



UNIVERSITY OF NORTH CAROLINA

SEA GRANT COLLEGE
NEWSLETTER

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Coastal lessons for summer

Going to the beach this summer? Take an education break while you're there. Visit with a sea turtle. Contemplate a moray eel. Find out what makes a marsh work and how sand dunes form.

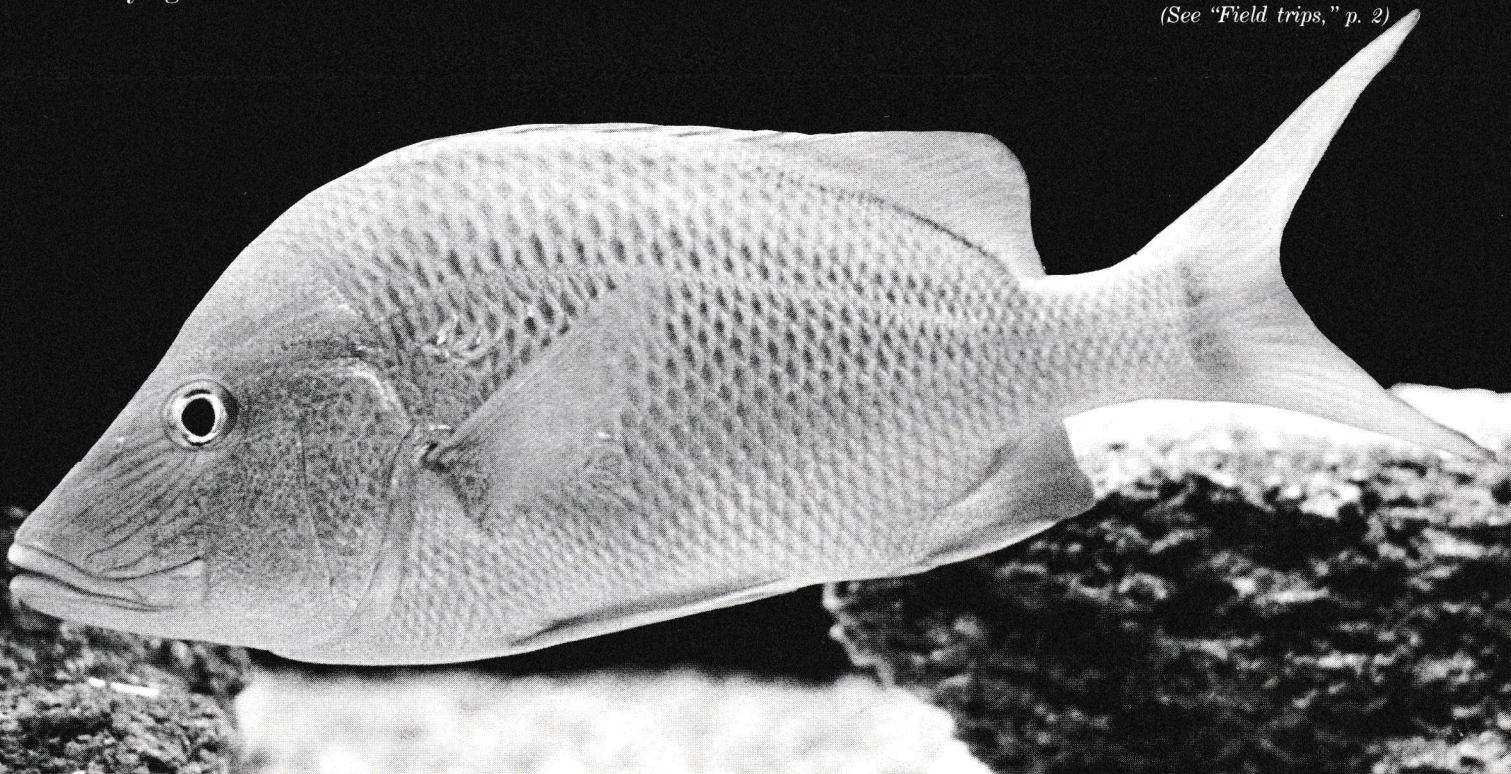
You can do it all at the North Carolina Marine Resources Centers, located near Fort Fisher, on Bogue Banks and Roanoke Island. Operated by the state Office of Marine Affairs, the three centers were built with \$4.6 million in state and federal funds. They opened to the public last September and their first summer's schedules are packed with activities for folks of all ages.

Interested in marine animals? Highlights in each center are 300 to 500 gallon aquarium tanks. They house about 100 species of fish and crustacea which are native to the North Carolina coastal fresh, estuarine and ocean waters. Among the favorite attractions are octopi, lobsters and sea turtles. And there are mini-tanks for smaller creatures—such as sea horses, grass shrimp and sea urchins.

Located in natural settings, the centers offer excellent opportunity for studying the local ecology. Inside, visitors can browse through varied exhibits. Guided tours are available for school groups and other organizations. Teachers can arrange for films and hands-on exercises for their groups.

The centers were designed as learning labs for tourists, school groups and research scientists. They are equipped with research labs which have been used by scientists from Sea Grant and other programs. Sea Grant advisory agents also have offices in the centers.

