UNC Sea Grant

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COASTWATCH

Photo by Scott Taylor

North Carolina's Vanishing Maritime Forests

What sets these woods apart

BY KATHY HART

There's an old adage: "You can't see the forest for the trees."

In the case of North Carolina's maritime forests, that adage can be taken literally.

As you ride along N.C. 12 through Buxton or N.C. 58 past Bogue Banks, you see the gnarled branches of live oaks or the berry-laden limbs of yaupons along the side of the road.

But the branches of the oaks and yaupons rarely give you a glimpse of the forest beyond. And they certainly don't give you a clue to the importance of these maritime woodlands.

Oceanfront forests are special.

Their flora can grow where no trees and shrubs have grown before. They are specifically adapted to tolerate salt spray, strong winds and the poor soils of the barrier islands.

Despite this inhospitable environment, maritime forests provide barrier islands with special benefits. They anchor shifting sands; accumulate, store and protect fresh water; and add soil through decomposition of plants.

Today, North Carolina's barrier islands support diminishing numbers of acres of maritime trees and shrubs.

The larger forests are at Buxton, Kitty Hawk, Nags Head and the Smith Island Complex (Bald Head, Middle and Bluff islands). Smaller wooded tracts can be found on Currituck Banks, Ocracoke, Portsmouth Island, Shackleford Banks, Bogue Island, Topsail Island, Bear Island and Carolina/Kure Beach.

Portions of these wooded tracts are protected.

Nearly 300 acres of Nags Head Woods are owned by the N.C. Nature Conservancy. Another 260 acres are owned by the town of Nags Head to protect its groundwater supply.

The Cape Hatteras National Seashore manages 1,000 acres of the 3,000-acre Buxton Woods tract. The N.C. Division of Coastal Management recently bought another 328 acres as part of its Coastal Reserve Program.

The Cape Lookout National Seashore maintains the woodlands on Portsmouth and Shackleford Banks.

And the state owns a 256-acre maritime forest on Bogue Banks, the Theodore Roosevelt State Natural Area, and the forests on Bear and Bluff islands.

Photo by Scott Taylor

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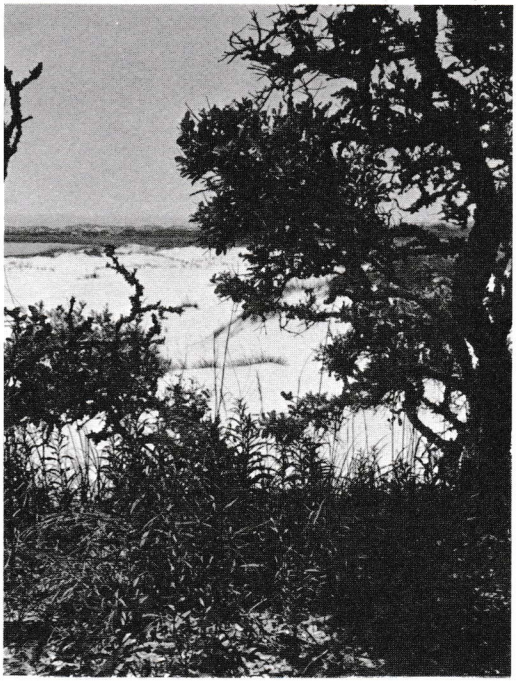


But this is only partial protection. As developers eye these maritime woodlands as possible sites for condominiums, hotels and housing projects, resource managers, conservationists and scientists worry. They would like to see these valuable maritime forests protected, preserved and studied.

"People don't know how important these systems are ecologically," says Jonathan Evans, a barrier island plant ecologist at the Duke University Marine Laboratory. "They associate the forests with mosquitoes and bugs.

"It's like the salt marshes. Twenty years ago most people considered them wastelands," he says. "Now they realize how vital they are."

Evans says the maritime forests stabilize the otherwise unstable barrier islands more than any other plant community.

The forests grow on old dune systems called relic dunes. And they are populated by species of vegetation—live oak, red cedar, yaupon and wax myrtle—that can adapt to the harsh seaside conditions.

