UNC Sea Grant

October, 1982

COASTWATCH

Photo by Kathy Hart

Lundie Spence, bringing the coast into the classroom

When people Are the point

At Sea Grant, we can tell you most of what we're up to in just one word: People. It is our belief that all the painstaking research in the world goes for naught unless people benefit. Sea Grant takes some of the best science our universities can offer and puts it to work out there on the dock, in the marketplace, in society.

This month, we thought we'd introduce two of the people who help make sure marine science is more than just words on a chalkboard or chapters in a textbook. As Jim Murray, director of Sea Grant's Marine Advisory Services, puts it: "These agents and specialists work with the public, and that means they can keep the university in touch with what the research needs are out there along the coast. It's a two-way flow."

We've singled out two of Murray's team—Lundie Spence and Bob Hines—only to give you a closer look at what the workdays of a specialist and an agent are like. We hope you get a chance to meet the rest of the team, too—they're all top-notch. If you want their help, give them a call. They'd like to hear from you.

If teachers can't fly, don't tell Lundie

Back during the heat of July someone asked UNC Sea Grant Director B. J. Copeland what Lundie Spence was doing these days. His reply? "The last time I saw Lundie, she was wading through the marsh wearing her bathing suit and big straw hat and flapping her arms like a bird. Behind her were fifteen teachers doing exactly the same thing."

Those who meet Lundie Spence rarely forget her boisterous enthusiasm or her echoing cackle. They go with a go-get-em attitude that makes her job as UNC Sea Grant's marine education specialist, well, special.

Lundie travels from the mountains to the coast of North Carolina, peddling marine education, and her enthusiasm for the marine environment spreads like a brush fire. She'll have you feeling an eel, tasting shark or wading knee-deep in a salt marsh before you have a chance to decline.

Lundie's not keen on negatives. On the job she neither takes nor gives no for an answer. There is always a way. And that way has meant more marine education for teachers and students alike.

Lundie helps teachers and science coordinators introduce and organize marine-education curriculums and materials. She also works with vocational teachers, especially along the coastal counties, to introduce marine fields—boatbuilding, aquaculture and fishing—to the vocational student.

