


CITIZENS WORKING TOGETHER FOR A HEALTHY COAST

Coastal Review

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WIND ENERGY

FUTURE OYSTER RESTORATION PLANS

NEW PHOTO CONTEST

Coastal Review

Coastal Review is the quarterly newsletter of the North Carolina Coastal Federation (NCCF). NCCF is a non-profit tax-exempt organization dedicated to involving citizens in decisions about managing coastal resources. Its aim is to share technical information and resources to better represent current and long-term economic, social and environmental interests of the North Carolina Coast.

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The North Carolina Coastal Federation is located on Highway 24 in Ocean, N.C., between Swansboro and Morehead City. Our offices, nature library and shop are open Monday through Friday, 8:30 a.m. to 5 p.m.



LAYOUT/DESIGN: by 8 Dot Graphics

COVER PHOTO: Sam Bland, NCCF

From a Brigade to a Division

In military terms, the N.C. Coastal Federation will grow from a brigade to a division sometime this year.

In other words, our membership will reach 10,000 people strong.

We need all the people we can recruit to accomplish our assigned mission: Citizens Working Together for a Healthy Coast.

We're proud of what our members have done since 1982.

In the beginning, the federation was just a fire team. We were a young bunch of recruits who jumped into the fray to stop a proposal by some highly connected former top-level federal officials. They wanted to strip mine nearly 120,000 acres of peat bogs for energy using a half-billion dollars in federal funds. The project collapsed after several years of heated "hand-to-hand" skirmishes. That enabled the permanent protection of these wetlands that now provide refuge for wildlife and help maintain good water quality in Pamlico Sound.

That early success helped us attract more volunteers and members. Working very closely with traditional fishing communities, we then went after coastal development that was polluting our estuaries. Amassing lots of ordinary people at public hearings and in courtrooms eventually yielded new rules for where marinas could be built, for controlling polluted stormwater runoff and for protecting 10,000 acres of Outstanding Resource Waters.

By the early 1990s, we had grown to a battalion of citizens who were still painfully aware that much more had to be done to protect the health of our coast. We partnered with WRAL-TV in Raleigh to mount the Save Our Sounds information campaign, and then worked with Gov. Jim Hunt to form the Coastal Futures Committee. That work resulted in some sweeping recommendations made in 1994 for how to better protect our coast, such as the need to greatly enhance state investment in land acquisition.

State Sen. Marc Basnight of Manteo took

up that cause, and convinced lawmakers to create the Clean Water Management Trust Fund in 1996. Working with an ever-expanding network of people throughout the coast, we quickly set about identifying good uses for these funds. Since then we've combined state and federal money to protect and restore nearly \$30 million worth of properties.

As we attracted more members, we realized the importance of staying connected with the communities in which we live and work. We addressed this need in several ways, including developing habitat restoration programs that provide hands-on ways for people to repair damage to wetlands and oyster reefs. We enlarged our environmental education efforts and connected school children directly with our habitat and water quality restoration efforts. And we decentralized our staff and board structure, opening regional offices in Manteo and Wilmington in addition to our central coast office in Ocean.

This has enabled us to pull off some large-scale restoration projects, reach many more schools and connect with numerous local governments interested in promoting Low Impact Development strategies. We've also become a force in the legislature as we engage more people in helping to protect the coast.

Over the years, new members frequently appear just when we need them the most. They infuse new ideas and energy, and help to make sure we have the recurring revenues to keep our experienced staff working. We try hard to foster an organizational structure and ethic that is open and responsive to such input and that makes efficient use of our donated resources. This helps us evolve and adapt to a constantly changing world, and continue to grow stronger as an organization.

Thank you for being a member of the federation. Our coast is a much better place because of your support.

Todd Miller

MEET OUR BUSINESS FRIENDS

Our list of Business Friends keeps growing, adding value to your membership. Be sure and keep your N.C. Coastal Federation membership card handy. It's good for discounts and special offers at these businesses that care about our coast:

18 SEABOARD, Raleigh,
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BIKES-R-IN SALES, Service, Rental,
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GYPSY DIVERS AQUATIC CENTER, Raleigh,
www.gypsydivers.com

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Fall is the perfect time for a bike ride. You will want to visit BIKES-R-IN in Cedar Point where you will enjoy great customer service, discounts and special offers from this federation Business Friend.

SCOTT TAYLOR PHOTOGRAPHY, Beaufort,
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CONSULTING**, Wilmington
www.wilmingtontaxesandaccounting.com

THE WINE SAMPLER, Wilmington

To learn how your business can be a federation Business Friend, contact Sally Steele at 252-393-8185 or sallys@nccoast.org.

VOLUNTEER SPOTLIGHT: Lewis Piner

With his generous smile, "can do attitude" and passion for people and the coast, Lewis Piner is the federation's supreme salesman and this season's volunteer pick. Lewis is a coastal native and went to high school with federation founder Todd Miller. He now lives in Wendell, N.C., but keeps a home along the coast and returns as often as he can.

Lewis has volunteered for the federation for more than 20 years. He's a member of the federation board of directors and its Inland Committee. He has helped with many of the federation's activities in the middle of the state and along the coast. For years, Lewis coordinated the federation's booth at the N.C. State Fair in Raleigh and made friends across the state. He has been seen steaming oysters for special groups, hosting workshops and meetings and chatting up legislators in Raleigh.

The federation credits Lewis with helping to build its membership over the years. Wherever he goes, Lewis is spreading goodwill and the Coastal Federation message. He always has a membership brochure in his hand and an irresistible sales pitch. Our hats are off to our good friend Lewis Piner.



WHO WILL BE THE FEDERATION'S 10,000TH MEMBER?

The N.C. Coastal Federation has grown from a handful of supporters in 1982 to one of the most effective conservation groups in the state today. Another milestone will be reached this year when we top 10,000 members. At press time, we needed 316 new memberships to reach this goal.

You can help by encouraging your friends and family to join today. Of course, we have something special for that milestone member.

The 10,000th member will receive:

- Four tickets to the Coastal Cohorts' March 26 Concert at Thalian Hall in Wilmington
- Reserved VIP concert seating
- Sponsor listing in the Cohorts' Program
- A Cohorts' package with t-shirts and autographed CDs

We'll also give you two tickets and reserved seats at the concert if you refer the new member.