(See "Field trips," p. 2)



Field trips anyone?

(Continued from p. 1)

Exhibits, films, lectures and field trips at each center are open to the general public at no charge. Here's a brief run-down of some activities planned for this summer:

Roanoke Island

The center will offer a field trip and a workshop each week. Scheduled workshops include mounting fish; fish filleting, handling and storing; coastal awareness through photography; and driftwood crafts. Field trips will include a coastal bird walk, sound shore investigation, a strands walk and a visit to a maritime forest.

Weekly seminars on a variety of marine subjects will continue. And the center will offer educational films several times daily. For further information, call 473-3493.

Bogue Banks

The Bogue Banks center is offering three special moonlight field trips to observe the egg laying and hatching behaviors of the loggerhead sea turtles. Also on schedule are four one-day snorkeling trips to Radio Island and two night snorkeling trips.

Weekly field trips include visits to a salt marsh and to the ocean and Bogue Sound for seining. On one trip participants will study naturally occurring plants on the barrier island. Center staff will also lead biweekly trips to nearby rock jetties, where groups can observe life in the inter-tidal areas.

Participation on some field trips is limited. Pre-register in person or by calling the center, 726-0121.

General interest films on marine life are shown daily and a film series on Thursday nights features sea adventures and sea science.

Fort Fisher

Summer field trips at the center in Fort Fisher are scheduled from June 20 to August 8. Participants will need their own transportation and children under 12 must be accompanied by an adult.

On a beach field trip, guides will point out changes in southern New Hanover County over the past 100 years. A trip is planned to Carolina Beach State Park to study a pocosin, a type of swamp common to coastal North Carolina. Established in low boggy areas, this unique plant community includes venus fly traps, pitcher plants and sun dews. That trip will include an optional two-mile walk to Sugar Loaf, a very old sand dune. There will be other trips to nearby tidal pools and salt marshes.

The center will continue to offer weekly seminars on marine subjects. Educational films, suitable for adults and children, will be shown every Wednesday night.

Pre-register for trips by calling 458-8257.



School children at the Bogue Banks Center

Mariners Museum

If you're in Beaufort, don't forget the Hampton Mariners Museum. It's nestled on Tucker Street in this quiet historic town, just a block from the waterfront.

The coastal branch of the Museum of Natural History in Raleigh, the Mariners Museum grew out of the old Hampton Marine Museum. It now offers exhibits, field trips and lectures in natural and maritime history.

Though it's unimposing from the exterior, the little museum is packed with treasures. There are aquaria containing salt water fish native to North Carolina, a large collection of sea shells and a small collection of stuffed shore birds and waterfowl.

The maritime section of the museum contains a large collection of ship models, dating to the early days of shipping. There are also exhibits of charts, navigation instruments, maritime artifacts and plans for common North Carolina boats.

Staff biologists conduct numerous field trips during the summer, including salt marsh and shell collecting walks, tidal flat trips and bird walks. A trip to visit boat builders in the Beaufort area is planned. Make reservations in advance by calling 729-7317.

The museum is open six full days a week and on Sunday afternoons.

Marine studies

Summer school for teachers

The North Carolina Marine Resources Center at Bogue Banks is bustling with more than the usual activity. This summer the center is the classroom for 34 North Carolina public school teachers. Their subject: marine studies.

The teachers are participating in two Sea Grant projects designed to enrich marine education in the public schools. The programs are being carried out in cooperation with the North Carolina Department of Public Instruction and the North Carolina Marine Resource Centers. Public education is one of the main functions of the three centers.

"Sea Grant's interest in marine education is based on the assumption that an educated public will be more responsible in its decision-making about the coast and ocean," explained Dr. William Rickards, associate director of UNC Sea Grant.

Looking at the environment

Rickards is coordinator of the Marine Awareness Program, which got underway at the Bogue Banks center in June. Six teachers spent a week at the center for an intensive introduction to marine science and the facilities of the centers. They studied a variety of marine environments, including the dunes, beach fronts, ocean, marshes and maritime forests. Then the teachers packed up and went home to work individually on developing lesson plans for teaching marine subjects in grades 6 through 9.

The lesson plans will be designed to complement physical, natural and earth science curricula already used in those grades. Each teacher will produce a lesson plan for about five hours of classroom instruction in a marine subject area. The plans will be written so that they can be used in any middle school classroom. But they can be most effectively used in conjunction with a field trip to any one of the three marine resources centers, Rickards pointed out. During the school year the centers host hundreds of school groups from all over the state.

The product of the teachers' research will be printed packets of materials which will be available to teachers through Sea Grant and the North Carolina Department of Public Instruction.

Jake Brown, a science consultant with the department of public instruction, believes that the new materials will be more appealing to the North Carolina student than most textbooks. "Often the books are so dry in their presentation that they can't present the little exciting side views. We can do that. Also all textbooks are national . . . I think sometimes that special materials are needed for North Carolina," he said. Brown is on the steering committee for the marine awareness program.

