shores and the Federation worked together bagging and loading oyster shells at the Federation's headquarters office in Ocean which were used on a living shoreline at Trinity Center in Pine Knoll Shores.

Croatan Forest: Patsy Pond Nature Trail

The Patsy Pond Nature Trail is managed by the Federation in cooperation with the Croatan National Forest. It winds through an area called the "Longleaf Pine Flat Woods," which is an open woodland of longleaf pines with low-growing herbs and shrubs. The trail is open to the public from dawn to dusk and offers visitors a great opportunity for a simple hike through a natural pine forest.

Center for Coastal Protection and Restoration

The new *Center for Coastal Protection and Restoration* will address the needs of the coast by showcasing the leading ideas in sustainable design and coastal resilience, while using cutting-edge technology to provide solutions and educational opportunities to people across our state. The Center will support innovative solutions for our coast like our Nature-Based Stormwater Strategies, developed with The Pew Charitable Trusts, that provide solutions to stormwater and flooding using the natural topography.

The Center will showcase and support our oyster restoration and living shoreline programs that restore habitat, recycle oyster shells, and support our local oyster mariculture industry. The Center will support efforts to clean up tons of marine debris, both through hurricane relief and by removing abandoned vessels.

Destination achieved! Event at site of the Federation's Center for Coastal Protection and Restoration