The salt spray constantly shears and shapes the trees and shrubs. The salty deposits kill outer twig shoots but allow growth along the inner branches, says Lundie Spence, Sea Grant's marine education specialist. The result is a thick, tightknit forest canopy that provides protection for less salt-tolerant species such as dogwood, red maple and American hornbean.

But as deadly as the salt spray is to outer branches, it is vital to the growth of the forest, Spence says. Minerals and trace elements carried in the sea breeze fertilize the sand and vegetation. Without the airborne ocean broth, the maritime forest would lack essential growth nutrients.

And just as the forest canopy regulates the infiltration of salt spray, it also manages the conservation of rainfall.

The canopy shields out the sun's evaporating rays, providing protection for the layer of fresh water that lies just beneath the land's surface. The layer is fed only by rainfall, and it is the sole source of fresh water along much of the Outer Banks.

By conserving water, the maritime woodlands also store water for the barrier island residents and vacationers who want a shower in the morning or a glass of water with their meals.

And the seaside timberlands provide other vital functions. They trap and moor sand, gradually add soil to barrier islands threatened by sea level rise and offer refuge to an array of wildlife.

But development threatens all of the maritime forest's valuable functions, Evans says. Building houses, condos or motels in these woodlands would fragment the forest, destroy its natural defenses and allow the killing salt spray to penetrate.

Eventually the forest could die.

Scientists don't know how much fragmentation the maritime forests can withstand and still work as a whole. And coming up with the magic number of acres for preservation or conservation is hard, Evans says.

"The amount of acreage needed for aquifer protection is different from the amount needed to sustain a deer population," he says.

In Evans' eyes, a combination of research, preservation and public interaction is needed to protect seaside timberlands.

"The public needs to recognize and understand how important our maritime forests are and then apply pressure to preserve them," he says. "But if they don't realize their significance soon, they could be destroyed."

The struggle to save our maritime forests

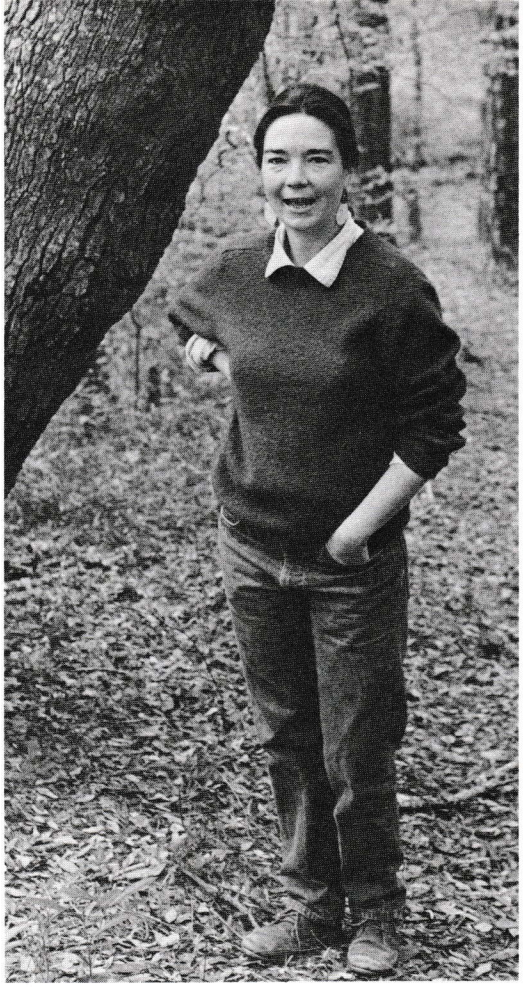


Photo by Nancy Davis

SHAY CLANTON IN BUXTON WOODS

BY NANCY DAVIS

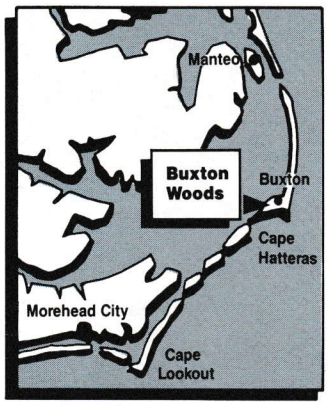
A rope swing drifted some 25 feet beneath a gnarled live oak branch.