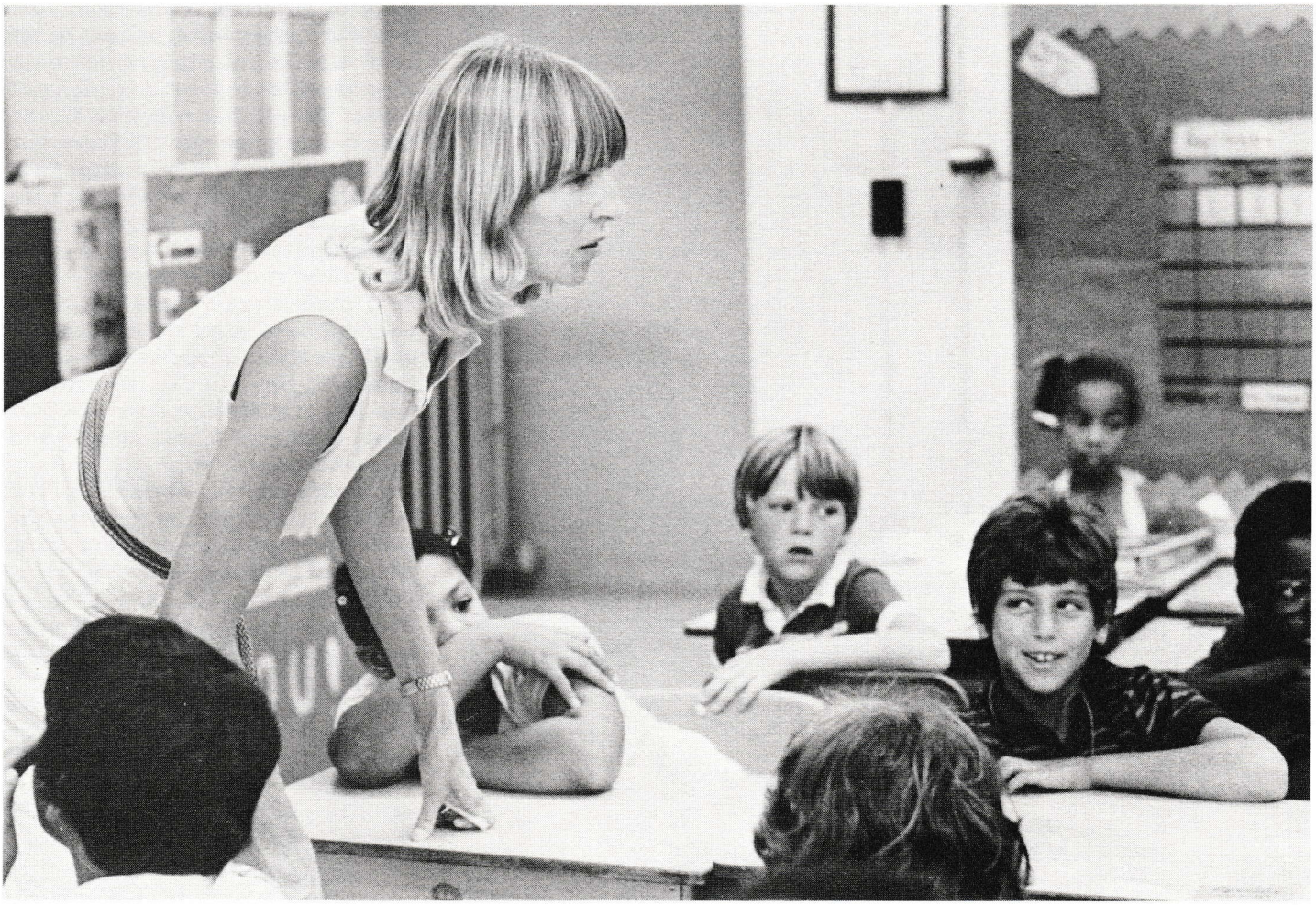
But it takes more than hard work to make marine education catch fire. It takes a spark. And many educators believe Lundie has been that spark in North Carolina.

She has planted the idea of marine education among science and vocational coordinators in school systems like Charlotte-Mecklenburg, Guilford and Pamlico. She fed the idea by conducting workshops among teachers, and by supplying enthusiasm, ideas and materials. At last the idea blossomed as teachers carried marine education back to the classroom, where they captured the interest of students through coastal field trips and classroom exercises.

Mary Kearns, science supervisor for Guilford County's schools, says Lundie has worked with both teachers and students in her school system to increase their knowledge of the coast. "She has shown us some neat things that really bring the coast to the classroom," Kearns says. "We've learned how to teach our students to graph the ocean floor without ever leaving the school.

"I feel like it is very important to learn about the marine environment. Most of our children go to the coast for vacation. They need to know there are

Photo by Kathy Hart



Lundie and third graders encounter the secrets of marine science at Underwood Elementary School

things to see and do there besides swimming in the ocean and watching the bikinis go by."

For Lundie every creature, tidal marsh, dune and yaupon bush is a lesson in coastal ecology. And she doesn't mind standing shin-high in muck to show a teacher a marsh periwinkle inching up a blade of cordgrass or an egret stalking its prey.

"She believes that getting in there and doing it or seeing it is the best experience a teacher can have," says Jo Duckett, assistant program director and education coordinator for the science museums of Charlotte, and the former science-resource teacher for the Charlotte-Mecklenburg Schools. "With Lundie you experience marine education. She lives marine education and she makes you aware of marine education as a holistic kind of thing."