Memberships are available at www.nccoast.org, by phone at 252-393-8185 or by mail. A membership application can be found on Page 16.



Company Wants to Explore Offshore N.C. for Wind Farm

Apex Wind Energy, a company in Charlottesville, Va., wants to lease more than 200 square miles of ocean bottom in Onslow Bay for the first offshore wind farm in North Carolina.

The company has applied to the federal Bureau of Ocean Energy, Management, Regulation and Enforcement, which is the successor to the Minerals Management Service, to lease ocean bottom about 20-30 miles off Surf City. The company wants to explore the area's feasibility for a wind farm.

Onslow Bay was selected because of its lack of environmental and other conflicts and its strong, sustained winds, the company says in the application. But the possible installation of massive wind turbines generating hundreds of megawatts and reaching several hundred feet into the air is

still years off.

"We're still at the baby-step stage here," John Bane, a professor of marine sciences with the University of North Carolina-Chapel Hill and an advisor to Apex, told the *Wilmington Star-News*.

The N.C. Department of Commerce and the federal leasing agency held a meeting in Morehead City in August to discuss wind energy and the federal leasing process. But state and federal officials declined to talk about the Apex application.

More information: N.C. Coastal Federation, www.nccoast.org

DUKE ENERGY, UNC-CH PULL PLUG ON PAMLICO WIND PROJECT

Duke Energy Carolinas will no longer pursue a plan to place up to three demonstration wind turbines in the Pamlico Sound near Buxton.

Instead, the company and the University of North Carolina at Chapel Hill will refocus their collaboration to study and help enable large-scale offshore wind development in the ocean off the N.C. coast.

Since the project was announced in September 2009, in-depth analysis and engineering have been conducted. Duke Energy concluded that the fixed costs associated with permitting, design and construction of the small-scale coastal wind demonstration project were no longer economically viable.

"As the team tackled this first-of-its-kind project, we realized that encouraging large-scale development of offshore wind resources is a better approach than enabling small demonstration projects that lack economies of scale," Paul Newton, senior vice president of strategy for Duke Energy's franchised businesses, said in a press release. "The cost of the project simply exceeds the benefits our customers would receive if we were to continue."

More information: Duke Energy, www.duke-energy.com/north-carolina.asp

PROPOSED CONTAINER PORT PUT ON HOLD

In the face of stiff public opposition and waning political support, officials with the N.C. Port Authority put on indefinite hold a giant container port that they had been planning to build on 600 acres near Southport.

The port was controversial almost from the day it was announced five years ago. People in Southport and numerous environmental groups, including the N.C. Coastal Federation, came out against the project, citing a host of environmental and quality of life concerns. Town boards in several Brunswick County municipalities passed resolutions opposing the port.

The end, port officials said, came when N.C.

General Assembly during its last session failed to pay for a feasibility study for the megaport and when U.S. Rep. Mike McIntyre, D-Lumberton, announced his opposition.

The authority has spent roughly \$10.2 million on the proposal, including planning, engineering technical reports, debt service on the property and legal and financial fees, ports officials have said.

Partly because of that investment, port opponents aren't entirely convinced that the project won't be resurrected. As long as the authority owns the land, the comatose project can't be taken off life support. A new non-profit, Save the Cape Inc., recently was formed to push for much of the land around Cape Fear, including the port property, to be preserved as a national seashore.

More information: No Port Southport, www.noportsouthport.org

LEGISLATIVE ROUNDUP: WIN SOME, LOSE ONE

Jetties on the beach were held off for at least another year and the state is better prepared to evaluate offshore oil-drilling proposals. Those were the major environmental successes during the summer session of the N.C. General Assembly. But in one of the worst environmental bills to come out of the legislature in decades, projects that receive public money in the form of economic incentives are now exempt from meeting a key state environmental safeguard.

JETTIES:

Sometimes success in the legislature is measured by what isn't done. Small jetties, called groins, are a case in point. For the second year in a row, the N.C. House wouldn't vote on a Senate-approved bill that would allow the structures to be built on the beach to control erosion. They are currently banned by state law because they can increase erosion farther away. As the short session ground to a close, the Senate added language to allow the groins to an unrelated bill that had already passed the House. The modified version didn't make it out of the required conference committee meeting. The issue isn't going away, and jetty proponents will likely lobby heavily for it next year.

OFFSHORE OIL:

With little to no opposition, the legislature passed a bill that holds any responsible party for an oil spill into coastal waters or offshore waters that causes damages to the territorial jurisdiction of North Carolina to be held strictly liable with no cap on damages. More importantly, the bill requires companies planning to drill off our shore to provide the state with detailed information about worst-case spills and how they plan to react.

ECONOMIC INCENTIVES:

The bill exempting projects that receive public incentives from environmental review was a direct outgrowth of our successful lawsuit against Titan America, which wants to build a huge cement plant and limestone mine near Wilmington. The project will receive more than \$4 million in state and local economic incentives when it reaches certain benchmarks. Because the money wasn't given to the company up front, the state maintained, as it has in all similar cases, that the N.C. Environmental Policy Act didn't apply. That law requires a project that trips three triggers must first undergo a thorough environmental review before any permits can be issued. One of those requirements is the "expenditure" of public money. The federation and other Titan opponents sued and won. A Superior Court judge decided that the promised public incentives met the law's definition and ruled that Titan must follow the law.

The ruling set off the requisite howls from economic developers and county officials. Economic development in the state would come to a standstill, they screamed, if the project now had to meet the law. Projects could be delayed for year, they said, and companies would simply look elsewhere to build.

While wildly exaggerated and in some instance false, the claims had willing listeners in the legislature where job creation during a recession was the mantra. The bill to modify state law to specifically exempt economic development projects steamrolled through the legislature with little opposition.

Titan has appealed the court ruling. It will still have to meet the law unless that appeal is successful.

State of the Coast Documentary Almost Done

If you liked our 2010 *State of the Coast Report*, wait until you see the big-screen version.

Ok, maybe just the flat-screen version.

This year's report, which we billed as a travel guide with a conscience, featured dozens of places along the coast that people fought to save. It has been very well-received. You can download a copy from our Web site, www.nccoast.org.