Shay Clanton took a running jump and threw her legs around the swing's seat. She sailed through the trees several times, then dropped off.

The clearing would make a beautiful site for a house. But Clanton felt more at home with the rope swing. For the artist, development would only mar the landscape she loved to paint.

Clanton and about 250 environmentalists, all members of Friends of Hatteras Island, had just won a victory of sorts. After two years of debate and negotiation, the woods were to be protected by a special Dare County ordinance.

Development would still take place. But at least it would be controlled.



Buxton Woods, the state's largest remaining maritime forest, covers about 3,000 acres of the widest portion of Hatteras Island. About 1,000 acres are part of the Cape Hatteras National Seashore. Most of the remaining 2,000 acres are privately owned.

Except for a few houses, the woods have remained undeveloped . . . until now.

As beachfront land becomes scarce and prices soar, people are looking to the woods. And for some longtime property owners, the promise of hefty profits is luring them to sell their land or develop it themselves.

It's a scenario repeated up and down the Carolina coast. At one time, most of the Outer Banks were forested with the live oak, laurel oak and loblolly pine characteristic of maritime forests.

But time has taken its toll. Many of the forests have been chopped by the developer's ax.

Buxton Woods is just one of the state's maritime forests that's been under scrutiny lately. And the debate over that forest has called attention to others from Duck Woods to Bald Head Island.

"Maritime forests are already an endangered habitat," says David Owens, director of the N.C. Division of Coastal Management.

"Most of what we had is gone, and most of what we have left is going," he says.

And it's the going that has Clanton and her group worried.

"We don't oppose development in here," she says of Buxton Woods. "It's just such a fragile place that we're afraid large-scale development would destroy it.

"Everyone realizes that development is inevitable, but we hope it's planned enough that it won't destroy the environment," Clanton says.

The controversy over Buxton Woods began in 1986 when a landowner announced plans for a golf course and housing development. Individual homes had been built in the forest before, but never a large development.

The Friends of Hatteras Island formed in opposition to the proposed development

and began a two-year lobbying effort to save the woods.

At the same time, the N.C. Sierra Club asked the N.C. Coastal Resources Commission to designate the woods an area of environmental concern. The AEC designation would have required special state permits for development in the woods.

Some areas, such as wetlands, estuarine shorelines and coastal beaches, are automatically designated AECs. Others must be nominated and must meet certain criteria to qualify.

Opposition to Buxton Woods development centered on concern for the water supply. Critics feared development would lead to contamination or depletion of the freshwater aquifer that serves as Hatteras Island's main source of drinking water.

In lieu of the state's AEC designation, in March the Dare County Board of Commissioners passed its own zoning ordinance to protect the area.

Ray Sturza, Dare County planning director, says the county's approach to the preservation of the woods was much like the state's proposed AEC designation.

The commissioners recommended that as much of the woods as possible be acquired by the state for preservation.

And they proposed that areas not acquired be managed by the local government through a special environmental zoning district.

The SED mandates a minimum lot size of roughly one acre per house and restricts the land to single-family residential use. It also calls for regular monitoring of water quality in the woods.

The state AEC, on the other hand, would have required lot sizes of nearly two acres.

Owens says the Coastal Resources Commission was satisfied that the county's plan would provide adequate protection for the woods.

If the commission feels the county isn't enforcing its ordinance, it reserves the right to resurrect the AEC proposal. But even with the SED, Owens says the ultimate protection for Buxton Woods and other maritime forests is state acquisition. After all, zoning ordinances can be changed, and such decisions are always political, he says.

So, even though Dare County now controls development in the woods, Owens continues to negotiate with landowners to purchase parcels for the state.

So far, he's bought 328 acres.