Besides working with regular classroom teachers, Lundie has also made a special effort to help vocational and home economics teachers introduce more marine topics to their students. Carter Newsome, regional coordinator for vocational education in southeastern North Carolina, says Lundie assisted in development of a marine occupations curriculum, arranged tours for vocational students at marine laboratories and conducted a workshop for marine occupations teachers at Sea Grant's Aquaculture Demonstration Project in Aurora.

"She's really inspired our vocational teachers to stretch out, to learn and to grow," Newsome says. "Lundie has promoted the scientific aspect of vocational teaching. She's inspired enthusiasm among our teachers and a quest for up-to-date marine information."

When Lundie is not on the road giving workshops, she's often in her Raleigh office on the phone to teachers, science coordinators or museum personnel wanting to know such things as where they can find a film strip on estuaries or a book on marine mammals.

"She's a connector," says Jo Duckett. "Because of her knowledge of her subject matter she can quickly look at the needs of an individual or group and match the resources, people or materials, they need. That is a very important skill."

Jim Smith and Steve Benton of the state Office of Coastal Management recently put together a peat-mining workshop for teachers in Washington County. They contacted Lundie for a little help. "She told us how to present our materials so we could be sure we were communicating to the teachers the information we wanted them to know," Benton says.

Photo by Kathy Hart

With "adaptation games" students learn about marine life

Lundie doesn't let state boundaries stop her when it comes to connecting people and resources. As president-elect of the National Marine Education Association, she draws on the ideas and resources of educators from coast to coast. And, she works with Sea Grant marine education specialists from Hawaii to Maine to target marine education needs nationwide.

As a teacher for six years, Lundie knows teachers don't always have the resources they need readily available. That's why she helped to put together four marine education manuals, covering coastal ecology, geology, history and seawater. The manuals offer information about the coast and exercises that bring the coast into the classroom. Lundie's latest manual, written with Jaynee Medlicott of the 4-H Marine Awareness Project, is a guide to marine resources, aquaria and touch tanks, and coastal field trips. She also produces a marine education newsletter for educators. It is distributed free four times a year.

Lundie's job as an education specialist wouldn't be complete without some time in the classroom. Lundie teaches an interdisciplinary "oceans" course at North Carolina State University. Drawing on the expertise of Sea Grant researchers, specialists and agents as well as other coastal specialists, Lundie teaches about twenty-five college students everything they can learn about the coast in fourteen weeks. The highlight of the course is a weekend field trip to the Cape Lookout National Seashore, where they learn about barrier-island ecology and shoreline processes from Stan Riggs, an East Carolina University geologist and Sea Grant researcher.

While Lundie's dedication to marine education seems endless, she is always quick to point out that she is not alone in spreading the marine education gospel. "I get a lot of support from the Marine Resources Centers and from the coastal and inland museums and nature centers," Lundie says. "Without them I couldn't be nearly as effective as I am."

—Kathy Hart

Pushing facts, Not paper

"Anytime I have to call on Bob he's available to give me the latest information on a new piece of gear or check into some new ideas I'm interested in. He's a really great listener, and I've got a lot of confidence in what he tells me."

Jim Etheridge, owner of Lowland Marine Supply in Bayboro, says he sees or calls Bob Hines at least once a month with questions and ideas. Hines is a Sea Grant marine advisory agent. His office is in the N.C. Marine Resource Center at Bogue Banks. But during the course of the day, he's just as likely to be found in Bayboro or Harkers Island or, even better, somewhere out in the Atlantic. He talks to commercial fishermen. He teaches surf-fishing. He leads a field trip. He's the information man, if you're interested in fishing in the central coastal area of the state—in Beaufort, Carteret, Craven, Onslow and Pamlico counties.

Here's some of what Hines has been up to lately: — Marine fouling on crab pots is a big problem for crabbers. A new anti-fouling paint, which was tested in Maryland in a Sea Grant project, not only significantly reduced fouling, but also extended crab pot life. Catch figures gathered over time also indicated that the pots treated with the new paint caught more crabs. Would the anti-fouling paint work in North Carolina? Hines received a Sea Grant mini-grant to find out and has set out 30 pots, treated and untreated, to do his own study. He also set up two demonstrations to introduce the new paint to crabbers, and gave them a chance to have some of their pots painted in exchange for data.