We picked three of those places – Bird Island, the White Oak River and the wildlife refuges of the Albemarle-Pamlico peninsula – and are featuring them in a documentary. Frank Tursi, one of our assistant directors, and Jan DeBlieu, one of our coastal advocates, wrote the script. Frank was also the lead writer for the *State of the Coast Report*. The University of North Carolina-Wilmington did the filming, and Sally Steele, our development and marketing director, handled the planning and logistics. Bland Simpson, a board member and creative writing professor at the University of North Carolina-Chapel Hill, is narrating the film.

Most of the filming has been done, and the documentary should be ready for distribution in late fall. We hope it will air on UNC-TV.

N.C. Coastal Federation Calendar

OCTOBER 2-3

N.C. Seafood Festival
Morehead City

*Federation booth in the
Chef's Tent**

OCTOBER 16-17

N.C. Oyster Festival
Ocean Isle

*Federation Education
Display**

OCTOBER 18-22

NCCF Fall Native
Plant Sale

Ocean

OCTOBER 30

Volunteer Appreciation
Wilmington

DECEMBER 3

Volunteer Appreciation
Manteo

DECEMBER 3

Volunteer Appreciation
Ocean

2011

SATURDAY, MARCH 26

Coastal Cohorts
Concert
Wilmington

APRIL 15-16

Native Plant Festival
Ocean

**Volunteers needed. Please call 252-393-8185 or email nccf@nccoast.org to help.*

50 Acres and Counting:

OYSTER RESTORATION STIMULUS PROJECT EXCEEDING EXPECTATIONS

The N.C. Coastal Federation finished building the two large-scale reefs funded by the federal Recovery Act on May 1, more than nine months ahead of schedule. The project successfully deployed about 54,000 tons of marine limestone to create about 50 acres of oyster reef sanctuaries in the Pamlico Sound.

Additional work paying fishermen to recycle bushels of oysters back into the water up and down the coast will continue through next spring. That effort is estimated to create at least six additional acres, using 42,000 bushels of oyster shells. These reefs will be opened to shellfishing after four years.

The project has proven popular with commercial fishermen. As fisherman Steven Galloway put it to the Wilmington Star News, “It helps us in more ways than one. It’s work for now. It’s good money. Then in a few years, we’ll have more oysters. It’s sort of win-win all the way around.”

In total, the federation had estimated that the project would create or protect at least 140 jobs. As of this writing, 157 jobs have been created or retained. We expect that the total number will exceed 190 by the project’s end.

And that’s the least of it.

The real economic benefit of building this green infrastructure, to use a popular catch phrase, is not in the immediate construction jobs. It lies in the long-term employment that healthy and thriving oyster habitat will provide to the coast. These benefits include a renewed oyster fishery, a healthier commercial fishery, increased recreational fishing and other



A small tug boat works to move the barge dumping shells into Pamlico Sound.

tourism benefits. Just how much economic benefit this will yield is not certain, but we aim to find out: NOAA has awarded us another \$30,000 to commission Drs. Pete Peterson and Jon Grabowski of the UNC Institute of Marine Sciences to put a dollar figure on the benefit of building these reefs.

Now that we’ve proven that such industrial-scale work can be accomplished efficiently, we are eager to continue. The oyster restoration plan worked out by our northern working group for Pamlico Sound is to build about 500 acres of oyster sanctuaries. The group includes the state Division of Marine Fisheries, N.C. State

University, the University of North Carolina, the federation and the Nature Conservancy, among others. About 100 acres toward this goal have been constructed, including half within the past year. That leaves about 400 acres more. We estimate it will take about 430,000 tons of limestone to reach the 500-acre total.

In the central and southern region, a working group including the state Division of Marine Fisheries, the

University of North Carolina Wilmington, and the federation is developing a plan that would almost double the average annual deployment of reef materials in the region. In the next ten years 900,000 bushels of reef material would be deployed over 180 acres of oyster habitat.

That will cost a significant amount of money, but it will yield equally or more significant economic and environmental benefits. We think that’s a worthwhile goal. We continue to pursue funds for this work.

left: The marine fossils on the prehistoric limestone marl used in the restoration projects prove its briny origins. right: Commercial fishermen dump oyster shells to build a reef in the White Oak River.





SAM'S FIELD NOTES: The Eastern Brown Pelican

BY SAM BLAND

The brown pelican has long been the proud logo of the N.C. Coastal Federation. We chose this stately bird because it is a symbol of hope, a living reminder that our coastal natural resources can withstand serious challenges. The struggles of the brown pelican, which weathered threats that brought it to the brink of extinction, mirror the challenges that continue to threaten the resources of our coast.

Brown pelicans are resilient and have prevailed despite steep odds. Market hunters shot them by the thousands just for their feathers; commercial fishermen unnecessarily slaughtered them under the mistaken belief that the birds were competitors; and pesticides such as DDT seriously impaired the pelican's ability to reproduce. Chemical residues collected in stormwater runoff and contaminated the fish that pelicans ate. The chemicals disrupted calcium formation, resulting in pelican eggs that were thin, brittle and unable to develop. The poisoned fish also killed pelicans directly.

Pelican populations declined dramatically, and the U.S. Fish and Wildlife Service put the bird on the federal endangered species list in 1970, but it took 11 more years for the agency to devise a recovery plan that established sanctuaries, natural areas and wildlife reserves. DDT and some other pesticides were also banned, and the brown pelican began a long and slow recovery. In November 2009, it was removed from the endangered species list along the Atlantic coast and the Florida Gulf coast.

Seeing a large flock of pelicans gliding

silently overhead along the barrier islands almost makes you forget all that they have endured. These large birds with six-foot wingspans look like something out of the age of dinosaurs. Their size is deceiving, since they weigh only eight pounds because of their hollow bones.

The body of an adult pelican is silver-gray with a darker belly and a mainly white head that will turn yellowish during breeding season. These highly social birds nest in colonies on small remote islands that are free of predators. The chicks are naked and helpless but will be covered by a white down about ten days after hatching. They depend on a steady supply of regurgitated fish from the parents while in the nest. As a defense mechanism, the adults and chicks will throw up on human intruders that venture into the nesting site.