The land will be included in the state's Coastal Reserve Program. It will be kept in its natural state for research and education, Owens says.

Without ownership of large chunks of the forest, the state is in danger of losing its maritime forests before it knows much about them, Owens says.

To learn more about the forests, Coastal Management funded a survey of all maritime forests larger than 20 acres. Jonathan Evans, the principal investigator and a researcher at Duke University Marine Laboratory, says he'll recommend the state conserve as much of the remaining maritime forests as possible. Evans would like to see all maritime forests designated as AECs so that the state would have some control over development in the areas.

"To have the communities disappear before we've had time to study them would be rather sad," Evans says.

Owens agrees. As he surveys an aerial photograph of Buxton Woods, he proudly points to the parcel of land recently acquired by the state.

"We now own the area where the golf course was proposed," he says.

And even though Buxton Woods is zoned for low-density development, it still disturbs Owens. "At what point does the development become houses in the woods or a subdivision with trees?" he asks.

JONATHAN EVANS

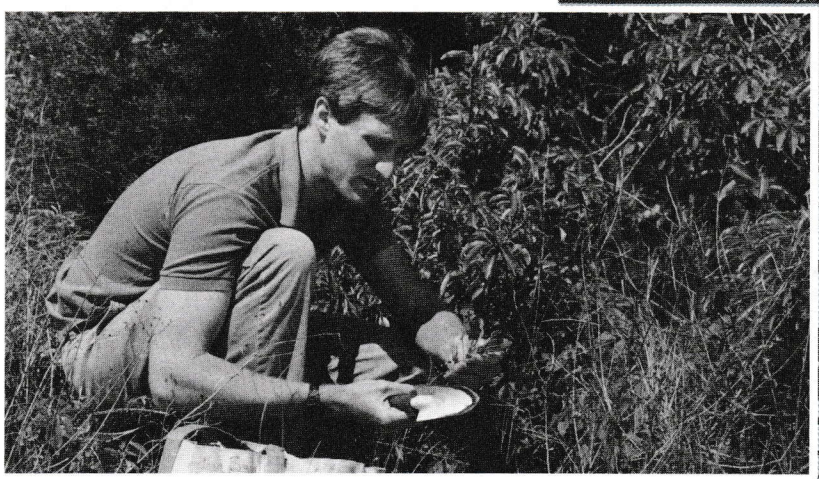


Photo by Scott Taylor

A friend in the woods

BY KATHY HART

Marcia Lyons shifts into four-wheel drive as she forces her vehicle up a steep incline on a narrow sand path in Buxton Woods.

Talking over her shoulder, Lyons explains the reason for the roller coaster ride: "Buxton Woods grew up on an old dune system. So, the forest alternates between ridges and low spots. Some of the ridges reach as high as 60 feet."

Lyons knows Buxton Woods well.

For her, the twisted limbs of the live oak and the spindly trunks of the loblolly pine are home and office.

She and her family live beneath the protective canopy of the Buxton woodlands. And as a park naturalist, she shares custodial duties for the 1,000 acres of the forest managed by the Cape Hatteras National Seashore.

But for Lyons, Buxton Woods is more than duty; it's a love.

She enjoys nothing better than telling folks about the plants and trees that knit together to form this tightly woven seaside forest.

Pointing out the window to the trees beyond, Lyons explains that the dominant forest species are the live oak, laurel oak and loblolly pine.

Lyons says the woods were logged during the 1700s and 1800s. First the live oak and red cedar were cut for shipbuilding. Then loggers turned to the pine and dogwood.

Meanwhile, Hatteras Island was also used for grazing cattle, horses, sheep, hogs and goats, she says. The goats, in particular, fed on the young tree and shrub shoots in the forest.

Finally, in the 1930s a penning law forced livestock owners to fence their animals. Afterward, the flora of Buxton Woods flourished abundantly.

Because of logging, grazing, occasional fires and hurricanes, Buxton Woods is a relatively young woodland, Lyons says. Most of the trees date back only 40 to 50 years.