— In 1981, Sea Grant marine agent Jim Bahen organized a first for commercial fishermen in North Carolina—a work boat show. The show was held in Wilmington and featured the new boats and fishery products on the market. This past spring, a second work boat show, held in Morehead City, was co-organized by Hines and Larry Giardina, another Sea Grant marine advisory agent. Attended by over 4,000 people, the show featured 45 commercial exhibits and a series of short seminars with topics ranging from tax management to diesel maintenance. At the show, Hines conducted a seminar on maintaining boats and gear.

Photo by Neil Caudle

Hines checks crab pots in a marine-fouling study

— To provide timely information on Sea Grant activities and other marine topics of local interest, Hines and Giardina started *Marine Advisory News* last year. Published 12 times a year, the free newsletter now has over 1,000 fishermen, seafood dealers, marina operators and coastal property owners for subscribers.

— To encourage more young people to consider the seafood industry as a career choice, Hines works with Lundie Spence, Sea Grant's marine education specialist, in vocational in-service training programs. Each summer, Spence runs summer workshops designed to teach educators more about commercial fishing and seafood processing and preparation. In his section on commercial fishing, Hines discusses the different types of gear used to catch the various types of seafood harvested in the state.

Probably the most frequent and most numerous requests Hines gets are for information on recreational fishing—what can I catch when, where and how. "People call or come in the office all the time," Hines says, "and they want to know where they can go crabbing, when's the best time and how many can they catch. Or, they

Photo by Cassie Griffin

Hines has encouraged boat-owners to maintain their equipment

want to know how to surf fish and where they can drive on the beach to fish." Hines has several ways of providing this information:

— With an office at the N. C. Marine Resources Center at Bogue Banks, Hines is constantly in contact with people interested in marine resources, and those numbers increase during the summer months.

Not all of Hines' requests come from the coast or even from the state. An ad agency in New York City wanted to know how many fish there are in the ocean. A fellow from North Dakota wanted to sell his restaurant, move to North Carolina and become a commercial fisherman. Hines says the man is reconsidering the idea. "I think he was laboring under the impression that it was an easy, glorious way to make a living," Hines says.

And, then there's work with other Sea Grant programs and state and federal agencies. Agents transfer information about new gear or fishing techniques from state to state and from coast to coast. "I'm working with an agent in Alaska now who has requested information on the anti-fouling paint I'm using in my crab-pot study," he says. "He is hoping they can use it up there on octopus pots to stop their marine-borers problem."

What kind of person is a marine advisory agent? "I'm kind of a jack-of-all-trades, I guess, since you have to be responsive to all types of marine interests," Hines says. "You can call yourself an expert, or knowledgeable anyway, in one particular area, but whoever walks through that door or calls on the phone, well you've got to be able to answer the question or know where you can find the answer. Sometimes that just takes one phone call, and sometimes it may take a couple of days of calls and searching."

Hines isn't desk-bound, or even at his desk at all somedays. He doesn't mind the lack of a daily routine which comes with his job. "With the diversity of things I get involved in, I haven't had a day yet when I have gotten bored because of doing the same things over and over too many times," he says. "There's enough different things to do during any given day where you don't get tired of doing it. Besides, I like folks, I simply enjoy working with people. I guess that's what I enjoy the most."

Weather news, Relay-style

Sea Grant agents and specialists connect people—people who have problems or questions with people who have answers. They may help an eel exporter find a supply of American eels, a marina operator learn more about insurance or a coastal homeowner fight erosion.

Jim Bahen, Sea Grant's marine advisory agent in Wilmington, is trying to help commercial and sportfishermen learn more about fickle offshore weather. He knows when a fisherman leaves the dock the weather may be sunny and the seas normal, but 35 miles offshore, squalls packing shifty winds and six-foot waves may send the fisherman back to the dock with no fish.