Pelicans have a long bill with a throat pouch that is used for fishing. Excellent eyesight allows pelicans gliding over the ocean to find mullet or menhaden near the surface. Once the fish are spotted, the pelican will rotate its upper body downward, stretch out its long neck, tuck back its wings and begin a



freefall that ends with an explosive splash on the surface of the water. Air sacs underneath the skin protect the pelican when it smacks the water after dives as high as 60 feet. As the long

bill pierces the water the pouch will expand scooping up the fish along with about two gallons of water.

After this controlled crash, the pelican will float on the surface and drain the water out of its pouch. Any fish trapped inside the pouch will then be tossed head first down the throat.

This tricky technique takes chicks awhile to learn. The parents will fatten them up with about 150 pound of fish during the nine-month fledging period. When new chicks leave the nest they actually weigh more than their parents. This additional body fat will provide them with the needed energy until they master the circus-like fishing maneuver.

An excellent swimmer, since all four toes are connected by a web of skin, brown pelicans will also swim on the surface of the water lunging after fish.

On the ground brown pelicans appear to be awkward and are clumsy walkers. In flight, however, they are grace defined. They fly in groups forming a classic V pattern or a simple long line. They glide along on the wind or in the currents created by their beating wings, called drafting, which reduces the amount of energy needed for flying. One of the most beautiful coastal sights is a long line of pelican silhouettes skimming just above the ocean surface as they slowly rise and fall like a ribbon undulating in a soft breeze.

Brown pelicans are now a common sight along our coast. However, their future is still uncertain. Loss of nesting habitat, human disturbance of nesting colonies, fishing line entanglement and pollution continue to impact their numbers. We need to make sure that their future looks promising, since legend has it that when old fishermen die, they will come back as pelicans.

Sam, a retired ranger and superintendent at Hammocks Beach State Park in Swansboro, works part-time for the federation and is the manager of Jones Island in the White Oak River. Look for his Field Notes on our Web site, www.nccoast.org.

FEDERATION TESTING FINDS HIGH BACTERIA LEVELS IN BRIDGE RUNOFF

Advocacy

BRIDGE TREATMENT NEEDS A SECOND LOOK

A preliminary study of runoff coursing off the four-lane bridge between Manteo and Manns Harbor has found that improvements may be needed for treating stormwater from the state's bridges.

At the request of the state Division of Transportation (DOT), Erin Fleckenstein, the federation's regional coastal scientist, collected stormwater samples from the Virginia Dare Bridge from April 15 to July 15. Because of uncooperative weather—rain on nights and weekends when the local lab was closed—Fleckenstein was able to submit only a few samples for analysis. Nonetheless, the results showed that wetlands installed by the state to treat the stormwater from the bridge were unable to remove bacteria from runoff.

Stormwater samples were collected directly from the bridge, as well as from an outflow from freshwater wetlands planted specifically to treat runoff. They were analyzed for fecal coliform, *E. coli* and *Enterococcus* bacteria, which are present in the intestines of warm-blooded animals. Control samples were also taken in dry weather.

The results found that even the stormwater that had been channeled through the treatment wetlands exceeded state standards for water quality.

Although the sample size was small, the study points to a need for DOT to further evaluate its current methods for handling stormwater from bridges. In a report to DOT, Fleckenstein offered several treatment alternatives. "The one thing we know for sure," she says, "is that we need to look at the problem more closely."

Education & Restoration

TEACHERS IMMERSE THEMSELVES IN WETLANDS

Public school teachers from across North Carolina gathered in Ocracoke in April, where over five days they enjoyed a working vacation—while learning about the importance of wetlands.



left: The shoreline at the N.C. Center for the Advancement of Teaching on Ocracoke was sandy and mostly bare before the teachers and students descended on it. above: When they were done, the beginnings of a new marsh took shape.

In between classes and field trips, the teachers planted thousands of marsh grass sprigs on Pamlico Sound. They were helped by 15 local volunteers and 135 students—the entire local student body.

By the end of the week thousands of marsh grasses had been planted along 725 feet, behind a rock sill on the shore of the N.C. Center for the Advancement of Teaching. Perhaps most important, the 20 teachers returned to their classrooms with a working knowledge of coastal estuaries and fresh ideas and activities.

The northeast region staff's partnership with the state-funded teaching center was born when the federation received funding from NOAA and the Restore America's Estuaries program to help build a living shoreline at the center, which is housed in the restored Coast Guard station on an exposed shoreline on Pamlico Sound. Erosion had recently taken a severe toll on the property.

The center's programs are designed to reward veteran teachers with a week of relaxation and intellectual stimulation. Building the living shoreline at the center in Ocracoke was a natural fit for federation's environmental education. So Education Coordinator Sara Hallas and Northeast Coastal Scientist Erin Fleckenstein planned four days of classes and activities designed to teach the teachers about the vital link of

estuaries in the coastal system.

Most of the activities carried a wetland theme—but not all. Staff from the Pocosin Arts cooperative in Columbia taught a class on how to make jewelry from recycled metals, such as discarded aluminum cans. Field trips and other presentations were made by staff from the N.C. Coastal Land Trust and the state Division of Coastal Management.

Sara and Erin returned to Ocracoke to the center in July to give presentations for a seminar on barrier island ecology.

The two staff members will lead another wetlands seminar in late April 2011. Interested teachers should contact the teaching center through their schools—and plan to get their hands and feet wet planting marsh grass.

Volunteers Needed in the Northeast

The Northeast staff is looking for volunteers who can help this fall with numerous tasks, including extensive work in the rain gardens at Manteo Middle School, where a boardwalk was built this summer; maintenance at the Columbia Middle School rain garden; and monitoring of our conservation easements in Tyrrell County.

If interested, call or email Sara Hallas at 252-473-1607 or sarajh@nccoast.org.

Hyde County Watershed Restoration Plan Funded

In a move that bodes well for hydrologic restoration on the coast, the N.C. Coastal Federation received a grant from the N.C. Division of Water Quality to write a watershed restoration plan for a farm drainage district in northeast Hyde County.