Suddenly, Lyons brings the vehicle to a stop and points to a spike-leaved plant that resembles a fan.

"That's a dwarf palmetto," she exclaims. "Buxton Woods is the northern-most limit of its range. The same is true of the cherry laurel."

Hatteras Island is a transition zone between subtropical and cold-tolerant species. Winds off the nearby warm Gulf Stream encourage the subtropical plants to thrive, Lyons says.

The island's location and isolation have also led to unique subspecies of woodland creatures such as the eastern king snake. And when it comes to mammals, Buxton Woods has greater diversity than any other maritime forest in North Carolina or the adjacent states, Lyons proudly proclaims.

In fact, she's proud of every shrub, tree and vine in Buxton Woods. By telling people about them, Lyons hopes they will better understand, appreciate and perhaps preserve this special forest.

The car stops again, Lyons hops out and gazes across the "most scenic spot in the woods"—Jeanette's Sedge. Here in a low spot between ridges, fresh water oozes from the ground to form a marsh surrounded by lush vegetation.

She's right. It's beautiful...the kind of spot you want to show your kids 15 years from now and your grandchildren 15 years beyond that.

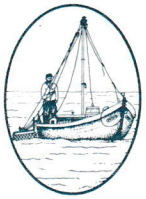
Lyons smiles. She knows she's made another friend for the forest.

JEANETTE'S SEDGE

Photo by Kathy Hart

THE BACK PAGE

"The Back Page" is an update on Sea Grant activities — on research, marine education and advisory services. It's also a good place to find out about meetings, workshops and new publications. For more information on any of the projects described, contact the Sea Grant offices in Raleigh (919/737-2454). For copies of publications, write UNC Sea Grant, NCSU, Box 8605, Raleigh, N.C. 27695-8605.



Jim Bahen is a winner. Bahen, Sea Grant's Marine Advisory Service agent in the Wilmington area, recently garnered two prestigious extension awards.

The North Carolina State University Alumni Association presented Bahen with one of two Outstanding Extension Service Awards. At a banquet in Raleigh, Bahen was given a plaque and a $1,000 check to honor his marine extension efforts along the southeastern North Carolina coast.

Bahen was also named Agent of the Year by Sea Grant's Southeast Marine Advisory Service. Over 100 agents from North Carolina to Texas compete for this annual award.

Bahen's awards are based on his development of three successful extension programs: the Marine Weather Reporting Program, the Sea-Surface Temperature Program and the Turtle Excluder Device Program.

MAREP, a system for relaying weather reports via VHF radio between mariners and the National Weather Service, has increased the safety of an estimated 3,000 commercial and 6,000 recreational boats.

The Sea-Surface Temperature Program enables fishermen to save time and fuel by providing temperature data necessary for locating the warm Gulf Stream eddies and the fish that swim those waters.

With the TED program, Bahen introduced North Carolina shrimpers to the controversial excluder devices designed to allow endangered sea turtles to escape from shrimp nets. He also worked with Supply netmaker Steve Parrish to design a cheaper, easier-to-use TED that met federal approval.

Jim Murray, Sea Grant's MAS director, says, "Almost everyone involved in fishing in southeast North Carolina knows Jim and calls on him for objective information. He is friendly, courteous, dedicated and well-liked by his clientele group."

Bahen, who specializes in fishery information, has been with the UNC Sea Grant College Program for 10 years.

Olympic athletes aren't the only ones receiving medals this year. Sea Grant's writers recently won two medals in a national publications competition.

Coastwatch, Sea Grant's monthly newsletter, took top honors with a Gold Medal award from the Council for Advancement and Support of Education. Out of 65 entries in the newsletter publishing category, only four gold medals were awarded. Judges honored *Coastwatch* for excellence in writing, editing, design, photography and printing.

Coastwatch is written by Kathy Hart, Nancy Davis and Sarah Friday. Kathy Hart is editor. Each month, it is designed by Ginny Petty or Linda Noble, and printed by University Graphics in Raleigh.