Fishermen need better weather information about the intermediate offshore zone (18 to 50 miles offshore) to make sound fishing decisions. Bad weather can endanger lives and waste time and fuel if conditions are too poor for fishing.

The National Weather Service (NWS) offers a marine weather forecast covering 0 to 100 miles offshore. But Al Hinn, meteorologist-in-charge at the NWS in Wilmington, says the weather information isn't as complete as he would like.

The Gulf Stream, which meanders northward off the North Carolina coast, creates some special offshore forecasting problems. "There can easily be a ten- to fifteen-degree temperature difference in the air over the Gulf Stream," Hinn says. "The temperature difference causes more evaporation, more clouds and more showers and thunderstorms. These can be localized conditions that aren't general to the whole offshore zone."

To make its offshore forecast the NWS relies on information from one weather buoy off Frying Pan Shoals and information relayed from cooperative ship reports, a fish house in Southport and a marina in Atlantic Beach. "That amounts to thirty to fifty reports a month," Hinn says. "That's only one to two reports a day and some days we get no reports."

To help the NWS offer better forecasting for fishermen, Bahen is

Continued on next page

drawing together a network of people from industry, government and the fishing community to organize a weather relay program.

Plans call for a 90-foot tower, donated by NCS International, a geodetic and marine positioning and surveying company, to be set up at the N.C. Marine Resources Center at Ft. Fisher. From the marine advisory services office in the center, Bahen (or

Jim Bahen

Sea Grant staffers Debbi Ford and Spencer Rogers) will communicate via VHF radio (channel 68) with fishermen in a 55-mile radius offshore of the center.

Sea Grant staffers will pass the information along to the NWS office in Wilmington. The reports will be incorporated into the marine weather forecast and broadcast over the 24-hour National Oceanic and Atmospheric Administration (NOAA) weather radio. Bahen says the weather relay program should begin operation in December.

The NWS also plans to relay the offshore weather information to NWS offices in Raleigh; Columbia, S. C.; and Washington, D. C., and the National Hurricane Center in Miami, Fla. Hinn says the information will not only provide better daily weather reports, but also help meteorologists improve their forecasting ability.

"I think it's a very, very workable plan," Hinn says. "After all, aviators have been doing it for twenty years. Pilots report back their weather experiences, icing, updrafts and turbulence, so the next pilot in the area will know what to expect. It's pilots helping other pilots. And the correlation is certainly there for the marine community to do the same thing. It will be based on fishermen helping fishermen."

Sea Grant's marine advisory team

If you have a marine question or problem, then call or write a member of the UNC Sea Grant advisory services team. Here are their names, locations, phone numbers and specialities.

Jim Murray	Director	North Carolina State University (919) 737-2454
Leon Abbas (specialist)	marine recreation, economics	North Carolina State University (919) 737-2454
Jim Bahen	commercial fishing	Marine Resources Center/Ft. Fisher Kur Beach, N.C. (919) 458-5498
Jim Easley (specialist)	economics	North Carolina State University (919) 737-2885
John Foster	aquaculture	NCSU Aquaculture Demonstration Project Aurora, N.C. (919) 322-4054
Larry Giardina	business management, marketing	Marine Resources Center/Bogue Banks Atlantic Beach, N.C. (919) 726-0125
David Hill	seafood	NCSU Seafood Laboratory Morehead City, N.C. (919) 726-7341
Bob Hines	commercial fishing	Marine Resources Center/Bogue Banks Atlantic Beach, N.C. (919) 726-0125
Spencer Rogers (specialist)	coastal engineering	Marine Resources Center/Ft. Fisher Kure Beach, N.C. (919) 458-5780
John Sanders (specialist)	coastal weather	North Carolina State University (919) 737-2454
Lundie Spence (specialist)	marine education	North Carolina State University (919) 737-2454
Joyce Taylor	seafood	NCSU Seafood Laboratory Morehead City, N.C. (919) 726-7341
Hughes Tillett	commercial fishing	Marine Resources Center/ Roanoke Island Manteo, N.C. (919) 473-3937
Frank Thomas (specialist)	seafood	North Carolina State University (919) 737-2956
Sam Thomas (specialist)	seafood	NCSU Seafood Laboratory Morehead City, N.C. (919) 726-7341
Wayne Wescott	commercial fishing, gear	Marine Resources Center/ Roanoke Island Manteo, N.C. (919) 473-3937

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).