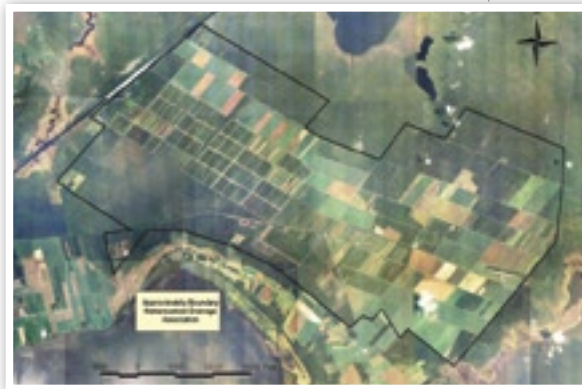
The northeast region staff will work with local farmers and engineers from N.C. State University to identify potential restoration projects in the 42,500-acre Mattamuskeet Drainage District, which discharges stormwater runoff to Pamlico Sound, the Long Shoal River and the Intracoastal Waterway through major canals.

The grant is being made through the Section 319 pollution control program, funded by the U.S. Environmental Protection Agency. Money is distributed to state governments for projects that improve water quality in pollution-impaired creeks, rivers and sounds. In most cases along the coast the pollution is caused by bacterial contamination from runoff.

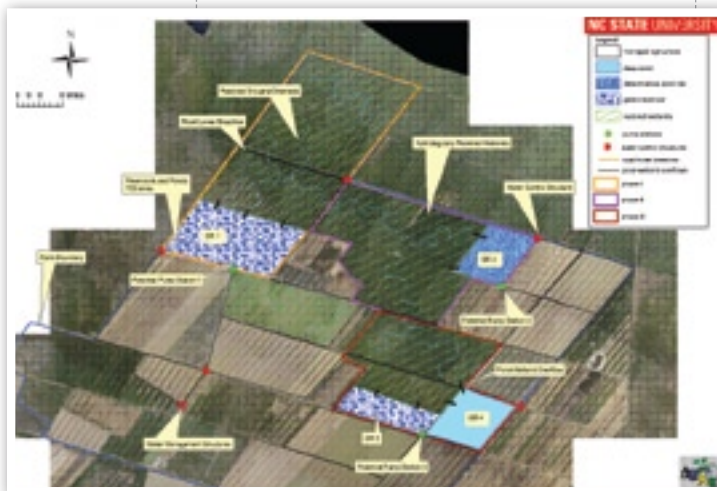
The plan will build on several years of restoration work by the federation in mainland Hyde and Dare counties, which comprise the broad thumb known as the Albemarle-Pamlico peninsula.

Federation staff members in 2004 began working with a group of scientists and conservationists to identify potential sites for oyster restoration in northern coastal waters. The group found numerous sites off Hyde County, which once had a thriving oyster industry. But the sites were being affected by plumes of tannic water from canals.

Next, staff members worked with a group of local farmers and landholders to locate areas where land-based restoration projects might reduce water flowing from the canals. Lux Farms in northeast Hyde was pinpointed as having tremendous potential for hydrologic restoration. The Mary Flagler Cary Charitable Trust funded that work.



The boundaries of the 42,000-acre drainage district in Hyde County.



This plan by N.C. State University engineers will restore natural hydrology on Lux Farms, which is uniformly drained by canals. Irrigation reservoirs and restored wetlands and sloughs would receive much of the stormwater that is now discharged into coastal waters.

The N.C. Clean Water Management Trust Fund then provided money to design a restoration plan on Lux Farms, which contained several low areas where runoff could be held. "It's a great collaboration," said Coastal Advocate Jan DeBlieu, "because we're hoping to reduce runoff and the farmers need extra flexibility for their crops. This serves everyone's interests."

State funding problems delayed that plan

but it will be completed this fall. The federation is now seeking money to build the project on 7,200 acres.

Last year a separate project was completed on Mattamuskeet Ventures Farm, just to the west. Using money from a U.S. Fish & Wildlife Service Partners for Fish and Wildlife grant, Erin Fleckenstein, the federation's regional coastal scientist, directed the restoration of 600 acres, in which extra rainwater is held at controlled levels to create the optimum habitat for migrating shorebirds.

Together, the projects will significantly reduce the stormwater flowing from the canals. But there are other potential sites for installing best management practices, or BMPs, to restore the land's natural hydrology. The goal of the watershed restoration plan is to identify them and rank them by their importance to reducing bacteria in local waters.

The first step will be to form a stakeholders group with landowners, engineers and partners from resource agencies like the federal Natural Resources Conservation Service. Because water movement is carefully controlled by pumps, the drainage district functions as a watershed. Scientists will use a tool known as DrainMOD, developed at N.C. State, to track water flow within the drainage district. Water quality sampling will help locate pollution hot spots.

After the initial analysis, potential BMPs will be identified and ranked according to how much pollution they can remove from the waters, the cost of installation and the ease with which they can be installed.

The watershed restoration plan will enable the federation and its partners to more effectively find funding for installing the BMPs, DeBlieu said. "If you've got a plan that shows you've carefully looked at the whole picture, you're more likely to be able to raise money for the projects," she said.

The plan is scheduled to be completed by the middle of 2012.

TOWN PASSES LOCAL STORMWATER LAW; KIDS PLANT RAIN GARDENS

Advocacy

CAPE CARTERET PASSES RUNOFF LAW

Cape Carteret, a small town in western Carteret County, this year became one of the few communities along the coast with its own ordinance to control stormwater.

The board approved the ordinance for all new commercial developments, which will have to control runoff from a two-inch rain if impervious surface exceeds 1,000 square feet. Developments of that size are too small to require a state stormwater permit. The town has begun tackling new residential developments and hopes to approve stormwater requirements on new or redeveloped residential lots. Frank Tursi, the federation's regional advocate, advised the town as it was devising the ordinance.

Frank and Lauren Kolodij, the federation's deputy director, have also worked with Cape Carteret on stormwater controls for a remodeled McDonald's restaurant in town. McDonald's has agreed to install low-impact development techniques to capture and treat stormwater from its parking area. State rules wouldn't have required the restaurant to do anything to control runoff from the redeveloped site.