Sea Grant's winning style also led to a Silver Medal award for *A Guide to Ocean Dune Plants Common to North Carolina*. The new book illustrating and describing the state's coastal flora was one of 40 entries in the book publishing category. CASE awarded four silver medals in this competition.

The guide was written and illustrated by E. Jean Wilson Kraus of the N.C. Maritime Museum and edited by Sea Grant's Sarah Friday.

If you'd like to savor sweet, succulent crab meat panned in butter or stuffed in a large fresh flounder, why not catch your own.

All you need is a crab pot and some chicken necks or fish heads for bait. The crab pot, which is easy to build, can trap 10 to 12 crabs in several hours during warm weather. And best of all, it doesn't need to be tended.

Sea Grant's *How to Build a Crab Pot* describes how to assemble the wire box that allows an easy entrance, but a difficult escape, for the blue crab.

It takes only galvanized wire, hog rings, pliers, wire cutters and about one hour of time to build, says Sea Grant agent Jim Bahen, author of the booklet.

For a copy of *How to Build a Crab Pot*, write UNC Sea Grant. Ask for UNC-SG-80-03. The cost is $1.50.

If you're planning to move and would like to continue receiving *Coastwatch*, please notify the Sea Grant communications office six to eight weeks in advance. And be sure to include your identification number, which appears just above your name on your address label.

The U.S. Postal Service notifies us of address changes, but only *after* you have moved and at a cost of 25 cents per return copy. We receive several hundred return copies per issue. These costs quickly add up and add a financial burden to a newsletter already strapped for funds.

So please do your part. Send us your address changes, and help us keep *Coastwatch* a free newsletter.

Also, when you subscribe to our newsletter, please allow six to eight weeks to get your first issue. The reason? We're always working ahead. The mailing list of the June/July issue, for example, was updated and printed in late May.

There are 18,000 of you on our mailing list, and we try our best to keep you all happy. But if you have a problem receiving your newsletter, please contact us. Write Sea Grant Communications, Box 8605, North Carolina State University, Raleigh, N.C. 27695-8605. Or call 919/737-2454.

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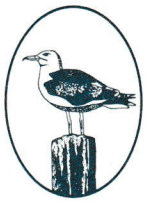

It's never too early to plan a trip to the beach. Mark Sept. 24 on your calendar now and plan to join thousands of other folks for North Carolina's Beach Sweep '88.

The second annual cleanup will cover the beaches from Nags Head to Wilmington. Last year, more than 1,000 people bagged 14 tons of trash. Beach Sweep coordinators hope to top those figures this year. And it can happen with your help.

Round up some friends, a club or your class to help pick up trash from 9 a.m. to 1 p.m. on the 24th. Bags, data collection cards and pencils will be provided at sites along the coast.

Coastwatch will print the names of regional and volunteer coordinators in August. If you'd like to pitch in, check the list in the next issue.

Beach Sweep coordinators also are looking for companies that would like to donate supplies, drinks, snacks or funds for printing or educational materials. All donors will be recognized for their contributions. If your company would like to make a donation, call Sea Grant at 919/737-2454. Ask for Lundie Spence or Sarah Friday.

Beach Sweep is sponsored by Sea Grant, the Office of Marine Affairs, the divisions of Coastal Management and Parks and Recreation, and the state 4-H Clubs.

Sea Grant agent Skip Kemp helped a Massachusetts company install the first state-approved water-column clam nursery.

Aquaculture Research Corp. is working with Kemp and a Carteret County lease holder to test the idea of water-column nurseries in North Carolina. Three-millimeter clams supplied by the company were placed in off-bottom racks where they will grow until they reach a size that is large enough to "plant."

In other clam aquaculture efforts, Kemp has set up spawning demonstration equipment behind the N.C. Aquarium at Bogue Banks. The equipment includes a water-heat exchanger, a spawning table and larvae tanks.

If you'd like for Kemp to show you how to spawn clams or other shellfish, call him at 919/247-4007 for an appointment. Kemp has also set up a small nursery, oyster trays and demonstration beds to show interested clientele.

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Address correction requested