A month-long teacher education program entitled "Man and the Seacoast" got underway at the Bogue Banks resources center July 18. Twenty-eight

teachers from Currituck to Asheville are participating in the multi-disciplinary course. They will study everything from Thoreau's *Cape Cod* to the geology of the North Carolina coastline. Environmental science, geology, oceanography, chemistry, coastal zone planning, anthropology, sociology, economy and literature are all on the course curriculum.

"The problems that face the seacoast and its development are not single-faceted problems. They are multi-faceted. You have to understand the economics as well as the technology," explained Dr. Dirk Frankenberg, director of the Marine Sciences Program at UNC-CH. Frankenberg and Dr. William Still, history professor at East Carolina University, are co-coordinators of the project.

The teachers will hear eight guest lecturers from various departments in the University of North Carolina system. Each faculty member will present a general interest public lecture on marine aspects of his field, followed by two days of formal instruction. Sunday and Wednesday night introductory lectures at the center will be open to the public until the course ends August 13.

Teachers were selected on the basis of their teaching skills and their interest in incorporating marine science into the curricula of grades four through eight. "Man and the Seacoast" is aimed at the middle grades because they can best accommodate the inter-disciplinary approach. It is expected that the course will be greeted with enthusiasm because teachers at these grades generally have fewer enrichment opportunities than teachers of elementary or high school.

Making lesson plans

Working in groups, participants in the course will help to convert the lectures into materials that can be used to introduce other North Carolina teachers to marine studies. The new materials will include suggested lesson plans and project designs. The teachers will be expected to share that information with other middle school teachers in their school systems during teacher work days next fall. They will also receive three units of credit toward the required renewal of their teaching certificates.

Course activities will not be confined to the classrooms of the resources center. "The idea is to provide them (the teachers) with an experience as well as some information. We're going to talk about these things and let them see them too," said Frankenberg.

Field trips will be an essential part of the course. Among those planned are a trip to nearby areas to study native plants and animals, a visit to the fishing and boat building community of Harkers Island and a trip to an excavated site of an ancient Indian fishing camp.

Sorting out the legal issues

As life in the coastal areas becomes more complex, so do the legal issues surrounding it. In the United States, a huge body of law has grown up around the ocean and the coast—a body of law that becomes increasingly important as the struggle for the control of limited resources intensifies.

Dr. Thomas Schoenbaum, a faculty member of the UNC School of Law, is trying to help others interpret and understand this complex body of law. This summer, with Sea Grant support, he is teaching the state's first ocean and coastal law policy course.

The course is being offered in a five-week summer school session for law students and graduate students in marine sciences at the UNC School of Law. Course work is based on a two-volume text prepared by Schoenbaum and seven of his students and published by UNC Sea Grant.

Schoenbaum believes that the texts will be helpful to scientists, policy makers and lawyers in other states.

The course will cover ocean and coastal law of the United States. Schoenbaum believes that it will be useful to lawyers going into private practice in the coastal area as well as to the growing numbers of law graduates who enter government work.

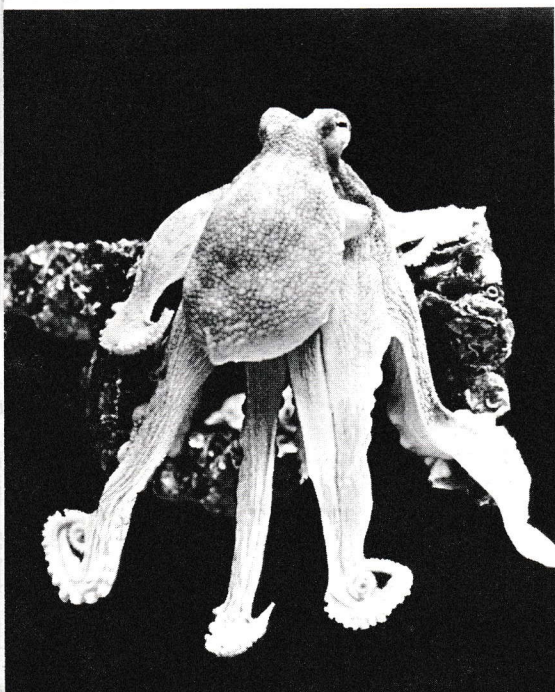
"We have a lot of coastal education programs, but there's no course in any of the universities in this state on marine policies or law. Everybody who works with the coastal area will have some contact with marine policy or law," he said.

Course work covers seven major areas. Ocean law topics include the international law of the sea, fisheries management and marine mammal protection, and laws concerning marine pollution control. Schoenbaum will also discuss laws governing non-living resources, especially those which control mining on the Outer Continental Shelf and the building of floating nuclear power plants.

Under coastal law, students will study the public and private rights to coastal resources, construction and regulatory activities of the U.S. Army Corps of Engineers and land use planning.

As part of the two-year Sea Grant pilot project, graduate students are doing legal research designed to benefit the state. They are trying to determine how the state can manage its Outer Continental Shelf resources. They're looking at the state's role under the new federal extended jurisdiction law. And they are attempting to develop a better maintenance, control and scheduling system for the state's 11 major research vessels.

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