Education & Restoration

STUDENTS PLANT RAIN GARDENS

Spreading the word about rain gardens is easy when people get excited. Both Atlantic and Swansboro elementary schools were eager to build rain gardens in their communities when they heard about other successful projects in the area.

Gerry Barrett, an Atlantic resident and federation board member, wanted to connect Atlantic Elementary School with the residents of the Snug Harbor retirement community in nearby Sea Level. Both communities are in eastern Carteret County. Sarah Phillips, the federation's educator in the central region and Dr. Lexia Weaver, the regional coastal scientist, met with Snug Harbor staff to discuss installing two rain gardens at the retirement center. Many



Students at Atlantic Elementary School help plant a rain garden at Snug Harbor.

students and teachers at the school have family members and friends who live or work in Snug Harbor.

Residents watched fourth- and fifth-grade students plant over 100 native trees, shrubs and flowers. These native plants are now helping to treat stormwater runoff from the building rooftops and nearby parking areas before it enters nearby Nelson Bay.

Kathleen Lester, a teacher at Swansboro

Elementary School in Onslow County, also was interested in installing rain gardens at her school and, after applying for and receiving a N.C. Beautiful Windows of Opportunity grant, she contacted the federation for help. Her first-grade class began to learn about stormwater runoff, native plants and rain gardens and, in the spring, they put their knowledge to work. With the help of other federation volunteers, the six-year-olds dug holes, planted native plants and spread mulch. They also got a first-hand look at a nesting killdeer (see accompanying story).

These and other rain gardens will now serve as living classrooms where students and the community can learn about stormwater issues and the ways in which these cost-effective and simple techniques can be used to protect and improve water quality.

Volunteers Make Jones Island Restoration a Success

Since the oyster and marsh habitat restoration project began at Jones Island in the summer of 2008, we've planted 42,000 marsh plants along its shoreline, filled and moved more than 10,000 bags of oyster shells and marl, built 700 feet of sills using bags of oyster shells and created almost two acres of patch oyster reefs.



For all that work, we have to thank the dedicated volunteers who went to the island in the middle of the White Oak River to pitch in. More than 1,600 people contributed more than 9,300 hours to help prevent erosion and create coastal habitat at Jones Island.

Specific groups and schools that were involved with the project include: Public Radio East; the Marine Corps; the Coast Guard; Camp Albemarle; Boy Scout Troop 82 from Cherry Point; Girl Scout Troop 1693; N.C. Maritime Museum and N.C. Aquarium summer camps; Craven County Gear-Up Ecology Program; Swansboro Methodist Church Youth Group; First United Methodist Church Youth Group from Wilkesboro; St.

Johns Youth Group from Lynchburg, VA.; Newport Middle School; Broad Creek Middle School; Beaufort Middle School; Smyrna Elementary School; Infant of Prague Catholic School; Jones Middle School; Jones High School; Swansboro Middle and High Schools; Croatan High School, Havelock High School; Pamlico County High School; Craven Community College; East Carolina University; University of North Carolina at Chapel Hill; and Plymouth State University in New Hampshire.

Our volunteers last summer helped to monitor the success of the sills and reefs made of oyster shells. They found that oyster spat and juveniles covered the shells, and many types of marine animals have been attracted to the reefs and sills. Those include stone crabs, mud crabs, hermit crabs, worms, sea squirts, juvenile mussels and clams, barnacles and a variety of fish.

This fall and winter we will be busy creating more bags of marl and oyster shells that will be used next year to build 500 feet of sills at Jones Island. We will also plant 20,000 more salt marsh plants next spring.

top: Hermit crabs use newly placed oyster shell bags as habitat.



Rain Garden Leads to Encounter With Nature

The students of the Swansboro Elementary School who helped plant trees and shrubs at their newly built rain garden were treated to an up-close encounter with nature this summer.

When the construction of the garden began in June, a pair of nesting killdeers vocally objected to the intrusion. Their loud "killdeer" call echoed off the walls of the brick school and could be heard around the campus. Part of their scientific name actually means "voice-to carry."

Both parents paraded around faking broken wings to lure people away from their nearby nest that contained four speckled eggs. Even as heavy equipment rumbled about and excited students dug planting holes, the noisy killdeers defiantly continued incubating the eggs.

After the construction, the relieved birds continued protecting and sitting on the eggs through some of the hottest days of June. Sam Bland of the federation staff made frequent trips to check on the nest and photographed the nesting parents and later the precocious chicks running about on long legs looking for insects. Photos showing their progress ran on the federation's Web site and Facebook page.

The parents soon moved the fuzzy downy chicks to a nearby ditch that provided cover and food. After about a month all four chicks had developed their first set of plumage and were able to fly.

above: A Killdeer parent guards two newly hatched chicks.



A huge thanks to our dedicated Jones Island volunteers.

FEDERATION LEADS PARTNERSHIP TO STOP RUNOFF AT WILMINGTON SCHOOL

Education & Restoration

BIG PLANS TAKE SHAPE AT BRADLEY CREEK

Bradley Creek Elementary School in Wilmington and the New Hanover Board of Education are working with the N.C. Coastal Federation and numerous partners to entirely eliminate polluted runoff on the 16-acre school campus. Another goal of this multi-year plan is to demonstrate techniques that can be used to capture and treat stormwater at other schools and public buildings.

The plan includes a number of stormwater reduction projects around the school. Rain gardens, bioretention areas and stormwater wetlands will slow down and soak up the rainwater flowing off the school's paved areas and roofs, removing bacteria and other pollutants before they reach nearby Hewletts Creek. These areas also provide students with living classrooms to learn about plants, soils, hydrology, pollution and local ecology.

Two rain gardens were finished in the spring and two stormwater wetlands will be built this fall. The projects are accompanied



by classroom and field activities for the entire third grade and include plantings by students and volunteers and educational opportunities for the community.

Other partners in this project are: the New Hanover Soil and Water Conservation District, Wilmington Stormwater Services, the N.C. Division of Soil and Water Conservation and Coastal Carolina Resource Group, Inc. The N.C. Attorney General's Environmental Enhancement Grant Program and the EPA-National Fish and Wildlife Foundation Five Star Program are

providing financial support.