The headline reads: North Carolina hard clams murdered in Back Sound bed. Suspects include members of two underwater gangs—the blue crabs and the whelks. But detective Charles Peterson, a University of North Carolina (UNC) Sea Grant researcher and biologist at the UNC Institute of Marine Sciences in Morehead City, turned up the real culprits—snapping shrimp. The snapping shrimp (Alpheus), still on the scene, gave themselves away by snapping their small lobster-like claws.

The shrimp produce a noise much like a person snapping his fingers as they clamp together their powerful claws—claws capable of crushing a small hard clam. Until Peterson's discovery, most scientists thought snapping shrimp used their claws primarily to attract mates. Scientific literature contains no reports of snapping shrimp preying on hard clams, Peterson said.

Peterson did his detective work as part of a UNC Sea Grant research project. Peterson is studying the hard clam, a bivalve mollusk common to North Carolina and large portions of the East Coast, and the effects of harvest methods on the clams and their environment.

Peterson made his discovery when Brian Beal, a graduate student working on the project, checked a seed-clam experiment in Back Sound, where he was monitoring clam growth and survival. To keep out the predators, Beal had enclosed the clams in a wire cage. Instead of finding healthy clams, Beal was greeted by piles of crushed mollusks and a chorus of snapping shrimp.

Suspecting the one-and-a-half inch shrimp may be responsible for the clams' demise, Peterson and Beal set up a laboratory experiment. Their suspicions proved correct as the snapping shrimp cracked as many as three clams a day. Peterson says the shrimp can crush clams up to two centimeters long (about one year old).

The snapping shrimp are abundant in Back, Bogue and Core Sounds, where populations run as high as 10 snapping shrimp per square meter, Peterson says. And, the shrimp aren't particularly choosy about their habitat. They're just as likely to be found tucked away in a sea grass bed as hiding among the oyster rocks.

According to Beal, in light of the findings, previous studies may have overestimated the predation rates of blue crabs. The crushed clam shell left behind by the snapping shrimp looks identical to the crushed shell left by the blue crab. Peterson says he doesn't know what percentage of the hard clam resource is being taken by snapping shrimp, but he believes it may be substantial.

With the preliminary investigation behind them, Peterson and Beal are writing their report on the case of the crushed clams, charging the snapping shrimp with the clams' demise. And what will the snapping shrimp plead. Guilty by reason of hunger.

Are you interested in learning how to raise crayfish, start a bait business or produce fish in your farm pond for profit? The answers are in a series of newspaper columns written by one of UNC Sea Grant's aquaculture experts, Johnny Foster.

Foster, a marine advisory agent at the NCSU Aquaculture Demonstration Project, began the columns last spring in response to numerous requests for information. Several newspapers in eastern North Carolina currently are running the biweekly columns which report on the latest research in aquaculture. Topics include catfish farming, soft-shell crabs, eels, bait fish, prawn farming, striped bass, pond construction, cage culture and more.

For a set of the aquaculture columns, write UNC Sea Grant, Box 5001, Raleigh, N.C. 27650-5001. And, for more information on aquaculture, contact Foster at the NCSU Aquaculture Demonstration Project, Route 2, Box 305, Aurora, N. C. 27806 or call (919) 322-4054.