OYSTER RESTORATION WINDING DOWN

The oyster restoration season is winding down after a very productive year in the southeast region. Using some of the money from our \$5 million economic stimulus grant, we paid commercial fishermen to place 20,000 bushels of oyster shells to create almost five acres of oyster habitat in Stump Sound and around Wrightsville Beach.

The federation also completed a grant project funded by the N.C. Attorney General's Environmental Enhancement Grant Program, which involved another 15,000 bushels of oyster shells spread over four acres of oyster reef habitat in Stump Sound. Over the course of this three-year project, we placed more than 40,000 bushels of shells in the sound, completed a living shoreline, built a new pier to load barges with oyster shells at our Morris Landing Clean Water Preserve and established a major stockpile of oyster shells at the preserve.



Advocacy

TITAN UPDATE: APPEALS, DEALS, NEW REGS

The Titan Cement plant saga took a few twists and turns, including a winning court decision in May that prevents Titan from fast-tracking its air permits.

The federation, Cape Fear River Watch and PenderWatch and Conservancy sued the state in Wake Superior Court over its decision to waive the State Environmental Policy Act (SEPA) review for the massive cement plant and limestone mine that Titan wants to build on the Northeast Cape Fear River north of Wilmington.

Judge Donald Stephens ruled that the state erred in that decision and confirmed that Titan must undergo the coordinated SEPA review before the state issues any permits. In effect, the ruling blocked Titan's plan to acquire its state air permit and begin building the plant before beginning the comprehensive review of potential impacts to wetlands that will be required by its federal permit.

Titan, which entered the lawsuit on the side of the state, has appealed Stephens' ruling, though the state says it will not. Our legal team from the Southern Environmental Law Center and Duke University's Environmental Law and Policy Clinic are busy preparing for the appeal hearing, which will probably be this fall.

The EPA finally in July released its long-overdue and more stringent regulations on air emissions from cement plants. In applying the new rules, Titan will be required to reduce its mercury emissions from 263 pounds to 46 pounds a year. The regulations also will require significant reductions – up to 98 percent – for other toxic pollutants that would be emitted by the Titan plant.

While the new regulations will save lives of those who must live near cement manufacturing plants, the federation and our Stop Titan Action Network remain opposed to the Titan plant, which would degrade our natural resources, our air and water quality and threaten the human health and economic engine that drive the coastal communities in this region.

College Students Transform Underwater Video Camera

Our new Aqua-Vu underwater video camera can pick out oysters in the murkiest water and catch the vibrant colors of a butterfly fish. But could this fished-shaped camera also be used to monitor oyster reef and other underwater habitats? Could it be a worthwhile educational tool for our restoration projects?

Enter the Marine Technology Department and Club at Cape Fear Community College.

The department provides students with the practical skills and academic background to become proficient using electronic navigation devices, physical and chemical measuring instruments and other sampling devices found aboard marine vessels. Students in the

department and Marine Tech Club – Marrison Salvitti, Jon Robinette, Dave Robinson, Joe Colin, Jacob Larence and Megan Rudolf – worked alongside Jason Rogers, the Marine Tech Department chairman, and Tim Shaw, an instructor and technician, to craft a system that made the camera more user-friendly and more suitable for the tasks we had in mind.

The students and instructors transformed a watertight case to hold the camera monitor, power source, video translator and laptop. What was once a series of components and tangled wires sitting on a wet boat deck became an efficient image downloading system. The group fashioned a new aluminum fastener



and stand, which allows the camera to hover above the reefs.

Now, when the camera is lowered into the shallow water above the reef, viewers get to experience the underwater world of the restored oyster reefs, following shrimp, mud crabs and fishes as they make their way through the reef. With this system, the federation has a new tool to help monitor the success of our oyster reef restoration efforts. As important, the images provide an exciting educational tool. So check out our website to get your fish-eye view of our oyster reefs.

Many thanks to the Cape Fear Community College Marine Technology Department and Club.

Lend a Hand This Fall

Building rain gardens, manning the federation booth (and eating oysters) at the N.C. Oyster Festival and bagging oyster shells for reefs – these are just a few of the ways volunteers can help us this fall. Please look for the email announcement and check out our Web page, www.nccoast.org, for more details.

Federation, Miller Receive NOAA Award

The N.C. Coastal Federation and its director, Todd Miller, were honored by the National Oceanic and Atmospheric Administration for years of dedicated and effective work restoring the state's degraded coastal habitats. The federation's award was one of five similar awards that the agency gave to groups nationwide.

The federation has worked with local communities to protect and restore the state's valuable coastal resources since 1982. Projects range throughout the coast and include working with farmers on large-scale hydrologic restoration of farm land in Hyde and Carteret counties, oyster restoration projects large and small, advocating for better enforcement of coastal laws and regulations and putting students and other volunteers to work restoring marshes.

"This award honors not only our work, but that of our many partners, including those here today," Miller said upon accepting the award.

Jackie Mardan Retires From Board

Jackie Mardan, a longtime federation board member, has retired from the board.

A native of New Hanover County, Jackie spent 28 years as a nurse or teaching nursing. She and husband, Omar, retired to Wilmington in 1987.

She started working with the federation six years later on New Hanover County's CAMA land-use plan. She joined our board shortly afterwards.

Jackie represented the federation at numerous planning initiatives and has been active in a variety of issues from corporate hog farms to Titan Cement. She has been a devoted coastal steward, strong environmental advocate and cherished board member. We wish her well.

Loss of a Dear Friend

The Coastal Federation lost a dear friend, volunteer and member recently, with the sudden passing of Karen Rooney. Since 2004 she donated nearly 180 hours of her time helping with landscaping, the Native Plant festival, clean-up events and oyster reef monitoring. Her smiling face and quiet charm will surely be missed. Many thanks to those who made donations in her honor. Our thoughts and prayers continue to be with her family.



INTERNS DID VALUABLE WORK OVER SUMMER

Our crop of summer interns has already come and gone, but they did some valuable work for us while they were here this summer. Here's a summary of their work:

JOSH BLACK: Josh is a candidate for the master's of environmental management at Duke University for 2011 and originally from York, Pa. He created an oyster restoration business prospectus that will allow the federation to gain more investments and investors for our future oyster restoration projects.