Fishermen in Brunswick, New Hanover and Pender Counties will have a new source of information waiting in their mail boxes soon. Jim Bahen, the Sea Grant marine advisory agent in the Wilmington area, has published the first issue of his newsletter, *Light Line*, designed for commercial fishermen—gill netters, shrimpers, charter boat captains and more. The newsletter will offer news about research, advances in gear and methods, regulations, and programs and events of interest. If you don't receive a copy of *Light Line*, but would like to be added to the list, write the UNC Sea Grant Advisory Services, General Delivery, Kure Beach, N. C. 28449 or call (919) 458-5498.

Sea Grant agents Bob Hines and Larry Giardina also publish a newsletter for fishermen, marina operators, seafood dealers and others along the central North Carolina coast. To be included on their mailing list, contact the UNC Sea Grant Advisory Services, P. O. Box 896, Atlantic Beach, N. C. 28512, or call (919) 726-0125.

UNC Sea Grant will host a visit from Neil Armstrong, director of the Center for Water Resources Research at the University of Texas in Austin, to the North Carolina State University campus November 18 and 19.

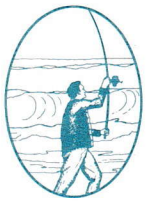
Continued on next page

Armstrong, a recognized estuarine authority, has extensively researched the relationship between stream flow and estuarine productivity, a growing problem in North Carolina as more coastal lands are drained via ditches to the estuaries. Armstrong will speak to Lundie Spence's NCSU oceans class and present a seminar to the NCSU Department of Zoology. He will be available for prearranged private consultations on November 18 and for consultations with state water-management officials on November 19. If you would like to make an appointment to talk with Armstrong, call the Sea Grant office at (919) 737-2454.

For those folks planning fall trips to the North Carolina coast, don't forget to include a visit to one of the N. C. Marine Resources Centers. At the Roanoke Island center, a new wave tank exhibit will be on display in November. And field trips are planned to explore the salt marsh and to watch the fall migration of birds and waterfowl. For more information, call Hilda Livingstone at (919) 473-3493.

Every Saturday and Sunday at 3 p.m. during October and November, the Bogue Banks center staff will present a live sea creature program featuring such ocean and marsh notables as the blue crab, the hermit crab, the octopus and the oyster. Also on the agenda each Wednesday and Saturday during the fall is a children's story time. Center staff will read from a selection of children's nature books. For more information about these programs, call (919) 726-0121.

And, if you're interested in foraging for your dinner, plan to attend the Wild Seafoods Day, October 30 at the Ft. Fisher center. Participants will gather seafood and plants from the marsh and beach, then prepare, cook and eat them. Preregistration is required. For more information, call (919) 458-8257.



Fishermen get your reels ready and your four-wheel drive vehicles packed. Surf-fishing season is here. Fall is the best time of year for surf fishing. Fish, fat from a summer in the estuary, are ocean-bound, often moving along the coast before swimming seaward.

And while surf fishing packs a lot of excitement, Leon Abbas, UNC Sea Grant's marine recreation specialist, says it can be hazardous too. Waves, the primary hazard, can knock a fisherman off his feet and fill a pair of chest waders in seconds. Unless the fisherman can free himself of the waders quickly, he can drown.

Abbas advises that a fisherman choose a spot where the water isn't too rough. Remember the surface under the water is not smooth. Holes, bars and trenches create varying depths along the bottom that aren't always detectable from the surface.

Fishermen should consider tide changes. "What seemed to be a comfortable level when you waded out may change behind you," Abbas says. Fishermen also should keep an eye on the weather, watching for changes in wind direction or sudden storms.

Abbas suggests that fishermen carry only minimal equipment into the surf. Hand gaffs or knives should be covered or kept in sheaths.

And whether you're a novice or an old salt, don't go night fishing alone.

UNC Sea Grant mini-grant funds have been awarded to the North Carolina State University Department of Food Science to support a study aimed at developing a baby food made from fish. Laura Jane Mackintosh, a masters' candidate in food science, will be working to develop a new product that will be acceptable to mothers and babies. The National Fisheries Institute also will be contributing funds to the study.

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