KYLE BORGEMEISTER: Kyle is a rising senior at University of North Carolina at Wilmington majoring in environmental studies. This summer he designed and outfitted our new habitat restoration trailer with a system that will enable staff to easily transport all the needed gear and tools to restoration sites. Kyle also designed and crafted the interpretive sign displays for the rain gardens at Alderman and Bradley Creek elementary schools in Wilmington.

CAROLYN GROVES: Carolyn was a restoration intern, working in the field on all restoration projects and organizing field data. She also continued the catalogue work on the Weber shell collection that intern Elise Leduc started last year. Carolyn is a rising junior at Duke University and is from Spartanburg, S.C.

CAROLINE RODRIGUEZ: Caroline is a rising sophomore at Duke University and is from Wilmington. She worked on creating a cohesive curriculum for the federation's educational programs in the southeast



*top; from left: Kirby Rootes-Murdy, Josh Black, Jess Sutt, Carolyn Groves and Holly Sanders.
below: Kyle Borgemeister and Caroline Rodriguez man our booth at the N.C. Shrimp Festival in Sneads Ferry.*

region and staffed our education display at the N.C. Shrimp Festival in Sneads Ferry. She has also created a database and virtual map of the oyster habitat restoration projects that the federation has completed over the last ten years.

KIRBY ROOTES-MURDY: Kirby is a 2011 candidate for the masters of environmental management at Duke University. He focused on the Cedar Point stormwater project, creating a photo inventory of existing stormwater systems throughout the town and creating a ranking order for prioritizing retrofit projects. Kirby is from Bethesda, Md.

HOLLY SANDERS: Holly is from Raleigh and is a 2011 candidate for the masters of environmental management at Duke University. She completed a comprehensive draft watershed management plan for the Bradley and Hewletts Creeks watersheds in Wilmington. The goal of the plan is to more quickly move forward in addressing the sources and causes of the impaired waters.

JESS SUTT: Jess is a rising senior at Warren Wilson College and was the lead educator for the Bear Island ecology tours and marsh cruises at Hammocks Beach State Park. She also created a hands-on curriculum for future summer programs at the park. Jess is from Belsano, PA.

Announcing The North Carolina Coastal Federation's 2011 PHOTOGRAPHY CONTEST

Sponsored by EMERALD ISLE REALTY

My Favorite N.C. Coastal Place



North Carolina's coast is one of the most spectacular and productive areas in the nation. More than 4,200 miles of shoreline fringe our coastal sounds, rivers and creeks. Our beaches include more than 320 miles of white sand and giant dunes. Let's work together to protect these areas by celebrating their unrivaled beauty.

Send us a photo of your favorite place along the North Carolina Coast and you could win:

- First prize: \$500 and the opportunity to have your photo published in the *State of the Coast Report*
- Second prize: \$250
- Third prize: \$100
- Honorable mention: Coastal Federation memberships
- All winners will be posted on the federation's Web site

CONTEST RULES:

- Photos must be of a North Carolina coastal landscape and have been taken no earlier than January 1, 2010.
- Photos must be emailed electronically; instructions and forms are at www.nccoast.org

- Photos should be unaltered beyond standard optimization (cropping, adjustment to color and contrast, etc.)
- Photos must be submitted by photographers 18 years and older.
- Photos must be received no later than April 15, 2011.
- Only one photo per photographer is allowed.
- N.C. Coastal Federation board, staff and their families and Emerald Isle Realty staff and their families may not enter.

JUDGING:

The judging panel will select winning photos and announce their decision no later than May 15, 2011.

Winners will be notified by email and winners will be posted on the N.C. Coastal Federation web site no later than July 1, 2011.

Linda Sunderland won first place in the 2009 contest with her photo of Lake Mattamuskeet.

Images will be judged on technical excellence, composition, originality and subject matter.

The judges are a panel of N.C. Coastal Federation staff and volunteers who are professionally involved in the selection of photographs for use in marketing and advertising. Their decisions are final.

AUTHORIZED USE NOTICE: By submitting a photo for the contest, you agree to the rules, terms and conditions that have been established for this photo competition. You also agree that the North Carolina Coastal Federation and Emerald Isle Realty can use your submission(s) for any purpose whatsoever and you warrant that the submissions are your own original work. By participating in the contest, you waive and release any and all claims and rights against the federation and Emerald Isle Realty and you indemnify and hold the federation and Emerald Isle Realty harmless from all actions, costs, liabilities, losses or damages arising out of your submissions used by the federation and Emerald Isle Realty, including those alleged or asserted by a third party to be unauthorized.

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GOT A PICKUP YOU NO LONGER NEED?

Our 1997 Toyota pickup is still on the road, but it's more rusty than trusty. We are in the market for a newer pickup for our field work. We need 4-wheel drive for our work in Hyde County but would like a smaller truck that doesn't use too much gas.

If you have a truck you'd like us to consider for donation, please contact Executive Director Todd Miller at **(252) 393-8185** or toddm@nccoast.org.



MEMBERSHIP APPLICATION

Be the 10,000th Federation Member and Win a Coastal Cohorts' Package (Details on page 3)

Name _____

Address _____

City _____ State _____ Zip _____

Phone _____ Email _____

Name of individual who referred you to membership (They win too!) _____

Their email or phone number _____

Individuals or Families:

\$35 \$50 \$100 \$250 \$500

Businesses, Groups & Organizations:

\$50 \$100 \$250 \$500 \$1,000

Membership Benefits: Quarterly issues of *Coastal Review*; Invitations to special events; Nature Library privileges; Discounts on events and on NCCF apparel; Annual *State of the Coast Report*; Discounts and special offers from Business Friends; The satisfaction of helping to protect and restore the coast

Join online at www.nccoast.org or call 252-393-8185 or make your check payable to NCCF and mail with this form to 3609 Highway 24, Newport, NC 28570.

For credit cards, please complete:

Name _____

Card: Visa Mastercard American Express Discover

Credit Card Number _____ Expiration Date _____

Signature _____

Membership fees minus the value of benefits received are tax-deductible. Fair market value of benefits is: \$35-\$50 level: \$0; \$100 - \$250 level: \$10; \$500 level: \$20 and \$1,000 level: \$50.

Check here if you wish to waive benefits and receive the maximum deduction.